Simulation Highlights

A Quarterly Compilation of Simulation Articles from Leading Defense and Industry Publications

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AirForceTimes

General Looks to Change the way Airmen Train

Lauren Biron
December 27, 2012
Air Force Times

As the Air Force adapts to the end of the Iraq and Afghanistan wars and flat defense budgets, the commander of the Air Education and Training Command is looking to revolutionize the way the service approaches training.

Gen. Edward Rice Jr., who is responsible for the training of nearly 300,000 students per year, wants to rethink the way airmen train, create a culture of cost consciousness and use airmen's time effectively. Rice spoke from his headquarters at Joint Base San Antonio-Randolph, Texas.

Q: You've talked about how the Air Force is "transforming the way it delivers training." How do you envision that?

A: There are opportunities now for us to think differently about how we deliver education and training. A lot of that has to do with delivering training to the individual versus having the individual come to the training location. It's less dependent on a traditional brick-and-mortar classroom to deliver the training.

It's more aligned to deliver the training and the education based on the pace of learning of the individual. It's more designed to be a learner-centric environment versus a teaching-centric environment. By that, we mean teaching, in many cases, is a push process, where you have a teacher or an instructor who is pushing information to the student. In a learning-centric environment, it's much more a student pulling information from instructors and other sources as they are ready to receive it.

It is blended learning where we combine the best of classroom education and delivery of information via various forms of technology.

Q: There has been talk of moving students in and out of schoolhouses to learn different skills as the need arises. Is the Air Force is looking at that?

A: The model that we are looking at is what I would call more of a three-phase approach. It's to deliver a set of information that the student would largely absorb on their own. Follow that with more of a facilitated learning process where they would have access to instructors via some sort of electronic medium, whether it's the Internet, video teleconference, or seminars if they are home-based. Then, when we bring them to a location, it's to do only those things that you can't do on your own. It's operational field exercise, classroom discussion, those types of things that require you to be at a specific location in order to get that level of learning.

Q: You've mentioned training at your own pace. What kind of training is that best suited for, and how do you see that working into the training regimen?

A: I actually think it's suited for almost every type of training that we do, from flying training to technical training. The idea is that we can put tools in the hands of individuals that allow them to learn in ways that they couldn't learn before. And by using those tools they are learning faster, learning better in terms of comprehension of the material, and can do a lot of it in locations that they couldn't do it before. They can take it

with them. While they're sitting in the mall waiting for their friends to come out of the store, they can be using their device and learning on the weekends.

Q: Could train-at-your-own-pace learning be used for something like the fifth-generation fighters?

A: Absolutely. As I look to the future, I think that we can develop a syllabus that, upfront especially, has students doing a lot more self-learning. When they get to a point where they need help, they have an ability to reach out to an instructor via email, or the next day they could go to a learning center where there would be instructors available for individual help. Then they could come back to their own learning environment and continue to learn at their own pace. We are trying to maximize the time of the individual and the instructor to provide as much focused learning as possible.

Q: When you have people using this mobile and blended technology for learning, how do you deal with issues of security?

A: Security requirements change over time. It's not something that you ever solve. It's something we're certainly cognizant of. Most of what we train, quite frankly, is open-source materials right now. It's not something you have to have behind a very hard firewall.

But for those things that are classified, we'll take the normal security precautions with that. It will obviously, in some cases, require us to take people to a place where they can deal with classified and secure information, but that's, again, a very small part of our operation, and I don't see, at this point, security as being a significant deterrent or detractor to move forward.

Q: Does the Air Force have an equivalent to the Army App Store, which hasn't gotten very far due to security issues, or are you thinking about one?

A: We do have some applications that are available right now on PDAs. Many of the ones I'm thinking of are used in the recruiting environment to help prepare and provide them with knowledge to come into the Air Force. But we've got another one that deals more with safety and how you can access different elements of our system to provide you with assistance should you need it.

I think this challenge of security is one that we have to deal with anyway as a military, and specifically as an Air Force. It's one that we're chipping away at, and we have to solve, since we are doing so much in cyberspace today. That will progress at its own pace, and I think it will progress at a pace that's satisfactory.

Q: How do you see simulation's role changing in the next five years?

A: I think we will see it increase at the pace at which we incorporate simulation into our operations. Simulation becomes more realistic every day. When I look at the change in simulation and the difference between F-22 and F-35, my expectation is I will be able to do more in the F-35 in a simulator than I would be able to do in a very advanced simulated environment in the F-22. That change in the capability of simulation — and concurrent increase in the ability for us to make use of it — will continue. And we have to do that. As we look at the resources that we think we're going to have available, anything that we can download from a more expensive training platform (the aircraft, for example) and bring that into a simulator (or a less advanced aircraft) will pay for itself very quickly.

Q: Sequestration aside, let's say you have to cut funds more generally. Does training or simulation suffer from that, or do you turn to it more as a cheaper alternative?

A: I think that there are two answers to that. One answer is: When you look at our long-range planning, we will tend to rely on simulation more, because it is cheaper. So we'll look for ways to take advantage of the resource savings that we can get from simulation. But when you're in the more near-term environment where you have to meet specific dollar figures or resource constraints, then everything gets put on the table. So it becomes

incumbent upon me, specifically, and others who are in the training business, to make the case to the larger enterprise of the value of training as opposed to other things that we might spend our money on.

Q: What is the Air Force doing to foster interoperability?

A: One of the areas that all of the services are thinking through right now is — as we continue to bring forces home from the Middle East — our airmen, soldiers, sailors, Marines and Coast Guardsmen have been used to working together and have a lot of joint experience. As we come back into our own service environment, how do we continue that joint training experience such that we continue to develop warriors who are joint-experienced? And it's not something that will just happen. It's something that we're going to have to think about doing in ways that I don't know that we've developed at this point. I think it's one of those areas that all of the services are trying to think through, because we have this tremendous experience that will rapidly atrophy unless we have some intentional way of reinforcing that jointness in a peacetime environment.

Q: Another theme that has been talked about lately is the renewed focus on the Pacific. How do you envision training changing as the forces make that switch?

A: It's much more of an air and maritime environment than some of the more land-centric environments that we have recent fighting experience in. So we develop training based on the demand signal that the operators give to us. As we make this pivot, I would expect that we are going to think about the concept of air-sea battle, and that will have its own set of requirements for training as a result. I don't know that we're at a place right now where we've got specifics that we can talk about. As we make this pivot, I would expect that we'll get more in terms of what that's going to look like, and then we'll adapt our training program, which we do every year.

Q: You've also spoken about using airmen's time efficiently. How does this relate to proper use of time in training?

A: Right now, our airmen have a full-time job to go out and do whatever it is that we have trained them to do, whether it is fly airplanes, fix airplanes, buy airplanes, do financial management, you name it. They've got a full-time job. Technology is enabling us to allow them to do more for themselves that they would traditionally have had to go someplace else and have someone else do it for them.

Whether it's planning their own travel or executing professional military education — much more of that can be done at home station. That will certainly shrink the amount of time that our airmen have to spend with their families or on themselves or doing other things that they would like to do. While there certainly is going to be some professional obligation to do things outside the normal duty day, unless we are intentional about understanding the demands we are placing on an airman's time, our view is we will expect them to do too much outside a normal duty day. So we want to understand what the demands on airmen's time are, and we want to provide enough time within the professional time to do professional things. Airmen can do what we've asked them to do and have a reasonable opportunity for quality of life outside of their professional obligations.

Q: What are some of the solutions to make that work? There are only so many hours in a day.

A: What we are doing is not looking at this in the average. We're breaking it down to each individual job and functional area, and looking at the time associated with those functions. And then we're determining what we are asking airmen to do outside their "normal" job and looking at how we provide time during the day in order to do those things.

So if you have an eight-hour shift, we might decide that three hours a week we are going to take you off your shift and provide you time to do your ancillary training, your professional military education, to do your additional duty in the squadron. We're still working out a way to do that.

We're going to place increasing demands on that airman's time. It's important that we have a process to manage that time such that we don't put excess demand on it.

Q: Is there anything that you would like the training or simulation industry to know, focus on or be aware of a demand for, in order to help you make your training more efficient?

A: My comment would be that cost will be a factor in everything that we do, much more so now and in the future than it has been in the past. I think it's important that industry really understands that and makes it a central part of everything that they do in terms of looking to provide a capability for us as they develop. It might be a very exquisite solution to a challenge that we face, but if we can't afford it, it's really a nonstarter.

U.S.-China Joint Exercise Wraps Up

Christopher Bodeen - The Associated Press
November 30, 2012
Air Force Times

CHENGDU, China — The U.S. and Chinese militaries on Friday wrapped up a modest disaster-relief exercise hailed as a tentative trust-building step amid growing suspicions between the Asia-Pacific region's largest armed forces.

While not a full-fledged operation, the two-day exercise at People's Liberation Army barracks outside the city of Chengdu consisted of U.S. and Chinese officers sitting around a table facing a flat-panel video screen and discussing how they would respond to an earthquake in a fictional third country.

Though this was the eighth meeting to discuss disaster relief, it was the first time both sides discussed a joint response to a simulated disaster. The leading officers called that a step forward in building familiarity and trust.

U.S. Maj. Gen. Stephen Lyons said the exercise began the groundwork for the day when the two militaries will operate side-by-side in an actual humanitarian operation.

"I think it's very conceivable. If there is a country out there, and there inevitably there will be, that will have a natural disaster, and they call for international help, if U.S. forces and Chinese forces respond, then indeed we'll find ourselves working together in the field," Lyons said in comments to reporters.

While Washington and Beijing have talked about boosting military cooperation for more than a decade, distrust runs high and disagreements over Taiwan, North Korea and China's assertive claims to disputed territories in the East and South China seas remain potential flashpoints. China's robust military buildup and Washington's decision to redeploy more weaponry and troops to the Asia-Pacific region have added to the tensions.

The modest scope of the table-top simulation underscores the underlying hesitation and distrust on both sides, particularly in Beijing, which tends to view military exchanges as a form of diplomatic leverage to be severed at times of tension.

"It's worth pursuing, but expectations should be modest," said Denny Roy, an expert on the Chinese military at the University of Hawaii's East-West Center.

This year's exchange comes as China has been flexing its military muscle and raising regional tensions. Last week China staged the first successful landing of planes on its newly commissioned aircraft carrier, a sign of its rapid progress toward deploying the ultimate symbol of naval power and a potent tool for projecting military force far from its shores.

China's Defense Ministry reiterated Thursday that the aircraft carrier was in line with the country's defense needs and was "not aimed at threatening others and not targeted against any country."

Hardware aside, China has been ratcheting up tensions by engaging in more aggressive tactics in recent months and thereby unnerving neighbors and the U.S.

Chinese coastal patrol and fisheries ships have pushed the Philippines away from a disputed South China Sea shoal and harassed Japanese coast guard vessels near contested East China Sea islands. U.S. naval and aerial reconnaissance close to China's shores has at times been challenged by Chinese ships and planes, risking clashes.

This week, southern Hainan province, which administers or claims to administer the South China Sea islands China holds or wants to, approved laws giving the police force the right to search vessels that intrude in Chinese waters. The move raised concerns about whether China would seek to block normal maritime traffic through the South China Sea, waters vital to world trade.

Aware of the potential for conflict between the militaries, both sides have in recent years tried to find ways to cooperate. Their armed forces have conducted joint anti-piracy drills in the Gulf of Aden. U.S. Navy Secretary Ray Mabus in Beijing this week renewed an invitation for China to take part in large U.S.-led multinational naval exercises next year, though China has not said if it would participate.

Exercises on humanitarian and disaster relief operations are relatively safe ways to build trust because they "avoid politically sensitive areas," said retired Rear Admiral Mike McDevitt, a senior fellow with the Center for Naval Analysis.

Asia is home to more natural disasters every year than any other part of the world, and the U.S. and Chinese militaries have proved vital in responding to tragedies such as the 2008 Wenquan earthquake that struck in the mountains outside Chengdu, and last year's massive Tohoku earthquake and tsunami in Japan, said Allen L. Clark, senior program development specialist at the Pacific Disaster Center in Honolulu, Hawaii.

"The U.S. military has been vital in responding to disasters so it makes perfect sense for it to continue coordinating and training with other nations' militaries," Clark told The Associated Press at a forum organized by the East-West Center.

Fire From Gaza Punctuates Israeli-U.S. Exercise

Barbara Opall-Rome
November 17, 2012
Air Force Times

Simulations meet reality amid cross-border escalations

TEL AVIV — The largest Israel-U.S. air defense drill concluded last week under combat conditions as simulations and preplanned live fire were conducted amid actual rocket salvos from Gaza and escalation along Israel's long-dormant border with Syria.

Multifront engagement scenarios designed for the thousands of U.S. and Israeli forces participating in Austere Challenge 2012 grew exceedingly realistic in the closing days of the biennial drill, as operators and joint task

force commanders from U.S. European Command (EUCOM) witnessed at least four operational intercepts by the Israeli Iron Dome.

By the time the drill culminated Nov. 12 with live fire from U.S. Patriot Advanced Capability-3 (Pac-3) missiles, more than 120 rockets — including extended-range Grads — had been fired at the Israeli homefront, forcing hundreds of thousands of residents within 40 kilometers of the border into shelters. On Nov. 14, a day after the drill officially concluded, the Israeli military launched "Operation Pillar of Defense," a widespread aerial campaign aimed at reducing the rocket and missile threat from Gaza.

In parallel, Israeli forces last week fired their first shots into Syria since the 1973 war in response to stray shells from the ongoing Syrian civil war that landed in the Israeli-annexed Golan Heights.

Israeli military spokesman Brig. Gen. Yoav Mordechai said the two separate engagements with Syria — warning shots Nov. 11 and a direct hit on a Syrian artillery launcher Nov. 12 — offered a clear message to Syrian President Bashar Assad that Israel would not tolerate spillover from internal Syrian clashes into Israeli territory.

At week's end, as most of the 1,000 or so U.S. military personnel stationed in Israel for the drill were making their way back to Germany, Israel's Northern Command remained on high alert for threats from Syria. Down south, Iron Dome batteries were activated against the rocket threat while the Israel Air Force intensified airstrikes against weapon storage sites, smuggling tunnels and other targets throughout the Hamas-administered Gaza Strip.

"These are very difficult days [which require] further bilateral cooperation in defense against future missile threats, as well as persistent operations against Hamas and the Iranian terror threat in Gaza, which is likely to intensify and expand," Israeli Defense Minister Ehud Barak told reporters.

Barak hailed the Austere Challenge drill for underscoring the deep cooperation between the two militaries and for bolstering Israeli deterrence.

In a press call before the drill, U.S. Air Force Lt. Gen. Craig Franklin, commander of the Third Air Force and regional air defense commander for EUCOM, said the $30 million drill, known as AC12, marked the largest in the history of U.S.-Israeli strategic cooperation. It involved Pac-3 batteries, an Aegis cruiser, the U.S.-operated AN/TPY-2 X-band radar deployed here and advanced communications links enabling simulated joint task force operations.

Overall, more than 3,500 U.S. military personnel, from multiple locations across Europe and the Mediterranean and in Israel, took part in the drill, which involved a logistics-centric deployment phase, extensive simulated joint task force operations against salvos on multiple fronts and Patriot live fire against simulated targets.

The Israeli contribution was estimated at 30 million shekels ($76.4 million). It involved nearly 2,000 personnel and all layers of Israel's planned multitiered active defense intercepting network, including the Arrow, Iron Dome, Patriot and Pac-2, used against air-breathing targets, and command-and-control elements of the developmental David's Sling.

Franklin insisted the scenarios simulating salvo attacks on multiple fronts were notional and "not related to any particular recent world event."

Nevertheless, representatives from both countries said last week's barrage of Gaza-launched rockets, combined with fire across the Syrian border, injected real-life urgency to simulated joint operations.

"AC12 took place in a realistic threat environment, to say the least. Many of us will remember it as the nexus between simulation and actual combat," an Israel Air Force officer said.

In the coming weeks, U.S. and Israeli officers will conduct post-drill evaluations and apply key lessons to the planning of the next major bilateral drill, scheduled for 2014.

Israel Air Force Brig. Gen. Doron Gavish, recently retired air defense commander, said the drill and ongoing exercises between drills were strategically significant in honing the ability of both countries to operate jointly against evolving threats.

“We’re not waiting for every other year to exercise together. Today we have a standing relationship with all the commanders, and we conduct a lot of small-scale training on a regular basis,” Gavish said.

The official web site of the U.S. AIR FORCE

On Cue: Langley Conducts Training Exercise

633rd Air Base Wing Public Affairs
Joint Base Langley-Eustis
December 20, 2012
AF.mil

Langley Air Force Base, Va. -- Langley Air Force Base units from the 633rd Air Base Wing, along with the 1st and 192nd Fighter Wings conducted an exercise, Dec. 11 through 14. to improve the base's preparedness to deploy and operate from a forward base while providing combat air power in a contested, degraded operational environment.

The first operational phase of this combined unit exercise tested Airmen's ability to successfully process and deploy large groups of people to various simulated locations around the world.

The exercise kicked off with a simulated-mass deployment of Airmen and cargo to an expeditionary environment. Nearly 400 personnel received deployment orders Dec. 11, starting a chain reaction of activity. Within 24 hours, those personnel and 300 tons of cargo deployed to an expeditionary environment, simulating a mass deployment.

"The main intent of the first phase of the exercise showed we could get our Airmen and cargo to a deployed environment in a moment's notice," said Capt. Kady Pauley, 633rd Force Support Squadron military personnel section chief.

Airmen in Phase I participated in a processing simulation that mimicked what they would encounter in an actual rapid-deployment situation.

During the line processing, those deploying attended briefings, were checked for deployment eligibility and were issued required equipment. Also, Airmen checked all cargo, and organized and prepared it to be transported to the expeditionary location.

Pauley reminded Airmen of the importance of ensuring all training certificates are in order at all times.

"All Airmen need to be ready to deploy at any time," said Pauley. "If you aren't prepared, the only person you hurt is your Wingman."

With the Airmen on their way to the simulated-expeditionary environment at Raptor Town, Langley, the next phase of the CUE began. Officials tasked Airmen with establishing a working base in a foreign environment, which could include treating and possible saving the lives of critically-injured Service members.

After deploying and employing Airmen at Raptor Town, the core of the mission changed to executing and sustaining the Air Force mission in a deployed location.

At the 633rd Communications Squadron Unit Control Center, 2nd Lt. Keisha Salandy, 633rd CS UCC flight chief during the exercise, primed her squadron for success - despite the complications of the simulated deployed environment.

"Our goal was to maintain continuity of our systems," said Salandy. "We needed to keep phone, radio and internet communication running non-stop so other units could accomplish their goals."

Salandy said the 633rd CS accomplished that mission without fail. After setting up the communications at Raptor Town, multiple calls came in to fix faulty equipment or other issues with the network.

Most communication problems arose from the specific phone lines assigned to the huts initially and similar problems with connection ports and cables. However, the newly implemented Secret Internet Protocol Router network quickly became a priority for the team. The command and control aspect of the mission relies heavily on SIPR network access to allow a free-flow of classified, detailed information to pass from in-the-field personnel to their respective command sections

After the hectic night fixing connections and maintaining the new SIPR network, Salandy said no complaints were sent to the communication focal point. To Salandy, zero complaints relates to a professional workforce.

Another challenge issued to the communication team came in the form of faulty equipment. Without being able to acquire new equipment, the team either had to create new equipment, such as cables, or share important information points.

After the 633rd Security Forces Squadron lost the ability to access the SIPR network, it was the communication team's mission to get security forces back online. Without access to another router, the team could not replace the 633rd SFS's faulty router. In typical deployment fashion, the 633rd CS delegated an information point within their structure to the 633rd SFS when necessary, which prevented security forces from losing access to a critical network.

Time and again, Salandy learned adaptability was the key to successfully completing the exercise. For her personally, having a team with a good attitude was the real backbone of the exercise.

"I felt like the camaraderie between the troops was great," said Salandy. "It was amazing to see how they worked with, and overcame, the obstacles in their paths."

As I entered the tent, my eyes darted frantically, trying to comprehend what was going on. A mortar attack had just struck the base. Medical personnel rushed people in on stretchers - wounds and burns covered their arms and faces. The personnel hurriedly moved throughout the tent, bumping into me as they tried to tend to the wounded as quickly as possible.

The piercing screams of those in pain overpowered the voices of medics and doctors. I felt a sudden sense of panic, in awe of the scene unfolding before my eyes.

I had to remind myself that this was just part of the CUE. Exercises such as the CUE are designed to train and prepare Airmen to deploy and operate in hostile environments. For medical personnel, the deployed mission is critical.

In the midst of the chaos in the medical tent, Staff Sgt. John Wendell, 633rd Medical Supply Squadron logistics technician, explained the importance of the medical mission.

"We triage patients, specify the severity of their injuries in order to treat them and prepare them for air evacuation if necessary," said Wendell, as he spoke loudly over the multitude of voices. "If they have minor injuries, we want to get them back to fighting condition, or get them stabilized until they can get to a more advanced facility for further treatment if the injuries are severe."

As a logistics technician, Wendell said the medical supply mission plays an important role not just at a home station, but especially in an expeditionary environment.

"We procure vital supplies and equipment necessary for the doctors and technicians throughout the rest of the hospital to properly perform their jobs," said Wendell. "These exercises provide a great opportunity for Air Force members to exhibit the reason we all joined the military."

While in this simulated-deployed environment, medical personnel took on many different roles. Tech Sgt. Damian Sharpe, 633rd Medical Operations Squadron noncommissioned officer in charge of element two of primary care, played the role of chief of medical security during the CUE.

"It's important to make sure the medical personnel are safe," said Sharpe. "Downrange, it can mean life or death if you don't properly account for patients as they come in."

That concept became a startling reality for Sharpe during one of his deployments to Afghanistan. His job there was to cut clothes off of patients in order put leads on them. When an Afghan patient came in, Sharpe discovered something in his garments that shook him to the core.

"There was a grenade in his pocket. If he had been conscious enough to pull it, it would've taken out an intensive care unit, nurses and technicians," said Sharpe. "I will never forget that. It was really eye-opening and showed the importance of security."

Having been deployed four times, Sharpe said exercises like the CUE prepare personnel for what to expect downrange.

"This is as close to the real world as you can get here," he said. "It gives you a really good idea of what to expect.

As I looked around the tent, the panic I felt earlier had subsided. The injured were no longer crying out for help, and the activity had slowed to normal operations. Even though this was an exercise, it was clear that in the aftermath of the attack, medical personnel had successfully accomplished their mission - saving the lives of fellow Airmen.

From this response by medical personnel, as well as other, aspects of CUE employment, came the framework necessary to survive in this hostile location.

As the sun set on the CUE, Airmen from the 633rd CS and every other squadron were able to remove their mission-oriented protective posture gear, knowing they were vastly more prepared to handle deployment to hostile locations and employment of expeditionary missions.

Team JSTARS Trainer Still Going Strong After a Decade

Jenny Gordon Robins - Public Affairs
December 20, 2012
AF.mil

ROBINS AIR FORCE BASE, Ga. -- The Team Joint STARS Mission Maintenance Trainer not only trains air crew members in a simulated and technically-sophisticated environment, but also keeps them safe as they are tested and evaluated before deploying worldwide.

"It's a great tool for us to practice wartime techniques without putting our people in harm's way," said Col. Mark Weber, 116th Operations Group commander.

The Joint STARS trainer has made its home at Robins for more than 10 years.

"What is significant today is we have trained in it for over 40,000 hours," explained Weber. "In the last two years alone, we have had absolutely no failure - a 100 percent mission-capable rate to send people in there without fear of it failing."

Surpassing that 40,000 hours' worth of simulated training in the last two years is a significant milestone in the history of JSTARS, added Weber.

The Air Force's E-8C Joint Surveillance Target Attack Radar System, Joint STARS, is an airborne battle management, command and control, intelligence, surveillance and reconnaissance platform that includes a crew of 21; 18 crew members run the radar and communication systems onboard that can basically see huge areas of the earth.

"The trainer gives us the ability to put those 18 people into a simulated environment, running the exact same equipment they would utilize on a plane," continued Weber. "What it allows us to also do is test and practice for wars that we're not even conducting today, but may conduct tomorrow. We can test techniques we think may be employed in future generations of warfare."

While Joint STARS planes are fighting on multiple fronts across the globe, the trainer back home allows the mission to continue without missing a beat.

"That is what we do. We protect other people through a robust C2ISR platform," he noted.

Up to 18 crew members can use the training system at any given time. Over the years, 3,500 people have learned how to employ Joint STARS, an ever-evolving process much different today than it was a decade ago.

Also through simulation, the trainer can connect to other mission trainers across the country, whether linking up with F-16 fighters, A-10s, or B-1 bombers, for example, of which Joint STARS plays a vital role. Debriefing following simulation exercises are also important as players from across the country learn from one another in order to enhance advanced warfighting techniques.

"Our mission trainer is extremely capable," Weber said.

Northrop Grumman is responsible for maintaining the software onboard the Joint STARS plane as well as the mission trainer.

"Our partners at Northrop Grumman have given us an extremely reliable system - bottom line," he said. "They are technically proficient at what they do and they've given us exceptional capability."

Over the last 10 years, Joint STARS has logged more than 80,000 hours in a combat environment and has been airborne for more than nine straight years. Couple that while being 'airborne simulated' for four solid years, and air crew members have been up in the skies at some point for 13 years.

"That is incredible. You could not match that level of capability anywhere else," he said.

Navy Returns to AEDC to Test Next-Generation Heat Shield Candidate Materials for Missiles, Reentry Vehicles

Philip Lorenz III AEDC/PA
December 13, 2012
AF.mil

ATA machinist Larry Phipps installs a Naval Surface Warfare Center thermal protection material wedge test article in the H3 test cell prior to a test run at AEDC. (Photo by Rick Goodfriend)

December13/2012 - ARNOLD AIR FORCE BASE, Tenn. -- Once it leaves a U.S. Navy Trident II submarine and is clear of the water, a submarine-launched ballistic missile (SLBM) rapidly accelerates to more than Mach 20, on its trajectory to impact and destroy a target.

An SLBM is the Navy's sea-based equivalent to the Air Force's land-based Inter-Continental Ballistic Missile.

How do the Navy fleet commanders know for sure the sixth generation D-5 fleet ballistic missile will survive those extremely hot and severe aero-thermal flight conditions and accomplish the mission?

This is where the Navy's Drew Pathwick and the test team at the Arnold Engineering Development Complex's (AEDC) High-Enthalpy Arc-Heated facilities come into the picture.

Pathwick is the Navy Reentry Ground Test Coordinator for the Naval Surface Warfare Center's Dahlgren Division Detachment in Washington D.C.

Since 2000, he has been coming to AEDC to conduct aero-thermal testing to simulate what a missile's heat shield material candidates will experience in that flight regime - to ensure they will survive long enough and intact enough to complete the mission.

"A flight test is extremely costly, I mean we're talking about orders of magnitude more than performing a 'simple' ground test at AEDC," Pathwick said. "The Navy had decided many years ago that the data we get out of AEDC for the price is actually a steal [when] compared to a flight test. And you get a very quick turnaround with your data, whereas with a flight test, from conception to flight, you're taking about three years or something like that."

Pathwick added, "Our systems see a very extreme environment, some very high heat fluxes and pressures. Although there are many other arc heaters [ground test facilities] in the U.S., none of them can actually provide the proper conditions that we're looking for. AEDC is very unique in that respect."

Pathwick said he and his colleagues have formed a solidly professional and collaborative relationship with the test team at AEDC's Arc Heater facilities over the years.

"I interface a lot with Mark Smith and the other engineers there," he said. "They're very good at taking our requirements and ensuring that the proper test environment that we're looking for is provided, including keeping things on schedule. And the operations folks down there do a great job at meeting our, sometime unusual test requirements.

"We typically have a standard type of test configuration that we're looking for, but for some reason it seems every time we come there we have some sort of new wrinkle and the crew there is very good at helping us out and ensuring that we get the data we're looking for."

The Navy's current test entries are next-generation SLBM heat shield material candidates and these are being tested in the Complex's most cutting-edge high-pressure segmented arc heater, H3, as well as in the legacy H1 segmented arc heater.

"The data we're getting out of this test is going to be used to provide relative performance data for new build thermal protection system materials," Pathwick continued. "We're comparing that to our current thermal protection systems so that we have candidates for a new system if the opportunity arises."

He emphasized it is important to put the current material candidates testing into perspective.

"Our systems are working just fine, but there will be an end date to the service life of this system and we want to be prepared for when that day comes," he said, acknowledging some of the challenges to fielding any new weapon system or its components.

As new missiles are conceived, designed and fielded, the existing TPS materials will no longer be available and new materials will be required. Ground testing in AEDC's High-Enthalpy Arc-Hearted facilities remains the only way to gain confidence and validate these newer materials.

"We can't say this is a simulation of flight test, because it really is not, especially when you consider the Mach numbers [and considering] the aerodynamics," Pathwick said. "This is really screening from a thermal perspective. We're looking at providing flight-like heat fluxes, pressures, so we get the right thermal soak through the material as a screening process. Again, the only true way to check out a material is to eventually flight test it.

"So, this is a great screening tool so we can narrow down our candidates to a few that we can then actually put in the air and flight test."

Pathwick also said his test team has also been getting help from another group at AEDC on the Navy's test entry in H3.

"Since it's a new arc heater, we're trying to better understand the flow field that we're getting out of it," he said. "H3 is a whole different beast - we just want to make sure we understand it as well as we can. And we're getting help from AEDC's analysis branch with this facility in defining the nozzle flow conditions."

2nd Lt. Julie Sung, who is AEDC's Air Force Program Manager for the test, said that although she only recently joined the Complex's workforce, "In my short time here I have already gotten the impression that our arcs team has established many positive and outstanding relationships.

"Since NSWC has worked with AEDC on this test effort for many years now, I get the impression that each time NSWC comes to test here, all the logistics that lead up to their visit goes very smoothly and is nearly routine now. Mark, his team, and Drew Pathwick seem very knowledgeable in their jobs, and most importantly, I get the impression that they are very passionate about it as well."

Sung added, "Ground testing done at AEDC is an invaluable resource in lieu of flight testing. Having this cost effective option very likely delivers a wealth of data that can be used by the Navy to continue their efforts in maintaining progress on their SLBM programs which in turn, support the defense of our country."

Mark Smith, the ATA project engineer on the NSWC re-entry candidate materials at AEDC, has worked closely with the Navy during his 26 years at the Complex.

"The Navy has a rigorous materials test program underway in the AEDC arcs going back some 30 years, with several different Navy-related programs in the testing mix," he said. "The Navy is the single largest test customer in the AEDC arcs in terms of test workload, and they have been for many years. The collaboration between AEDC and NSWC has always been a dynamic one, with excellent communication and forward-thinking on both sides.

"[This relationship] has enabled the 'stand-up' of many new test techniques and capabilities which directly support the Navy systems and provides additional capability to the DOD warfighter for development of high-speed missiles and vehicles. In turn, the Navy has been very proactive in helping to bring these capabilities to

fruition through various partnerships and most importantly, through systematic utilization of the legacy and developing arc jet capabilities at AEDC."

Asked why the Navy has continually brought their thermal protection system materials to AEDC for ground testing before subjecting the materials to a flight test, Smith said the answer is relatively straightforward.

"The AEDC arc facilities are unique in the world in their ability to simulate heat flux and pressure conditions typical of long-range ballistic missile reentry through the atmosphere," he said. "For tests such as these, the Navy as well as the Air Force (for ICBM) require high-temperature air flows lasting several minutes with turbulent boundary-layer conditions on wedge and nose tip test articles. There is no other place in the world to conduct tests of this nature."

711th Human Performance Wing Wins Big at I/ITSEC Conference

Michela Greco - 711th Human Performance Wing
December 6, 2012
AF.mil

WRIGHT-PATTERSON AIR FORCE BASE, Ohio -- The Interservice/Industry Training, Simulation, and Education Conference, or I/ITSEC, is taking place in Orlando, Florida this week. The conference promotes cooperation between the Armed Services, industry, academia, and other government agencies to improve training and education programs for modeling and simulation (M&S). The 711th Human Performance Wing (711 HPW) has several members from across its mission units representing the Wing at I/ITSEC this week. And at the conference's Executive Dinner and Awards Ceremony on December 4th, the 711 HPW representatives brought home three of the seven awards.

Firstly, Ms. Kim Puckett of Dayton Tri-Village High School was given the "Individual Award" for her efforts to promote modeling and simulation (M&S) in Science, Technology, Engineering, and Math (STEM) schools in the Dayton Area. Ms. Puckett worked closely with the 711 HPW Human Effectiveness Directorate's Gaming Research Integration for Learning Lab to write an M&S course for Dayton area high school students. Through collaboration with the 711 HPW and the Dayton Regional STEM Center, the group created a Dayton Regional M&S Competition, which was held in September for students of Dayton STEM schools.

Secondly, the C-STARS unit, a division of 711 HPW U.S. Air Force School of Aerospace Medicine (USAFSAM), along with the Division of Trauma and Critical Care Medicine at the University of Cincinnati Hospital, was awarded the Team Training Award. The C-STARS and University of Cincinnati hospital team was recognized for its simulation training program for the Critical Care Air Transport Team located at USAFSAM at Wright-Patterson Air Force Base.

The C-STARS unit brought home the third award of the evening--the coveted Governor's Award--a top commendation of the I/ITSEC Executive Dinner and Awards Ceremony.

Congratulations to the award winners and all those representing the 711 HPW at I/ITSEC!

Afghan Aircrew Better Prepared to Save Lives

Staff Sgt. Melissa K. Mekpongsatorn - 438th Air Expeditionary Wing
December 3, 2012
AF.mil

KABUL, Afghanistan -- Afghan medics spent three days with Afghan Air Force pilots, flight engineers and aerial gunners to improve their basic medical skills and casualty evacuation procedures. The Afghan medics were assisted by U.S., French, Czech, Croatian and Hungarian service members at the Kabul, Afghanistan, International Airport Nov. 18-20.

More than once, Afghan aircrew members have found themselves in the back of an aircraft with injured Afghan service members or passengers, some severely so. The aircrew was in the right position to help these patients get through the flight to medical care, but they didn't have some of the basic skills to help. During the three days of training students learned such skills as proper patient loading and unloading techniques on the Mi-17 and Mi-35 helicopters and classroom and hands on training of tourniquet, sling and bandage applications.

Members from the 438th Air Expeditionary Advisory Squadron, AAF Kabul medical facility, and the French Medical Regiment at the KAIA Role 3 hospital worked alongside aircrew members from the Czech Republic, Croatia, and Hungary, who brought their real-world experiences to the training. The basic medical skills' training was led by AAF medics.

"This training given by Afghans for Afghans, bridged a noticeable gap in communication and knowledge of support elements between the AAF medical and rotary wing units, which is key to the sustainment of their current life-saving capabilities as Coalition troops reduce their presence here in Afghanistan over the next few years," said U.S Air Force Staff Sgt. Matthew Hanlon, 438th AEAS aerial gunner.

The AAF medics, led by AAF Chief Flight Surgeon Col. Tooryalay (Shahsawar Qurasishi), began each of the three days by providing classroom instruction. This was followed by some basic hands-on training.

"This training is very important, when we fly we are always in danger. I believe everyone should have this training," said AAF 2nd Lt. Amani Habibullah, 377th Rotary Wing Squadron pilot.

The skills that they were taught in the classroom were first put to a test during a simulated blood loss scenario led by Hanlon. Following that, the students went to the flight line to learn about patient transportation.

On the flightline, the aircrew were taught how to load and unload patients properly into the back of an Mi-17 helicopter and practice what they learned.

In addition to the medical skills learned by the aircrew, the training helped establish a relationship between the AAF medical and rotary wing units.

"Synergy between these two vital pillars of the AAF will enable an Afghan organic casualty evacuation capability," said Tech. Sgt. Will Stimpson, 438th AEAS aerial gunner.

The importance of this training has been recognized by the AAF flying and medical communities, and they have taken it upon themselves to make this training an annual requirement.

Dayton Students Benefit from AFRL and Dayton Regional STEM Center Collaboration

Michela Greco - Air Force Research Laboratory
November 30, 2012
AF.mil

WRIGHT-PATTERSON AFB, Ohio -- In the summer of 2011, the Dayton Regional STEM Center and the Air Force Research Laboratory (AFRL) embarked on a collaboration to develop modeling and simulation courses for Dayton regional schools. Air Force Colonel John Franz of AFRL and Major General Ed Mechenbier were the leading initiators of the collaboration, citing the necessity to teach area students modeling and simulation skills in the hopes that those students would invest their skills in the area upon graduation from high school or college. The collaboration also sought to distinguish Dayton on a national level as a hub of the modeling and simulation field.

Together with area teacher Kim Puckett from Tri-Village High School, AFRL and the Dayton Regional STEM Center created a Capstone course for modeling and simulation. The course was offered to all regional schools--public, private, and parochial--that were interested in participating; eleven school districts were trained, with hopes of increased enrollment as the Capstone course gains traction. The guidelines for certification were kept open to ensure teachers could readily participate, and students were given the opportunity to practice at the Gaming Research Integration for Learning Laboratory (GRILL) at Wright-Patterson Air Force Base with expert researchers from the 711th Human Performance Wing's Human Effectiveness Directorate acting as mentors.

Margy Stevens, Executive Director of the Dayton Regional STEM Center, took the collaboration one step further by proposing a Dayton Regional Modeling and Simulation Competition. The competition would serve two purposes: first, it would provide a platform for students who participated in the Capstone course to present their work, and second, it would provide a way to moderate submissions to the Future Leaders Pavilion at the Interservice/Industry Training, Simulation, and Education (I/ITSEC) conference. Prior to 2012, students could submit projects to the I/ITSEC conference without any prior review from industry experts. The Dayton Regional M&S Competition provided a solution to this gap and ensured that only top tier presentations were submitted.

Because the Dayton Regional M&S Competition was held in September, participating students spent much of their summer planning and executing their projects. At the competition, judges from the GRILL and the Dayton Regional STEM Center were very impressed with the students' level of sophistication and dedication to their work. The participants were judged on a variety of measures, including an abstract, paper, project demonstration, and paper presentation. Craig Harrison and Seth Thomas, both GRILL alumni, together with team member Macy Fraylick, were the winners of the competition with a fire evacuation scenario presentation. The Tri-Village team simulated a model of their high school, even including the details of the room materials, desks, and floor texture to outline fire evacuation routes for the students and faculty. As the winners, the team will enjoy an all-expense paid trip to the I/ITSEC conference in Florida in December where they will present at the Future Leaders Pavilion; this is an incredible honor for both the students and their mentors at AFRL and the STEM Center.

It is the hope of AFRL, the STEM Center, and the GRILL that competitions and Capstone courses centered on modeling and simulation will invest in the future of the industry and the area. As is evident from the enthusiasm and participation in its first year, these efforts will enhance the reputation of the Dayton area through the success, innovation, and hard work of its young people. And it is this dedication that will be on display at the I/ITSEC conference next month; best of luck to the students and their mentors in this well-deserved effort!

AFNIC Simulator Enables Realistic Training for Cyber Flag 13-1

Katherine Kebisek - Air Force Network Integration Center
November 28, 2012
AF.mil

SCOTT AIR FORCE BASE, Ill. -- Air Force Network Integration Center engineers recently provided support to U.S. Cyber Command's annual cyber exercise, Cyber Flag 13-1, which took place Oct. 29 - Nov. 8 at Nellis Air Force Base, Nev.

Cyber Flag, a joint cyberspace training exercise, is designed to provide realistic training opportunities for a number of Department of Defense commands to deter, and if necessary, defeat a cyber attack against the department.

To provide this realistic training, USCYBERCOM called upon the expertise and capability of AFNIC's Cyber Force Integration Team. For over 10 years, this team has managed and maintained the Air Force's Simulator Training Exercise (SIMTEX) range, which simulates the service's three-tiered network operations and security structure, giving cyber operators valuable hands-on experience within a safe, secure environment that is separate from the operational network.

The Cyber Flag exercise specifically employed a unique capability of SIMTEX called the Range Global Internet (RGI), which offers a realistic World Wide Web framework that allows for training in an environment similar to the live internet. With dynamic services such as websites, core Domain Name Server (DNS) infrastructure, foreign country emulation, and artificial, yet realistic network traffic, users experience the same environment as if they were on the real Internet. The RGI even simulates popular social media sites, allowing for cross-collaboration among exercise participants.

"This [Range Global Internet] was the gray, or neutral, zone ... everybody traversed through us," said Capt. Andrew Dunn, chief engineer for Cyber Force Integration. Just as with air ranges that pilots use to practice maneuvers, he said the cyber range provides the same opportunity for cyber operators and defenders to practice maneuvers through cyberspace.

SIMTEX is frequently used in Air Force and joint cyber exercises, as well as for training of cyber operators through units such as the 333rd Training Squadron at Keesler AFB, Miss., and the 39th Information Operations Squadron at Hurlburt Field, Fla. Dunn noted that participating in exercises like Cyber Flag helps his team to ensure SIMTEX simulates the network closely to provide the best possible training opportunities for new Airmen entering the cyberspace career field.

"When we support these exercises we get to interface with the people doing actual missions ... when they give us new requirements or say, 'We want to see this happen on the range,' we can adjust as needed or simply change the tactics," Said Dunn. "We then filter the [range or tactic] updates to the schoolhouse ... that way things are kept fresh and relevant, which is important because cyber is always changing."

Participants in this year's Cyber Flag included personnel from the DoD, all four services, government agencies, and academia from national labs--all key players in securing cyber networks and deterring cyber-attacks.

With cyber security a priority for the U.S. government and coalition partners, USCYBERCOM conducts events such as Cyber Flag to exercise and institutionalize its cyber forces and capabilities to ensure they meet their mission of defending and operating the DoD networks, and ensuring U.S. and allied freedom in cyberspace.

Sink or Swim: SERE Specialists Train Airmen in Water Survival

Airman 1st Class Ryan Zeski - 92nd Air Refueling Wing Public Affairs
November 27, 2012
AF.mil

FAIRCHILD AIR FORCE BASE, Wash. -- These Airmen are off the deep end.

But that's okay, it's part of their job.

Survival, evasion, resistance and escape specialists at Fairchild train aircrews to endure in a variety of environments in case the fliers have to leave their aircraft. In addition to training to survive in forest, desert and tropical environments, the students also learn how to survive in water.

"The purpose of the training is to save their lives if they ever encounter a life-or-death situation," said Tech. Sgt. Chad Churchill, NCO in charge of water survival.

The water survival course has two parts: SV84 and SV90. SV84 is a one-day course dedicated to underwater egress from an aircraft and primarily focuses on rotary wing aircrew. These aircraft are top heavy and have a greater possibility of flipping upside down in the water. The SV90 course lasts two days and prepares students to survive in open water areas until they can be recovered.

The pool with temperature-controlled water is located inside the aquatics center. The courses are mandatory for most aircrew members, special forces and any other Airmen identified as needing the training. About 3,800 students go through water survival annually.

Students that attend the one-day SV84 course also attend SV90. Students are taken underwater in the modular egress training system, flipped upside down and are required to exit out a window to the surface while using compressed air systems to breathe. SV90 students will not require SV84 as their aircraft has wings which usually prevent it from flipping over if it ever has to crash land in water.

Depending on which aircraft the Airmen assigned determines what training they'll undergo, sometimes both, said Senior Airmen Craig Maertens, who teaches the water survival course.

During both courses, students are loaded into the METS. This is a large box supported by a winch system so it can be lowered and raised in the pool. It holds anywhere from 8 to 16 students and simulates being inside an aircraft as it goes down in water. The METS is able to be completely submerged and rotated under water.

After being dunked underwater students must escape the METS. They hold on to each other to ensure nobody gets washed away, as the team swims to the life raft. From there they begin the recovery portion. Using the crane system, which has two rescue hoists and a main hoist to lift heavy objects weighing up to 24,000 pounds, they are raised back into the METS 30 feet above the pool.

With the opening of the new fitness center last March, the SERE program gained a new training facility for the water survival course. The new facility hosts top-of-the-line equipment and its technology has been the forefront of what makes this training realistic, Maertens said.

"The realism in the old facility was limited -- all we had was sound and fire hoses," said Maertens. "The strangest thing we've dealt with in the new pool is the fact that since it's so realistic, we actually experience sea sickness and the students don't realize they're in a pool."

The pool is capable of draining one and a half feet of water into a holding tank compensating for larger waves so students don't crash over the walls of the pool. A 'wave ball' is used to generate waves - it's a large black sphere that floats in the water with a piston inside causing it to bob up and down to displace water, creating high swells in the pool up to 3 feet high. In addition, a fan capable of creating winds of more than 46 miles per hour. All of this simulates the open ocean.

"The more realistic the training is, the better it will prepare the students for real-world situations," said Church. "We're teaching life saving skills, for situations that will hit them at the worst time."

SERE specialists use radio systems and scuba equipment during the training to ensure safety of the students at all times.

"I was able to experience a realistic simulation of crash landing in the water," said Airman 1st Class Michael Dymtriw, 93rd Air Refueling Squadron boom operator. "The training I received allows me to ensure the safety of myself, the crew and its passengers in the event of an emergency."

Desert Wind 13-02 Rattles Edwards

412th Test Wing Public Affairs
November 20, 2012
AF.mil

EDWARDS AIR FORCE BASE, Calif. -- Five members of Team Edwards were injured following a major earthquake Nov.16 and transported to a local hospital for treatment.

That was one of the scenarios for exercise Desert Wind 13-02, which took place in conjunction with the California Statewide Medical and Health Training Exercise Program.

Team Edwards partnered with Antelope Valley Hospital in Lancaster during the statewide exercise, working to help the hospital prepare for multiple patients while practicing how to transport victims to and from base.

The exercise tested Edwards first responders' ability to handle a major local earthquake while the rest of Team Edwards conducted emergency management scenarios.

First responders from the 412th Security Forces Squadron, the Edwards AFB Fire Department and the 412th Medical Group, responded to a report of injuries at Bldg. 2600, where simulated victims had to be rescued from a roof collapse following the quake.

Medics treated the victims while security forces secured the area. Security forces also ensured security for the base's resources and conducted road surveys to determine what roads were safe for travel and what roads could have been damaged during the simulated earthquake.

The base's objectives for the exercise was to evaluate all elements of the disaster response force; perform accountability for base personnel; assess basewide damage; establish external and internal communication; and to set plans for 24-hour operations.

Four volunteers along with the 412th MDG's METlman mannequin, were "treated." The volunteers were fitted with different injuries to make the simulation more real.

The METIman mannequin is a highly technical, highly advanced mannequin that assists in training. It added to the training scenario by allowing us to go beyond our normal capabilities using volunteers as patients. Medical personnel can start an IV on the mannequin and even cut its legs open to facilitate bleeding. The mannequin is operated through a simulator, which is controlled wirelessly from a nearby laptop. It gives the operator complete control over the patient's environment. The technology provides virtually a limitless variety of scenarios for medical personnel to train with.

The five wounded personnel were then transported to Antelope Valley Hospital in Lancaster to help them train while they were conducting their own natural disaster exercise. Hospitals and schools around the state were

practicing how they would respond to a major earthquake as part of the California Statewide Medical and Health Training Exercise Program.

The scenario for the 2012 Statewide Medical and Health Exercise was a loss of power due to an earthquake. An interruption of the power supply can occur for a variety of reasons: natural disasters such as earthquakes, hurricanes or flooding, wild land and urban fires, mechanical failure and even human error. The impact would be the same - inability to maintain service to the community and its services. Power loss for medical and health providers is a significant concern and can further inhibit a community's response to such an event.

The AV Hospital focused on topics such as communications, shelter-in-place, medical surge, incident command and resource logistics and distribution.

More than an Exercise: Active Shooter has Real Effect on Service Members

Staff Sgt. Katie Gar Ward - 633rd Air Base Wing Public Affairs
November 19, 2012
AF.mil

JOINT BASE LANGLEY-EUSTIS, Va. -- His normally animated and jovial demeanor changed suddenly one Monday - his coworkers noticed he began acting agitated, depressed and lonely. Being the social person he was, they found it odd when he started shutting his door - usually it was always left open.

When he left his door cracked, coworkers were startled to see semi-automatic weapons magazines strewn across his desk - he didn't normally own weapons. Some wondered if he was going to hurt himself.

Everyone in his office knew him to be a big family man, so they were shocked when he took down all the family photos on his desk. When they asked what was wrong, he would reply, "It's just life problems, but everything will be better soon."

Coworkers speculated as to whether he was upset about the recent election results, the deployment tasking he just received or if he was having problems at home. They battled between not wanting to offend him by asking questions, but not wanting to leave him alone either. The whole dynamic in the office was changing, and not for the better.

A few days later, the culmination of odd behavior shocked everyone when he opened fire on the base, killing and injuring numerous people.

Fortunately, this violent action was only part of an active-shooter exercise at Langley Air Force Base, Va., Nov. 15. Not only imperative in training first-responders, the active-shooter exercise also reminds Service members to always be vigilant in noticing warning signs in their fellow Service members to prevent a harmful situation from occurring.

Master Sgt. Scott Wagonblott, 633rd Air Base Wing information assurance manager, played the role of active shooter in this exercise. His preparation for the role began more than a week before the scheduled shooter event, when he was asked by the Office of Special Investigations to display certain behaviors in his work center, without letting anyone know it was part of the exercise.

"It was everything from showing signs of agitation, feeling for criminals and supporting conspiracy theories. The list progressively got worse," said Wagonblott. "In my own mind I was torn because you're playing with people's real emotions. I truly care about each and every one of my Airmen, and to see them react and feel things that I'm causing, to watch them go through that emotional stress was the hardest thing."

For Airman First Class Jacob Bell, 633rd Communications Squadron information assurance technician, watching Wagonblott's behavior change had a negative impact on his work performance, as well as the entire work center. Bell became so upset that he channeled his concerns initially to his supervisor and later to his first sergeant.

"He's usually a very upbeat person and fun to be around - it's easy to talk to him. It got to the point where he was so negative around us, I felt as though I couldn't be near him because it would upset me that much," said Bell. "It was bringing the whole office down. It's amazing how much one person can affect an entire organization."

Unbeknownst to Bell and the rest of Wagonblott's office, the first sergeant and commander knew about Wagonblott's role in the exercise. Initially, Wagonblott was supposed to keep displaying this behavior up until the day of the active shooter event, but things escalated so quickly, it had to stop four days early.

"It got to the point where people who weren't in my chain of command were going to my commander with concerns," said Wagonblott. "Two flight commanders had notified my commander, and my commander would have to make the decision to mandatorily refer me to mental health. We had to stop it at that point."

That next day, Wagonblott's office was briefed by OSI to explain his role in the exercise. For Bell, the revelation had varying levels of impact.

"I was just extremely relieved that he would be back to the way he was, because he really affected me - I didn't want to come to work at all," said Bell. "To learn nothing was wrong was very uplifting. It was quite the experience and I'll never forget this. It'll be something that I can always look back on and reference."

According to Wagonblott, it was challenging to face his colleagues when OSI revealed the nature of the exercise.

"The look of betrayal, the look of shock, the look of awe. It had changed the dynamic of the office - not from a negative perspective, but people looked back at how they reacted to someone in need," he said. "I think that's a lifelong lesson that they'll carry with them forever. It's a deep, emotional commitment, but this is something that will change the way people will lead."

Once the nature of Wagonblott's behavior had been revealed, the next aspect of the exercise was the active shooter event. In the scenario, a potential outbreak of the pneumonic plague caused the installation to issue mass prophylactics for mission essential personnel. Wagonblott, playing the role of active shooter, became enraged when he was turned away from receiving medication for his family. He went to his car, took his weapon from the trunk and began shooting everyone in sight.

The sounds of screams and gunshots filled the air, and people ran with panic to take shelter away from the shooter. He continued reloading his weapon.

The sound of sirens could be heard in the distance, and Wagonblott barricaded himself into one of the buildings. Members of Security Forces began searching for the shooter as they arrived on scene.

According to Master Sgt. Jon Dahlmer, 633rd Security Forces Squadron A-flight chief, this training prepares Security Forces in the event of a real-world threat and has a lasting impact on the entire installation.

"For the most part we don't practice for an exercise - we practice for the real world. If you always practice like it's real, then you're always going to make the right decisions at all times," said Dahlmer. "It benefits the base personnel when they see us running around with weapons yelling and screaming. It gets them mentally prepared that stuff's going to happen, and it can happen."

Airman First Class Joshua Gershey, 45th Intelligence Squadron geospatial analyst, played a victim during the exercise and echoed Dahlmer's sentiment.

"It's kind of scary because you don't usually hear actual gunfire," said Gershey. "It puts perspective on things, like this could actually happen someday."

The Security Forces team was able to successfully neutralize the threat and apprehend Wagonblott, completing the active-shooter scenario. For Wagonblott's coworkers, the exercise didn't end as swiftly, leaving some to contemplate the lingering effects.

"I wouldn't be able to forgive myself if this was real scenario and people were harmed because I didn't bring it up," said Bell. "Go up the chain as far as you need to go. Just because it's someone who outranks you, don't be afraid to bring stuff up - we're all still people. It's about communication."

Although playing the role of active shooter had physical and mental effects on Wagonblott, he said it was an enlightening experience.

"It's very surreal," he said. "I was shocked at how exhausted it made me to act depressed. I was just playing a part, but when you're truly feeling that there's nowhere to go, it wears you out."

Wagonblott continued.

"That whole wingman concept came into play," he said. "Even though I was acting, if I were truly in that situation and it played out like that did, these people truly care. It was definitely a learning experience and it will make me even a better leader as I go on."

Although this active-shooter scenario was part of a training exercise, it reminded everyone involved that the potential for an event like this is very real. Whether acting as a wingman or battle buddy, knowing and caring for fellow Service members could have a lasting positive impact not just on individuals, but the military as a whole.

Firefighters Conduct High Angle Training

Maj. Lindsay Logsdon - 178th Fighter Wing Public Affairs
November 7, 2012
AF.mil

SPRINGFIELD, Ohio -- The 178th Fighter Wing firefighters conducted a high angle rope rescue training event, Nov. 4, on the 100-foot radar tower at Springfield Air National Guard Base, Ohio.

Fifteen firefighters from the unit participated in the training event. The simulation involved an injured worker surrounded by a hazard which required the responders to attempt a rescue from above.

The rescuers were working at a height of more than 80 feet on the radar tower. High angle rope rescue training requires firefighters, "to train at an elevation higher than most are comfortable," said Master Sgt. Brian Stiteler, 178th Civil Engineering assistant fire chief.

"The more you work around that environment the more comfortable you become," he said.

"The more height we can keep them familiar with the better off we are." 178th CE firefighters conduct high angle training every couple of months to maintain their familiarity.

"We train for the disciplines we use: high angle, trench, collapse, confined space and extrication. Many of these intermingle," said Stiteler.

The Fire Fighter Air Force specialty code is composed of firefighting, crash and rescue. Senior Master Sgt. Andy Hennigan, 178th CE fire chief, explained that during the wing's prior F-16 training mission their primary focus was aircraft rescue firefighting.

"Technical rescue is what we do now," said Hennigan. "We still have to fulfill all the [AFSC] requirements but our focus has shifted."

Future training for the firefighters will include: structural collapse rescue, trench rescue, confined space rescue, vehicle and machine extrication and more high and low angle rope rescue.

"This kind of training will be going on whenever we get the opportunity," said Hennigan.

Readiness Exercise Sharpens Skills

Amy Rollins - Skywrighter Staff
November 2, 2012
AF.mil

WRIGHT-PATTERSON AFB, Ohio -- A simulation involving a disgruntled employee whose job was being cut was part of an active shooter scenario Oct. 30 during 88th Air Base Wing readiness exercises conducted at Wright-Patterson Air Force Base.

The exercise was held at Bldg. 676, Area B, site of the Air Force Research Laboratory DOD Supercomputing Resource Center.

Observers and exercise evaluators were on hand to assess the effi cacy of the training and to note both desired and undesirable actions.

Tech. Sgt. Ryan Brown, senior operations controller of the 88th Communications Group and one of the exercise coordinators, said, "We're evaluating our people to make sure that in an active shooter scenario they're taking the right steps, taking cover."

Other purposes of the exercise were to see whether building occupants secured their space as well as how appropriate the responders' actions were.

The scenario began with a disgruntled employee who was a system administrator on the network and was overheard saying he had planted a virus because his job was being cut. Portrayed by Milton Waddams, the disgruntled employee was confronted by David Whorton, an action officer in the base's Cyber Security Working Group. Mr. Waddams became upset and simulated shooting several people with a plastic handgun in one of the building's offices.

He then fled and hid somewhere in the building. Mr. Whorton called his commander, Security Forces were notified and information protection conditions were escalated and observed.

"The intent of this exercise scenario is to assess the ABW's emergency response and management capabilities to effectively counter an active shooter crisis situation," said Master Sgt. Bruce Hatfield, 88 ABW Security Forces Squadron's (SFS) lead exercise evaluation team leader. "The installation actively trains first responders as well as assigned military and civilian employees to defend against the potential threat of an individual who does, or attempts to do, a violent act using a firearm. In order to evaluate our installation's preparedness to employ necessary tactics, techniques and procedures, this exercise concentrated on lessons learned from previous real-world events.

"Our training objectives have been developed to ensure first responder actions are focused on quickly neutralizing an active and hostile threat while minimizing risks to the rest of the base population," Sergeant Hatfield said. "This is essentially what our exercise is designed to evaluate."

After the first "contact" team of the Security Forces Squadron arrived they made a tightly controlled sweep of the first floor where the exercise was being conducted. Once the contact team apprehended and secured the suspect, a second "recovery" team re-swept the floor, released employees locked in -- some having wisely barricaded themselves in -- their room and escorted them to safety.

The SFS members even reacted appropriately when they heard construction noises from hammers that sounded like gunshots.

"This is what this is all about," said one of the observers, "Emergency Services doing what they're supposed to do. This is how we learn."

After the floor was cleared of personnel, the simulation continued with the disgruntled employee having been overheard saying something about planting a bomb outside the building. The Explosive Ordnance Disposal (EOD) Flight was called, and a bomb-sniffing military working dog (MWD), Rudo, and his handler, Tech. Sgt. Matthew Hemeon, came to conduct a sweep.

Tech. Sgt. George Freese, MWD kennel master, said MWD Rudo just turned 2 years old and recently arrived at Wright-Patt from training at Lackland AFB, Texas. This was his first exercise, but his handler said Rudo is working out well and has good potential.

"This (inclement) weather is new to him, being down at Lackland for so long, so we'll see how it affects him," he said.

The conditions seemed to have no ill effects on Rudo, as he took little time to respond to the simulated bomb once he smelled it, earning his reward -- a few seconds with a toy Sergeant Hemeon had. The area was cleared and then the EOD unit took over, remotely piloting a robot to the bomb's location.

Master Sgt. Loren Green, EOD Flight chief, said, "It's always better to put a robot in harm's way prior to us."

X-ray technology was then used to take a look inside the suspect package and then identify the best way in which to render it safe, Sergeant Green said. Sometime later, the exercise was considered closed, with analyses conducted and further training needs assessed.

The 2013 first exercise is scheduled for early spring.

Family of Heroes Resource to Serve Schriever

2nd Lt. Jason Gabrick - 50th Space Wing Public Affairs
October 24, 2012
AF.mil

SCHRIEVER AIR FORCE BASE, Colo. -- A new interactive online learning tool, Family of Heroes, is now available to all members of Team Schriever who have recently returned from a deployment.

The primary focus of Family of Heroes is to help Airmen and their families cope with changes that can occur during and shortly after a deployment.

Air Force Space Command is providing the program. Although new to Schriever, Peterson Air Force Base has been using it since December 2011.

"We want to know how receptive the warfighters are to this training but it's also important to us that we keep it anonymous," said Steven Brite, the chief of education services for AFSPC. "We want them to be more than curious; we want them to feel comfortable enough to talk to their spouses about what's really going on in their lives."

The program is not a run-of-the-mill computer based training course. Instead, Family of Heroes is a flexible platform. Users are taught material applicable to a returning service member and their family and then they use it as they interact at home.

Maj. Catherine Tredway, chief of military personnel programs for AFSPC, returned after seven months at Bagram Air Base, Afghanistan, in 2011. Tredway was one of the first Airmen to use the program and volunteered her story in hopes that others will give it a shot.

"It was surprisingly helpful," said Tredway. "When I started out, I thought it would be like any other CBT but, very quickly I felt engaged and wanted to know what it was about. I liked that there were different stories and characters. I identified with them."

Tredway said she especially liked the way the simulation was tailored to her inputs.

"In one of the stories, a female comes home and she's talking to her spouse. She realizes that she's jealous of her mother-in-law because of all of the time she got to spend with her kids," said Tredway. "And, I realized that I was jealous. I shouldn't have been, though. I should have been appreciative. The program helped me realize things I hadn't even thought about."

No one experience with Family of Heroes is identical to another. The program takes inputs from the service member as they interact with their family and develops a specific path which will be most beneficial to the individual and their family.

Chaplain (Maj.) Gresham, 50th Space Wing, is excited for Schriever Airmen to use this new resource.

"Family of Heroes is an excellent resource for managing expectations before, during and after deployment," said Gresham. "It is for both the deployer and the deployer's family."

Family of Heroes is available now and can be accessed anonymously at www.familyofheroes.com/peterson

When the Network Dies

Lt. Col. Michael J. Lanham
Armed Forces Journal

The Army lacks the battle drills that would help it fight on

Unprepared soldiers are ineffective soldiers, and the rise of the networked battle space has made this ancient wisdom no less true.

It is curious, then, that when the Army practices operating in contested cyberspace environments, it does so largely in echelons above corps and not throughout the force. What exercises do take place generally understate the likely effects of network outages and overstate our ability to adapt to them.

If we continue to avoid rigorous rehearsal for cyber attack, or fail to implement it at all levels, we are training to meet incompetent adversaries and setting the stage for improvised, ill-coordinated and ineffective responses to competent ones.

Just as the Army has done for every other aspect of combat, it needs to develop a set of battle drills for such environments and work them into the standard training regimen at each echelon of command. These drills must include individual and collective tasks of the sort that would prepare soldiers, commanders and units to face many varieties of cyber events: short- and long-duration, point and pervasive, man-made and natural. To make this practical, we must also give units at all levels the modeling and simulation capabilities they need to hone their defenses, responses and training efforts.

What We Do

What are our current capabilities and willingness to conduct rigorous rehearsals of operations in contested cyberspace environments?

Before addressing that explicit question, we should acknowledge that there are certainly concerns with authority to conduct rehearsals — unlike tankers skirmishing at the National Training Center, cyber warriors often hone their craft on the actual Internet — but I'll defer such a discussion and presume there are safe, legal, moral and ethical ways of getting better at our jobs.

We should also properly frame what we wish to accomplish. I'm going to borrow an idea from Maj. Gen. Richard Webber, a past commander of the 24th Air Force, his service's component of U.S. Cyber Command. His vision of his command was that he and his airmen will provide "mission assurance," not "information assurance" — that is, that his main goal is not to defend computers per se but rather to assure commanders that they can continue their missions in contested cyber environments. The Army uses different vocabulary, but it's apparent that these two Cyber Command service components share a view.

To that end, the Department of Defense holds rehearsals for cyber attack; these exercises go by names such as Cyber Flag, Bulwark Defender, Turbo Challenge and Cyber Endeavor. But these are largely echelons-above-corps exercises, and the ways we execute them are insufficiently rigorous.

Too often, exercise commanders and planners make fundamental assumptions about retained availability or unrealistically rapid restoration of cyber resources. The exercises tend to be short-duration, not long-duration; to feature degradations or losses of limited scope, not pervasive ones; and to clearly differentiate natural and man-made effects. This allows commanders and staffs to extrapolate impacts and reactions to circumstances they've not encountered. I'm confident readers can recall breezy hand-waving about operating through cyber outages, predictions of restoration of host-nation cyber capabilities despite high-altitude electromagnetic pulse detonations, and otherwise confident assertions that the collective "we" would overcome whatever nature or adversaries threw at us. I'm also confident those same anecdotes are colored by the remembered irritation and pain of actual cyber degradation or losses well below "Cyber Pearl Harbor" thresholds that were not planned, not rehearsed, not well-tolerated and were poorly muddled through by units at every echelon.

At the risk of overgeneralizing, most cyber tabletop exercises and general officer-level leadership games I've been exposed to involved either too few (or too low-ranking) technical-oriented people to splash the cold water of technical realities on the attendees and too few maneuver commanders to splash the cold water of mission priorities beyond cyber on the technical-oriented folks.

An informal and unscientific poll of the Functional Area 53 and INTELST mail lists contributes to the notion that we are also not rehearsing well or often for cyber contingencies at echelons below corps. (By contrast,

government officials — at least to judge by their quotes in the media — are quite worried about just these kinds of environments.)

What We Used to Do

Our collective failure to perform rigorous cyber-related rehearsals in the form of individual soldier tasks, unit tasks and integral parts of larger-purpose exercises stands in stark contrast to our preparations for threats in the 1980s and '90s. I recall two forms of contingency rehearsals I regularly executed as a platoon leader that could, with analogical reasoning, help us in contested cyberspace environments. The first was rehearsing operations in persistent and nonpersistent chemical environments. The second was the use of radio listening silence, radio silence and signal operating instructions (SOIs) in platoon- through battalion-level operations.

For cyber strikes, what are our standard, rehearsed individual, small-unit or even battalion-level tasks and responses? One response, at an emotional level, could be relief: At last, we can operate without micro-management from afar! But the relief will likely be soon overtaken by confusion and improvisation. How will soldiers navigate when their commercial off-the-shelf mapping hardware and software stop working unless they have practiced using paper maps and lensatic compasses?

When plotting the coordinates of a chemical strike broadcast message, soldiers knew to avoid the affected coordinates and its downwind hazard areas. Can units identify and locate specific hazards from a broadcast cyber strike? Do we rely on cyber resources to broadcast alerts about cyber strikes or cyber malfunctions? Are reports from national or combatant-command-level entities sufficiently detailed to allow, say, D Company, 1-327th Infantry, 101st Airborne Division, to know it just received a cyber strike? How does a message from faraway entities even get to D Company? If a report contains an IP address with no other identifying information, are there rehearsed drills to identify the owning unit and the analogous downwind hazards? Can the Army, with high confidence, train soldiers and leaders to recognize adversary-caused cyber effects compared to self-induced problems — i.e., is that unscheduled and unannounced reboot of the commanding general's computer evidence of hostile action or just an ill-advised move by local IT support? Is the temporary loss of NIPR Wi-Fi at an installation a temporary glitch or a man-in-the-middle attack? Are immediate action drills for man-made degradations different from those for confirmed or suspected adversary actions? Are the differences purposeful and meaningful?

Certainly, the "identify and react to a chemical strike" battle drill is no perfect analogy to "cyber strike" battle drill. But it shows the kind of past competency that we must regain in the modern era. Years ago, we willingly put large numbers of people, including high-ranking commanders, through time-consuming and physically uncomfortable battle drills for biological and chemical environments. We developed expectations and rules of thumb for operating tempo slow-downs within planning staffs and standard operating procedures for mechanized and armored forces. At the battalion level, at least, these rehearsals led to confidence that a sufficiently small chemical strike would not inflict too great a casualty rate.

We have yet to consistently inconvenience high-level commanders or develop such expectations for cyber, although DoD leaders appear far more confident of future network attacks then we ever were of chemical strikes by the Soviets.

What We Can Do

A second contingency rehearsal we could resurrect would require us to use seemingly long-forgotten skills: operating without our networks and radios for extended periods of time across large battle spaces. Mechanized infantry used to lay communications wire between tracked vehicles when at long halts or in a laager. Soldiers used to use SOI-encoded messages and messengers/couriers for days. Tactical units may still practice these alternate and contingency ways of exercising command and control — but how fast does failover occur, and how comfortable are higher echelons without their data addictions being fed from their subordinates? I am

dubious that staffs of division and higher units will find it trivial to work through the old-but-forgotten ways of commanding large outfits without the near-instant gratification of cyberspace capabilities.

Here are a few ways we might practice for such situations. Commanders at various echelons can:

- Self-inflict announced and unannounced reductions of bandwidth in our day-to-day networks: C2, medical, logistics, personnel, finance and contracting — that is, deliberately move to "soda-straw" levels compared to normal levels for days at a time.
- Coordinate with higher commands and request nondestructive defensive fires. A cyber analog could be isolating a network segment or cutting off all online connections except those to a white list of pre-approved, known safe systems.
- Rehearse defensive reconfigurations, deployments of cyber assets that would not be susceptible to the envisioned threat or other "cyber maneuvers."
- Practice failover and load-reduction to alternative transmission modes. If a host nation's communications fail, how does a unit behave when restricted to military or commercial satellite links?

Staffs can practice this, as can commanders. They might, for example, relay past orders from Cyber Command or elsewhere, ask for and implement their services' Cyber Command contingency plans and execute notional cyber defense orders that actually impinge on their perceptions of what's important. Brigade-and-above headquarters can practice reporting timelines that take hours or days instead of seconds or minutes and practice collecting data with clipboards and grease pencils instead of Command Post of the Future and Tactical Integrated Ground Reporting. Crucially, they should practice these drills and tasks not only in garrison, but also during training center rotations. There's no use excluding unit training for deployment — Strategic and Cyber Command have already demonstrated that being "in the fight" is an insufficient rationale for ignoring cyberspace orders and directives.

Finally, nonmaneuver forces must rehearse as well. Medical, logistics, acquisition, strategic intelligence, morale-welfare-recreation and other organizations should also practice cyber operations battle drills. How do they prioritize and continue their missions in the face of long-term or pervasive degradation? Can they send and receive messages up and down the chain of command sufficient for high-priority mission tasks? Can they receive reports from outside their day-to-day operations channels (e.g., Cyber Command or Army Cyber) about a bad computer? Do they have the manpower to find and fix dozens or hundreds of systems amid day-to-day or degraded operations? Can they react in ways short of self-inflicted denial of service to an entire installation, as happened at Fort Campbell in 2004? If the answers to these questions are not reasonably clear and rehearsed, no commander should have confidence in the answers' accuracy.

In short, we should periodically apply the enemy's most dangerous cyber course of action and work through how we adapt to it. We should resist the temptation to assume cyber capabilities will return to normal or near normal after only brief periods of interruption with no substantial or long-term degradation of operations. We should test our self-confidence with rigor, not blithely trust in our use of "superior" technology and information.

What We Need To Do This

Of course, there are challenges to all this. Full-participation exercises are expensive for units and the services to plan and execute. There are almost always more staff-recommended training objectives than commanders can reasonably fit into a schedule and budget.

With too few resources and too many demands, what are other options? Commands could pick the cyber-analogs of map exercises, tactical exercises without troops, or command-post exercises.

Here's another option, one that promises better preparation without much increase in cost: Use rapid, decentralized and customizable modeling and simulation tools. This suggestion raises a number of questions. For example, can such tools:

- Reflect the variety of knowledge, beliefs, practices, behaviors and capabilities possessed by soldiers, units, other services, other coalition partners and host nations?
- Adequately depict cyber capabilities, including specific systems and their dependencies, classified networks and communications mediums?
- Reduce our cyber rehearsal gap?

The answer to the first two questions is "yes, with caveats," but to the last, it is a definitive yes. We know this because such tools already exist. Leading research universities such as Carnegie Mellon University, George Mason University, Vanderbilt University and others have taken them from laboratory experiments to commercial applications.

One example of such a set of tools and workflow exists at Carnegie Mellon's Center for Computational Analysis of Social and Organizational Systems. Its AutoMap tool uses machine learning to quickly create models of organizations, which can then be used to analyze data flows, look at social networks and perform what-if experiments using agent-based simulations.

U.S. Army/Timothy Hale

Army Reserve soldiers work together to limit simulated blood loss of an injured patient during noncommissioned officer developmental training at the MSTC at Fort Bragg, N.C., where the NCOs refreshed their combat lifesaving skills in January.

A staff might feed AutoMap a collection of documents that describe the organization: joint and service doctrine; descriptions of tactics, techniques and standard operating procedures; emails; reports; briefings; etc. The software can sort the documents' words and concepts into categories — agents, organizations, roles, beliefs, knowledge, tasks, resources, events, locations and actions — and create a complex representation of the organization.

The commander and staff can then take this socio-technical, multi-mode model and inflict simulated cyber attacks on their organizations. The tools for the assessment of the attacks' effects are already in wide use by the intelligence, counter-IED and service academy communities. Such tools include ORA, UCINet, Palantir, Pajek and Analyst Notebook. (Helpfully, the Joint IED Defeat Organization has produced side-by-side comparisons of these tools.)

The results of these simulated attacks may inspire confidence in one's cyber preparations. When the Air Force Research Lab used Air Force doctrine documents to model the service's Air Operations Centers, the resulting model indicated that the AOCs were significantly more resilient to cyber attack than a cursory review suggested. But these kinds of models can also reveal vulnerabilities in organizational structure, IT setup, manning and processes. As commanders and staffs create adaptations, and possibly even solutions to the vulnerabilities, they can tweak their model and re-run the simulated attacks until they achieve a satisfactory response. Such simulations are certainly not proof or prediction of real-world success, but they allow us to move beyond gut feelings, personal opinions and hyperbole toward rigorous and repeatable experimentation.

All this can be done without disrupting a command's operational networks and with relatively little impact on the rest of the unit. The next step is staging soldier-in-the-loop exercises to calibrate the model to reality, and ultimately, developing battle drills to hone the unit's ability to carry out its missions under cyber attack.

Conclusions

From short-duration denial-of-service attacks to sophisticated advanced persistent threats, from seafloor landslides to high-altitude electromagnetic pulses, a vast range of potential network problems threaten our wired way of war. Yet rehearsing operations in contested cyber environments remains a capability gap at all Army echelons. If we fail to adequately plan and rehearse for adversaries that exploit that gap, we almost assure ourselves a difficult initial future fight and a hard slog out of an initial future mess.

Tools like AutoMap have drastically reduced the time, money and expertise needed to construct useful organizational models to just hours or days instead of the weeks to months needed by the Battle Labs. Best of all, the Army does not need to wait for gold-plated, grade-A M&S capabilities from a defense contractor that require a staff of statistical analysts and professional model builders. We can use capabilities coming out of our research universities, give them to soldiers and their commanders, and begin reducing the gap today.

ARMY Magazine

Medical Simulation

Scott R. Gourley
December 2012
Army Magazine

One rapidly growing aspect of Army medical care involves the use of medical simulation (MedSim) in the training of medical personnel at all levels— from initial combat lifesaving skills through multiple levels of hospital care, and in the development and maintenance of specialized medical proficiencies.

“There is really a growing body of evidence supporting the effectiveness of clinical medical simulation,” says LTC Wilson Ariza, U.S. Army program manager for medical simulation. “That’s because it not only improves proficiency but it also improves the performance of the health-care provider and improves patient safety. I think that’s the key in telling this story.”

Organized under the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI), Ariza’s team is at the forefront of emerging medical simulation technologies.

“Simulation improves the competence of the provider,” he explained. “And it improves competence by providing a safe environment in which providers can practice as many times as they want. They can master those skills. They can practice different protocols, they can apply critical decision-making skills, and they can even develop communication and interpersonal skills.”

According to Ariza, the current model in medicine involves a process that is commonly called See one, Do one and Teach one.

“Whether you are a medical student or a new provider you will first observe a medical procedure from a staff member,” he says. “That’s the ‘See one.’ Then you will most likely practice that procedure on a cadaver being supervised by a staff member once. That’s it. That qualifies that provider to perform that procedure later on a patient, but that also means that a doctor who graduated from school today might not do the first one until 10 years down the road.” Recognition of that fact has been an important factor in the rapidly expanding adoption of simulation in the medical field.

Medical Simulation Training Centers

One critical early element of the U.S. Army's medical simulation program was the fielding of medical simulation training centers (MSTC). (See "Soldier Armed," ARMY, August 2006.) Today there are 23 MSTCs located worldwide, including six in Iraq and Afghanistan.

"That first one went into continuous operation in 2005 to support Operation Iraqi Freedom," Ariza recalled. "The medical simulation training center is a facility of about 10,000 square feet in which we have provided the sustainment training for all the EMTs [emergency medical technicians]— we call them combat medics—in the U.S. Army as well as the EMTs of any other service who were deploying to support Iraq and later on Afghanistan."

He added that the systems are also being used to educate medics, doctors, nurses and nonmedical personnel throughout the entire U.S. Army and the sister services.

In the case of nonmedical personnel, he said, "Let's say you have infantrymen deploying to Iraq or Afghanistan. They could be sent to the medical simulation training center where they will learn basic combat lifesaving skills. That's where MedSim has supported the tactical enterprise. Now we have a truly integrated training platform that deploys a very comprehensive training and education medical system using simulation."

LTC Ariza estimates that 40 percent of the current MSTC training mission involves combat lifesaver training. "The emerging [MedSim] technologies provide training in what I call a low risk, supportive environment, where I can really recreate the nuances of patient care, whether in a hospital or a combat environment," he explained. "I can really identify and re-create it, and they can practice as many times as they feel they need to practice. Then later on I can do the training and I can even test to see if they've learned those levels of competency needed to save a life."

The wide array of simulation methods includes mannequins, human patient simulators and body-part task trainers.

"Training for a servicemember is normally 40 hours," he said. "The first two days are spent in a classroom, learning the curriculum and refreshing their knowledge. Through the classroom phase they also practice on part task trainers. For example, if they need to practice to start an IV in an arm, we have an IV arm trainer that is very similar to a human arm.

"Toward the end of the week, on the last day, we do what we call the Validation Day," he continued. "Using simulation we have re-created an environment in which they are going to walk into a location, a building like one we saw in Iraq or Afghanistan. It will include a combination of medical and nonmedical personnel, and we are teaching skills to both.

The enemy will be there, so they need to engage the enemy and clear the room. Then they will find out that they have patients in there: friendly, friendly allies, and possibly even one of their own, who may become a patient. Now they need to apply everything they have learned, including tactical operations, to the trauma medicine aspects. While they are doing this, we are simulating the noise and we are even simulating the smells. Any provider will tell you that a wound has a distinct smell, so the ability to re-create that distinct smell in that chaotic environment adds to that realism.

I am trying to re-create the trigger and the stress that they are going to encounter so when they first see that real environment they will have done it so many times that they can fully concentrate on trauma medicine."

LTC Ariza pointed to one relatively new simulator, developed in conjunction with industry and the Army's Research, Development and Engineering Command, that presents trainees with double amputee injuries. The simulator can be attached to a living role player to enhance the traumatic realism.

"What we were trying to do with that was to create that environment where a servicemember will have to block out some of those aspects to really concentrate on trauma medicine, applying the tourniquet, telling the soldier

that he is going to be okay, and generally doing everything that he or she has practiced in the medical simulation training center to save a life," he said.

Along with situations like traumatic amputations and other combat casualties, the simulation technology at the MSTC can be used to create unique crisis scenarios like heart attacks, hypothermia or other complex medical situations.

"You also have different degrees of combat chaos that can be added to the scenario. You can also add different scenarios that they might encounter later on. This is not just about Iraq or Afghanistan. Look what happened in Haiti not too long ago. We had a situation in which hospitals were destroyed or so full that they couldn't take any more patients," he said.

The state-of-the-art MSTC equipment also includes video scene recording.

"While we are videotaping, we let the servicemember go through the entire scenario. We do not stop the training; that's not realistic. We believe that learning occurs at the end of the session, which normally takes a good hour, when we go back into a room and play the video and point to any mistakes," he said.

"In this job as I travel to different locations around the world it is very reassuring when servicemembers tell me, 'I've been in combat and this is as real as it gets,'" he added. "In fact, it's so realistic that there have been some instances when we have triggered PTSD [post-traumatic stress disorder]. We're very careful of that now, and we have different medical personnel available in case anyone feels the need to talk to someone."

Asked about the incorporation of theater-lessonslearned into the MSTCs, Ariza noted the close cooperation across DoD and with entities like the Lessons Learned Center at the AMEDD [U.S. Army Medical Department] Center and School "at which we constantly have meetings to make sure that we capture those lessons learned from Iraq and Afghanistan and that they are incorporated into all of our 23 MSTCs. That's why we incorporated things like the simulator for double amputation, because we learned that was an injury that servicemembers were seeing and that we needed to re-create that environment.

"I'm a strong believer in knowledge management—being able to share those lessons that we have learned that will improve patient care and improve patient safety," he added.

"Going even further, that type of lessons-learned analysis has also triggered new equipment," Ariza said. "For example, when we realized—the 'enterprise' U.S. Army and DoD—that we were seeing a certain type of injury, people analyzed the data and came out with a new type of body armor that covered a lot more of the body."

Ariza highlighted a 2009 DoD Defense Health Board assessment of the types of training being conducted at the MSTCs as well as at other agencies.

"The outcome of that Tactical Combat Casualty Care study is that at the time—more than three years ago—we had saved more than 1,000 lives," he said. "For my team and for myself, the fact that we can go home thinking that we had saved so many lives because of what we do here is a great feeling."

Levels of Care

Along with use at the MSTCs for first responder training, Army MedSim technologies are being applied across expanding areas of medical training.

"Medical simulation is no longer just for trauma medicine or first responders," Ariza says. "As you move that patient from the street in Iraq, Afghanistan or even Haiti, that patient then goes to the next level of care, which in this case may be the operating room after the emergency room. With simulation we are now able to recreate that same patient moving through the levels of care.

"We have been able to use simulations in hospitals not only to generate the emphasis of treatment but also the teams concept. When a patient gets into the emergency room or the operating room, there are doctors, nurses and other technicians, and it is critical how we communicate and work as a cohesive team. What simulation has

done is to allow those providers in fixed facilities to also refine their communication skills, and we can do the testing to see how we work as a team," he said.

"We feel very proud that our simulations and training are credited with saving more than 1,000 lives, and also that all of the other services have been trained in our facilities.

They want to see what we are doing so that they don't have to reinvent the wheel in their own training facilities," he added.

Another recent milestone was the signing of an interagency agreement by PEO STRI and Secretary of Veterans Affairs (VA) Eric Shinseki, which establishes PM MedSim as the acquisition arm for medical simulation across the entire VA system of more than 150 hospitals. Ariza credits the new arrangement with providing continuity of care for medical simulation equipment used across the Army as well as the VA system.

Other outreach efforts have created MedSim synergies with Florida's new Medical City at Lake Nona, Florida Hospital Nicholson Center, and University of South Florida Center for Advanced Clinical Learning and Simulation.

"We have now sent the message to the world that the central corridor of Florida has become the epicenter of medical simulation," he said. "I tell my team that we are being pioneers in this office in transforming the way that we practice medicine, not only in the military but in the world."

The Army's 23 MSTCs train an average of 120,000 individuals each year, and in the middle of 2012 the program passed the milestone of a half million people trained.

"That is just at the MSTCs," Ariza stressed. "That's not counting all of the VA providers and all of the doctors and nurses training with medical simulation in U.S. Army hospitals."

In terms of the growing embrace of medical simulation, he says, "It's very difficult to change a culture. We've been doing things one way for so many years, so why should we use medical simulation when we haven't done that before? It has taken a lot of effort to demonstrate the clear benefits so that now the entire medical enterprise—not only military medicine but also civilian medicine—incorporates medical simulation in their day-to-day operations."

Emphasizing a strong team effort, he pointed to growing outreach from his office across the Army as well as to other services "looking for the best type of simulator to fulfill a particular requirement."

"They are seeking advice as to what is the best prototype or simulator to fulfill a requirement," he said. "One mistake that is occasionally made is that a hospital may buy the highest end simulator when a simpler one will do. You don't need a complex simulator to teach a basic medical procedure. For example, you can use an IV arm part task trainer to teach starting an IV."

Asked about his vision for new technologies and the way ahead, Ariza offered his belief that "virtual technologies and long distance learning" will be vital to ensuring that medical providers stay current in an environment of fewer combat deployments.

"For the past 10 years we have had a large percentage of the force forward-deployed. So, although we were extremely busy, we had a balance. Now that more of the force will be coming home we must be able to continue providing them with the skills that they need to practice medicine, and we believe, from the simulation perspective, that virtual training and long distance learning will be key to be able to maintain those skills," he said.

"I've been forward-deployed many times," he concluded, "and everyone who is forward-deployed knows that if they become a casualty they will receive the best combat medical care known in the history of warfare. That knowledge enables many of us to accomplish any difficult mission under extraordinary circumstances. That's one of the biggest combat multipliers on the battlefield. Our warfighters know that we have the best-trained

personnel and that we have given our providers the very best training and resources to take care of them if they become a casualty.

They are surviving, and that's a great news story for those great Americans out there."

Homestation Instrumentation Training System (HITS)

Scott R. Gourley
December 2012
Army Magazine

If all goes according to plan, the next few years will witness a dramatic increase in units stopping by their local training audiovisual support center and checking out new training kits that will significantly enhance the effectiveness of their home-station training opportunities.

At least that's the vision of LTC Chuck Worshim, product manager for Combat Training Instrumentation Systems (PM CTIS), under the project manager for Training Devices (PM TRADE), within the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI).

According to Worshim, the Army's Homestation Instrumentation Training System (HITS) represents a new program of record designed to introduce instrumentation into local live training events to enhance the impact of that training. Consisting of an Interim Range System (IRS), vehicle radio, soldier radio, field after action review (AAR) kit, exercise control and operator workstation, HITS supports collective maneuver training for platoon through battalion units.

"For the last 20-plus years the CTCs [combat training centers] have always had an instrumentation capability," Worshim explained, "and that's one component of what makes them what they are: the ability of instrumentation to 'be the eye in the sky,' if you will, recording the movements and actions of soldiers on the ground. That information allows the Army to then come back during an AAR to let the soldiers know what they did wrong, what they did well, where they need improvement, what training they should sustain and how they should direct their training focus moving forward.

"In its simplest form, HITS, along with TES [Tactical Engagement System]—more commonly referred to as MILES [Multiple Integrated Laser Engagement System] Individual Weapon System—provides the ability for home-station trainers to conduct instrumented after action reviews by providing them with historical, factual data to show where units need to sustain or improve their training," he said.

Programmatically, Worshim pointed to the fact that HITS received its Milestone C full rate production decision in the past year, with subsequent fielding to both Fort Hood and Fort Bliss, Texas, before the end of fiscal year 2012.

Outlining the system operation, Worshim explained that HITS will interface with the whole family of MILES, including the new MILES Individual Weapon System.

"With 'old MILES' you were basically able to play a 'laser tag game,' back and forth, with some audible sound that indicated someone was hit," he said. "That was the great essence of MILES—to control that battlefield. But now [with HITS] we have taken things a step further to say, 'I can take those actions on the battlefield and import them into an automated application that will now display to a soldier the battlefield locations and the firing lines from shooters to targets.

That's something that you just didn't get before with MILES. You had guys walking around—OCs [observer/controllers] or trainers—saying, 'You're dead, you can't shoot,' and so forth." Now, he explained,

events take place in real time. Later, following the "battle," soldiers can view on screen what actually took place.

"That ability also helps to reduce some of the challenges you have when you're having training events and you have OCs trying to 'train' the unit by saying, 'This is what I saw; you did this,'" he added. "Well, sometimes you may have the [trainee] disagreeing, but HITS takes away all of that ambiguity because it will show you and play back what someone did or didn't do."

It will also provide that information to the field environment in a very rapid manner. With AAR response timing, for example, Worshim said that the HITS formal playback requirement is "within two hours" but could be significantly less "depending on what the trainer or the OC wants to see."

"The trainer is already talking to the [HITS] operator, who is helping him put together the AAR," he said. "The operator will already have a good rough cut of what that trainer is looking for—burned to a DVD. Basically the operator can verify that the images reflect the scenarios that the trainer wants to talk the unit through. Once that's confirmed, the DVD goes out with portable monitors that can be taken to the field location and played for the AAR.

When I first got the time requirement of 'within two hours,' that was articulating or trying to judge time, distance and everything. HITS is normally centrally located at a place with training taking place in excess of 20 kilometers from that suite of HITS computers. So it's really [a matter of] how long it takes someone to drive out to that site.

"The HITS operators really build the AAR," he added. "They reflect what the trainers want to train that platoon or company on. So if a trainer just wants to show actions at the objective, for example, there is the potential that I could have those actions on the objective generated and burned to a DVD in 30–45 minutes. Then as quickly as that DVD could be handed off and inserted into a DVD player, you're seeing it right there on the monitors. So there's not a huge time delay.

It's all dependent on what it is that's being trained and the actions the trainer wants the unit to take from it." LTC Worshim continued, "The [beauty of] HITS is that you don't have to go through this extreme editing process to 'make something pretty.' It's bare-boned, in the field, and gives the AAR process as much factual data as you can give so that soldiers can go back and, if they have to do it again, do it differently so their buddy doesn't get killed."

In addition, there is no prescribed concept of operations, meaning that the system can be used in any manner that helps enable unit training. That said, LTC Worshim was asked whether the recent fielding to Fort Bliss (in September 2012) might make HITS available for use as the Army makes the transition from Network Integration Evaluations (NIE) to Capability Integration Evaluations.

"I think we're really working with training systems as a whole and how they fit into the NIE," he replied. "I think we really have to peel it back and ask, 'Where does a training system fit in the NIE, and are we using that system to assess its [benefits] to the Army or are we using that training system to somehow assess what proposed product an industry partner might be bringing for evaluation?' But we have not cracked that code of where training systems fit into the NIE yet."

In light of the system flexibility, Worshim did offer one caution about potential applications of HITS. "I hesitate to say that the data is real time," he said, "because we don't want to have commanders standing over HITS operators, monitoring what Bravo Company is doing. We don't want that. That's not what HITS was built for. HITS was built for the historical record to support the AAR—not for a commander to control the battle."

Shifting his glance toward future fieldings, he said, "Over the next two years we're going to be fielding HITS to more sites. In the January time frame we are looking at fielding to Fort Campbell, Ky. Then in the March–April

time frame we are looking at fielding Fort Drum, N.Y., and then in the July time frame we plan to field in Korea. I'm on a fielding schedule of about one HITS installation per quarter."

The sequential fieldings will also incorporate a number of enhancements to the HITS design. "Some of the technology improvements that we are making with HITS include going to a virtualization of the suite of equipment," Worshim explained. "That will help to give HITS a smaller footprint, making it easier for the soldier. We are also putting in the newest technologies as we move forward in terms of both software and hardware.

"So if I were to call Fort Hood my grandfather system today it is only that in terms of being big and bulky. If I look at Fort Campbell or Fort Drum, now I will say that I have the 'grandson' edition of HITS, but it still provides me with the same capability. It's just in a smaller footprint because of where we are with technology. … That will provide additional advantages, like reducing sustainment costs in the long term. As I get to my Version 3 of HITS I will go back and retrofit earlier versions, but I don't want people to lose sight of the fact that the capability is still the same, whether it's the bulky grandfather edition or the new grandson edition," he said.

In terms of industry participation, Worshim pointed to Saab Training USA (Orlando, Fla.) and EHS Technologies (Moorestown, N.J.) as "the two primes for the HITS subsystems right now. They are doing a great job, and they have delivered the capabilities that we have required," he said, adding that the program office is looking to recompete those contracts "in the 2013–2014 time frame."

Offering a takeaway message to warfighters, Worshim said, "HITS is a very powerful enabler for the commanders at all levels, battalion and below, to train their soldiers.

It provides commanders with an incredible capability that is easy to use, and it will provide you with more data and information about the effectiveness of your training program than any other tools that currently exist at home station today.

"And part of that is that we are able to show a soldier at home station where improvements need to be made when he is conducting training for wartime mission or deployment to the CTC," he said. "The more preparation that we can give the soldier at home station the better that soldier is going to be prepared when executing at the CTCs or on a deployment. It's funny, but sometimes the things we remember best are not when someone is standing up or giving us a paper to read. Instead it's when you're looking at a video screen and realize, 'I am the dot on that screen and I was moving, standing up, when I was shot.' I need that soldier to play that back in his mind every time he goes to do that operation. I want him to realize that he needs to get into a prone position, because when he did it during homestation training he stood up and he got killed. When soldiers see that, it's a lot more powerful than having someone talking about why they need to be in the prone position."

His takeaway for commanders was equally direct. "I want them to know that this is a new capability for home station," he said, "and I am convinced that once they use it and provide guidance to their subordinates on using it on live training events or field events, that they will see the [beauty] of what HITS offers. Once that word gets out that will be all that we really need, and they will see the capability, they will see how it improves the effectiveness of their training, and they will see how the potential exists for them to improve the survivability of their soldiers by how they are trained. You can't put a dollar value on that. It's something you have to see to believe, and you will know that you are better for having used the system. HITS will sell itself."

Leavenworth Soldiers Hit Virtual Battlefields

The Associated Press
October 28, 2012
Army Times

FORT LEAVENWORTH, Kan. — Soldiers at Fort Leavenworth demonstrated a new virtual training system aimed at preparing soldiers for combat without the expense and danger of live training.

The Dismounted Soldier Training System uses helmet-mounted screens that show soldiers what they could face on combat patrols. Noises such as gunfire are delivered through speakers in the helmet.

The Army says the system also gives soldiers a 360-degree view of the battlefield and the location of other soldiers, letting them train to perform their tasks in a safe environment. During the exercises, they carry the weapons they would use in combat. The training allows a squad of nine soldiers to communicate and work together with others just as they might on the battlefield.

Soldiers demonstrated the new system Thursday at Fort Leavenworth, showing how the military has taken simulation to a new level. About 20 such systems are in use, The Kansas City Star (http://bit.ly/XtqU22) reported.

While the military has used video game technology for years to simulate war and has used simulations for decades to train pilots, until now there was little virtual training that could truly help a soldier on foot.

"You don't want to fly on a commercial airliner where your pilot hasn't logged thousands of hours on a flight simulator," said Dan Miller, a virtual training expert and military analyst.

Miller said the virtual system is intended to sharpen skills and help maximize live training. Miller is also the project leader for TRADOC Capability Manager Virtual, the Fort Leavenworth-based military organization that plans, manages and integrates Army virtual simulations. The system is portable and can be set up and used in four hours and allows the military to train large formations in small places.

The program has limitations, however. The program recognizes some gestures, but it doesn't pick up all the details that can be important on the battlefield, such as holding up two fingers to suggest two enemies are present.

The program won't replace the physical intensity of live training. But it helps soldiers practice and gain experience before going out to live training missions. The virtual system can also be less expensive than live training. The new system is about $470,000, whereas a large live exercise costs millions of dollars for two to three days.

Mike Lundy, deputy commanding general of the Combined Arms Center Training at Fort Leavenworth, said that with the virtual system, obstacles that could injure soldiers or damage equipment can be part of a regular training regimen without fear of injury. Lundy said the system also makes it easy to move through different conditions, from day to night, rain to sunlight, confronting a lethal enemy or a noncombatant.

"The things we learn the most are from the mistakes we made," said "It allows those mistakes, those experiences to be built up."

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Simulation Teaches Collection Asset Management, Situational Order of Battle, Symbology Analysis

Regina Albrecht
November 29, 2012
Army.mil

Fort Huachuca, AZ. (November 30, 2012) -- As the U.S. Army Intelligence Center of Excellence continues its campaign to build a more effective and efficient future force, its Learning Innovation Office or LIO, is responding to the call to action by developing adaptable interactive multimedia instruction.

LIO's latest IMI product release, the Collection Asset Management Simulator, can expand to serve multiple intelligence disciplines and staff functions within and outside the installation.

"CAMS isn't one of those products that is developed for a single course and then put on a shelf to gather dust," stated Capt. Luke Gosnell, executive officer, LIO.

Developed for the Military Intelligence Captain's Career Course or MICCC, CAMS is an Afghanistan-based simulation that is meeting USAICoE's need for high intensity conflict training.

Gosnell said CAMS offers a more contemporary scenario than MICCC's Operation Northern Star and Operation Southern Cross which are based in Sierra Vista.

"It's a serious game that allows students to plan requirements, task, direct and execute information collection inside a simple-to-use graphical user interface," he explained. "The GUI is a baseline platform that can be easily modified by the user to expand upon other objective-based and learner-centric serious games."

Chris Gonzales, LIO lead developer on the project, stated CAMS is also portable and requires very little system resources.

"The product does not require a gaming computer," Gonzales said. "It's a web application that can be played at someone's home station or in their home for refresher or sustainment training."

CAMS comprises two IMI products, Operation Kanjhar Strike and Operation Kanjhar Storm. Operation Kanjhar Strike is a 2-dimensional product with a high intensity conflict scenario and Operation Kanjhar Storm is a 3-dimensional product with a counterinsurgency setting.

He said the 2D product is focused on the tasks of a brigade collection manager.

Jamie Tate, MICCC training specialist, said Operation Kanjhar Strike teaches students how to conduct their own analysis as well as read and determine the pertinence of message traffic.

The 2D game also explains how to plot icons on maps. "Students place NAIs (or named areas of interest) on maps to track enemy movement and develop situational templates for their plans," Tate said.

Students are graded on how well they use their collection assets.

"If they place the right or wrong assets in the wrong place at the wrong time, no information is generated to determine the enemy situation and plot maps," he said. "It's imperative students know what assets to use as well as how and when to use them or to employ cueing, redundancy and mixing."

Gosnell said CAMS learning outcomes extend beyond collection asset management to situational order of battle, symbology and fusion analysis.

"Operation Kanjhar Strike incorporates fusion of various incoming intelligence sources," he elaborated. "Whether they're white noise, non-intelligence or intelligence, all sources must be linked, parsed and vetted for conversion into usable intelligence."

Satisfied with the finished product, Gosnell, Gonzales and Tate acknowledged some challenges they encountered during development of Operation Kanjhar Strike.

"Maintaining the original vision was challenging," Gosnell said.

Gonzales agreed, stating the scope changed during development. "I think it's a bigger and better product," he said. "It's definitely broader in terms of scope."

Feedback from beta tests spurred some changes to the product.

"During testing and validation, we received a lot of great feedback from a very mixed group of individuals," Gosnell said. "Participants were officers, ranging from non-MI Soldiers awaiting course enrollment to current and past MICCC students as well as collection asset managers downrange."

MICCC intends to implement Operation Kanjhar Strike by January. Beta testing for Operation Kanjhar Storm is complete, and modifications are underway.

According to Gosnell, CAMS's unique features and capabilities are already capturing the attention of other USAICoE organizations and courses.

Most recently, the Joint Human Intelligence Officer Course submitted a request for service to modify CAMS and develop a supplement to their existing instruction.

"JHOC is looking to add more of a HUMINT (Human Intelligence) flavor to CAMS, which will facilitate its use as a study tool for course exercises and exams," he said.

Simulation and Training Technology Center Shows Support for Wounded Warriors

Jenna Brady, U.S. Army Research Laboratory
November 7, 2012
Army.mil

The U.S. Army Research Laboratory's SFC Paul Ray Smith, Simulation and Training Technology Center (STTC), located in Orlando, Fla., actively participates in programs focused on supporting combat wounded warriors.

According to Mark Brzezinski, STTC's security manager, the organization has reached out to its local Wounded Warrior Transition Unit, which supports approximately 250 to 300 wounded warriors in the Southeast region.

STTC has provided several of these Soldiers with a productive worksite while they transition through the challenges of their injuries and medical treatments before either being returned to duty, or in some cases, medically released or retired.

"Engineers and employees get a chance to see, talk to and learn firsthand from what these Soldiers have experienced and are willing to share that will aid in the development of new and emerging technologies to help the Warfighter," said Brzezinski.

There are several nonprofit organizations that members of STTC are actively involved in.

Included in these organizations is Wounded Warrior Outdoors, which provides outdoor adventures to currently hospitalized combat wounded service members directly through our military hospital system.

Brzezinski is a captain for the Wounded Warrior Outdoors team that consists of 12 various military and non-military members including a group of wounded warriors from around the U.S. that will participate in the Ragnar Relay Key West 2013.

The team will run 200 miles from Miami to Key West, Fla. starting on Jan. 4, 2013.

"The team will be running with and alongside our wounded to provide motivation and confidence to them as they walk or run," stated Brzezinski. "Our goal is to raise awareness and resources for our injured and their families."

STTC is also aligned with Home At Last, whose goal is to provide mortgage free, accessible homes for combat wounded disabled veterans in appreciation for their service and sacrifice to our country.

The organization has built four homes in Orlando, Fla. for severely wounded warriors and has two more home projects currently underway.

Other organizations that STTC has partnered with include Operation Giveback, whose mission is to raise awareness and resources for our wounded warriors, their families and the children of our fallen heroes, and Fairways for Warriors, which is dedicated to providing a better quality of life for our wounded warriors by teaching them to play the game of golf.

In addition, STTC works closely with its local Association of the United States Army Sunshine Chapter, Veterans of Foreign Wars, Disabled American Veterans and American Legion posts.

"This is a great organization that continues to show our support not only to the Warfighter in the field but those returning with the scars of war and helping them get back on their feet and return to both a mentally and physically healthy and productive life," added Brzezinski.

Unified Endeavor Prepares U.S., Multinational Soldiers for ISAF Missions and Beyond

Staff Sgt. Tina Villalobos
December 11, 2012
Army.mil

GRAFENWOEHR, Germany -- Just as ground troops must become proficient at weaponry and a myriad of warrior skills and tasks, there is also an expectation that commanders and their staffs master their mission of orchestrating movements on the ground.

More than 1,800 U.S. and multinational Soldiers from more than a dozen European countries are participating in exercise Unified Endeavor from Dec. 5-14 at U.S. Army Europe's Joint Multinational Training Command here. The event trained members of the III Corps headquarters from Fort Hood, Texas for an upcoming deployment with NATO forces.

“Unified Endeavor is a multi-tiered command post mission rehearsal exercise,” said Lt. Col. Joel Brown, chief of operations at the Joint Multinational Simulation Center here. “The exercise trains the headquarters staff, as they prepare to assume roles with the International Security Assistance Forces Joint Command, also known as IJC, in Afghanistan.”

Brown said the realism of Unified Endeavor is enhanced by engaging NATO partners from the NATO Rapid Deployable Corps in Italy; the Joint Warfighting Center in Stavanger, Norway; and the Joint Forces Training Command of Bydgoszcz, Poland. The Joint Coalition Warfighting Command from Suffolk, Va., the 101st Airborne Division (Air Assault) from Fort Campbell, Ky., the 3rd Expeditionary Sustainment Command from Fort Hood, Texas; and the 2nd Marine Expeditionary Force from Camp Lejeune, N.C. are also participating in the exercise.

These military elements come from several different countries, speak different languages, and hold different cultural beliefs, but during Unified Endeavor they come together as a team with the common goals of establishing and keeping the standard.

This exercise demonstrates JMTC's ability to provide key mission command training for coalition personnel and units, Brown said.

"This is an opportunity for the mission participants to partner before deploying," Brown said. "Whether it is Afghanistan or a Decisive Action Training Environment scenario, we will modify the scenario to meet the commander's training requirements. We use simulations to stimulate their mission command systems, and replicate intelligence systems. The system reacts to decisions made by the commander and the staff, which become part of the scenario."

Soldiers working in the Joint Operations Center have an overview of the battlefield. With today's technology, commands can see in real time much of the micro and macro action as it unfolds in the theater of operation. This capability allows a commander to direct and improve outcomes, making their unit battle ready when the time comes.

NGC, US Navy Complete At-Sea Deck Handling Trials of X-47B Unmanned Demonstrator

Dec 20, 2012
ASD News

Northrop Grumman Corporation (NYSE:NOC) and the U.S. Navy have successfully completed a series of deck handling trials of the X-47B Unmanned Combat Air System (UCAS) demonstrator aircraft aboard the aircraft carrier USS Harry S. Truman (CVN-75).

The exercises, conducted from Nov. 27 to Dec. 17, demonstrated the ability to maneuver the tailless, strike-fighter-sized aircraft quickly and precisely on the flight deck using a wireless handheld controller. They are the latest in a series of test activities leading up to the first carrier landings of the X-47B planned for 2013.

"The X-47B deck trials proved convincingly that the design and operation of the aircraft are fully compatible with the rhythm and operational requirements of the carrier flight deck," said Mike Mackey, UCAS-D program director for Northrop Grumman Aerospace Systems. "They provided a major boost to the team's confidence as we move steadily toward our first carrier landings next year."

Northrop Grumman is the Navy's prime contractor for the UCAS-Carrier Demonstration (UCAS-D) program. The company designed and produced two X-47B aircraft for the program. One aircraft was on the ship; the other remains at Naval Air Station Patuxent River where it is undergoing additional shore-based carrier suitability testing.

The deck trials were conducted both while the USS Harry S. Truman was in port at Naval Station Norfolk, and while the ship was under way off the coast of Virginia.

Mackey said the testing included taxiing the X-47B on the flight deck, maneuvering the aircraft up to the ship's catapults using the Northrop Grumman-designed Control Display Unit; taxiing the aircraft over the ship's arresting cables and conducting fueling operations. The team also moved the aircraft up and down the ship's elevators between the flight deck and the hangar bay.

"We proved that the X-47B air system is mature and can perform flawlessly in the most hostile electromagnetic environment on earth, a Nimitz class Navy aircraft carrier," added Mackey.

In 2013, the UCAS-D program plans to begin conducting shore-based arrested landings of the X-47B at Patuxent River. Carrier trials, which will include both landings and catapult launches, are planned for later in the spring.

Northrop Grumman's UCAS-D industry team includes Pratt & Whitney, Lockheed Martin, GKN Aerospace, Eaton, General Electric, UTC Aerospace Systems, Dell, Honeywell, Moog, Wind River, Parker Aerospace and Rockwell Collins.

CAE Awarded Contracts by Chinese and Russian Customers for 4 FFSs

December 18, 2012
ASD News

Includes first simulators for new COMAC C919 aircraft

CAE today announced that it has sold four Level D full-flight simulators (FFS), two each to customers in China and Russia. The sales include the first two FFSs, associated training devices and the CAE Augmented Engineering Environment (AEE) for the new C919 aircraft being developed by Commercial Aircraft Corporation of China, Ltd. (COMAC). They also include two simulators, a Boeing 737NG and a Bombardier CRJ200, to Russian aviation equipment company NITA (New Information Technologies in Aviation). In addition, CAE sold simulator update services to various customers.

The contracts are valued at more than C$50 million at list prices and bring the total FFS sales that CAE has announced to date during fiscal year 2013 to 23.

"We have a long history of cooperation with COMAC's Shanghai Aircraft Customer Services Co. (SACSC) Ltd. starting with the development of the first ARJ 21 full-flight simulators, and we are honored that SACSC has once again selected us for the development of the world's first C919 simulators," said Jeff Roberts, CAE's Group President, Civil Simulation Products, Training and Services. "We are also proud to continue to extend our reach into Eastern Europe and to have been selected once again by Russian aviation equipment company NITA on behalf of the Ministry of Transport of Russia."

COMAC

The two C919 CAE 7000 Series FFSs will incorporate the new third-generation CAE Tropos™-6000 visual system. They will be ready for use at SACSC in 2015, prior to the aircraft's expected entry into service. In addition, CAE will provide two Level 5 Flight and Maintenance Training Devices (FMTDs).

The C919 FFS program will also use the CAE Augmented Engineering Environment (AEE), a modeling and simulation environment that will allow SACSC and CAE to efficiently develop, evaluate, test, and validate a range of aircraft models and systems during the development phase of the simulators and aircraft program.

CAE has designed, developed and delivered the industry's first full-flight simulators for more than 40 new aircraft representing 16 different original equipment manufacturers, including the first simulator for COMAC's ARJ21 advanced regional jet.

NITA

The Boeing 737NG FFS for NITA will be deployed in 2013 to the Ulyanovsk Higher Civil Aviation School in Ulyanovsk, Russia, where CAE delivered earlier this year an Airbus A320 FFS. The CRJ200 FFS will be deployed to the Saint-Petersburg State University of Civil Aviation in Saint-Petersburg, Russia, also in 2013. NITA is acquiring the simulators on behalf of the Federal Air Transport Agency, part of the Ministry of Transport of Russia.

Cubic Receives $12.5 M and Completes 1st Deliveries of Instrumentable MILES Tactical Vehicle System

December 18, 2012
ASD News

Cubic Defense Applications, the defense systems business of Cubic Corporation (NYSE: CUB), has received a new $12.5 million order for its Instrumentable MILES Tactical Vehicle Systems (I-MILES TVS) from the U.S. Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI).

I-MILES TVS employs Cubic's wireless vehicle Multiple Integrated Laser Engagement System (MILES) technology to provide the real-time casualty assessment necessary for MILES tactical engagement training in direct-fire, force-on-force instrumented training scenarios. The system offers superior performance because of its weapon simulation and casualty assessment accuracy for vehicles and fixed structures. It adapts to any wheeled or tracked tactical vehicle and is also configurable for buildings, fixed equipment and other structures. The system includes new features that significantly improve ease of use for soldiers, including touch-screen displays with highly intuitive graphic interfaces.

In related news, Cubic just completed its first shipments of I-MILES TVS to the U.S. Army. Cubic delivered more than 1,000 kits to U.S. Army installations in November, with the U.S. Army Joint Readiness Training Center at Fort Polk, Louisiana, and the National Training Center at Fort Irwin, Calif., receiving most of Cubic's production.

The first six tactical vehicle systems went to Fort Carson, Colorado, where they will be used to train end users. Cubic is to deliver over 3,000 systems under the first option of its 2010 contract with the U.S. Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI). Cubic will conclude deliveries under the first option in May 2013, then commence work on a second option, which includes the $12.5 million order.

Charles River Analytics Develops Virtual Training Environments to Train Soldiers Social and Cultural Skills

December 14, 2012
ASD News

Charles River Analytics, a developer of intelligent systems solutions, released a case study of an effort for the US Army called CAATE (Culturally Aware Agents for Training Environments). Under this effort, Charles River developed tools to rapidly and cost-effectively create game-based training applications for Soldiers that teach them mission-critical social and cultural skills. Through computer games and by interacting with CAATE-based artificially intelligent agents, Soldiers can safely train to effectively interact with residents of other countries and from different cultures.

The Problem

Today's Warfighters are increasingly engaging in peacekeeping missions, humanitarian missions, and stability and support operations. These missions often require junior leaders and Soldiers to interact and communicate effectively with people whose cultures, languages, lifestyles, and beliefs are very different from those found in the US. These missions require a variety of new skills that the US Army has not traditionally focused on, especially in the training arena.

Computer-based training in virtual environments has the potential to train Soldiers to rehearse missions with a sound knowledge of the relevant local cultural context. Existing computer simulations of culturally situated agents representing humans are either very limited in fidelity, making them unsuitable for training and rehearsal, or prohibitively expensive to develop and maintain as missions and needed skills change.

The Charles River Analytics Solution

Under the CAATE effort, Charles River designed and prototyped a modeling toolkit called Persona™ for designing computer-controlled agents for cultural training applications. The approach uses graphical social network modeling technologies to develop models of socially interconnected agents and a graphical human behavior modeling tool for creating culturally-appropriate behaviors for the simulated agents.

Charles River also developed a demonstration training application that uses socially dynamic agents in a virtual environment to teach simple social skills. One of the advantages of Persona is that it makes it easy, using a single user-facing tool, to create agents for several different virtual environments. We have used Persona to create virtual agents for a variety of simulation environments, including VBS2, OLIVE, and Half-Life 2.

The Benefit

"By using computer game technology and cutting-edge artificial intelligence (AI), we can create realistic, immersive, virtual training environments that every Soldier can have on his or her laptop. These training environments can teach social and cultural skills that have become tremendously important for mission success," said Dr. Scott Neal Reilly, vice president, Decision Management Systems. "For instance, Soldiers using training tools built with Persona can learn how to successfully interact with realistic, but virtual, residents of various countries in a completely safe, virtual environment."

Argon Chemical Warfare Simulators to train Canadian Forces in CBRN defence

December 11, 2012
ASD News

Argon Electronics' Canadian representative Patlon Aircraft & Industries Limited has been awarded a multi-million dollar contract to equip the Canadian Forces with Argons' chemical warfare training simulators. The simulators will be used to train Canada's military on the equipment and procedures for detecting chemical warfare agents and toxic industrial chemicals.

Argon will supply the company's flagship PlumeSIM™ training systems, as well as simulators for several of the Canadian Forces' chemical detectors, including the Proengin AP4C™ detector and the S4PE surface sampler, as well as simulators for the Smiths Detection LCD3.3™ personal detector and LCD-Nexus™ fixed-site detector. The simulation systems are to be deployed at the chemical, biological, radiological and nuclear training facility at Canadian Forces Base Borden and several other bases throughout Canada.

"Argon and Patlon Aircraft Industries have worked extremely hard together to secure this important contract, which will be delivered over the next eighteen months," said Steven Pike, Managing Director of Argon. "This contract represents a huge vote of confidence in both our simulation products and our company. That confidence results from not only the performance but the cost-effectiveness of our systems. For example, the PlumeSIM system has a modular and highly flexible architecture, enabling our customers to expand and adapt the system in the future as their CBRN training needs change."

CAE Healthcare sells Caesar Trauma Patient Simulators to NATO and to US DHS Training Facility

December 5, 2012
ASD News

CAE Healthcare announced today at the Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC) the sale of Caesar trauma patient simulators to NATO and a U.S. Department of Homeland Security training center that is dedicated to disaster preparedness.

Caesar was originally developed for the military and is now proving popular with the emergency and disaster response markets due to his resistance to rain, extreme temperatures, humidity, dirt, sand and body impact.

The NATO Supreme Headquarters Allied Powers Europe (SHAPE) in Casteau, Belgium has purchased a Caesar for use in training Special Operations Forces (SOF) on a multinational level. The Center for Domestic Preparedness (CDP), located in Anniston, Alabama, USA, purchased five Caesar trauma simulators for disaster response exercises. The CDP is the United States Department of Homeland Security (DHS)'s only federally chartered Weapons of Mass Destruction (WMD) training center.

"Our newest version of the Caesar trauma simulator is even more rugged and more versatile for the military, emergency response and disaster response markets," said Michael Bernstein, president of CAE Healthcare. "Caesar has generated a tremendous amount of excitement and interest among emergency and disaster response agencies."

Caesar was designed to withstand adverse environmental conditions to allow point-of-care training in challenging field settings. With dramatic bleeding and automatic physiological response to treatment, Caesar is training medics and responders who need to stabilize an injured patient quickly for transport or for higher-level care.

The original Caesar technology was developed by researchers at the Center for Integration of Medicine and Innovative Technology (CIMIT) in collaboration with the Telemedicine & Advanced Technology Research Center (TATRC) of the U.S. Army Medical Research and Materiel Command, and licensed to CAE Healthcare.

Thales Unveils Innovative Motion System for Reality H Helicopter Simulator

December 5, 2012
ASD News

At the 2012 Interservice/Industry Training, Simulation and Education Conference (I/ITSEC), Thales is unveiling its latest-generation Reality H helicopter simulator equipped with the all-new, all-electric Hexaline high-fidelity, six-axis linear motion system.

Hexaline harnesses the latest technological innovations to bring users major benefits in terms of life cycle cost and usability. Delivering greatly enhanced performance, the new motion system offers a unique level of flexibility for unmatched pilot perception.

The Reality H simulator was developed in partnership with helicopter operators and is designed to maximize training capacity and availability while ensuring easy set-up, implementation and maintenance.

With multiple reconfiguration possibilities for different helicopter types, the modular Reality H simulator comprises a docking station and a dome-mounted visual system coupled to a six-axis electrically operated motion system. Interchangeable modules representing the cockpit of each simulated helicopter are then slotted into the docking station. The instructor station module provides an optimised forward-facing view of the crew undergoing training. The direct-projection visual system offers a wide 210° x 70° field of view combined with high-resolution geo-specific imagery from the ThalesView image generator.

The instrument panel and flight controls support different helicopter configurations using highly realistic simulated instruments or graphic displays and simulation models derived from real helicopter data.

As well as helicopter flight training and recurrent proficiency training, the simulator will be used for specific missions such as SAR (Search and Rescue), HEMS (Helicopter Emergency Medical Services) and offshore oil & gas operations.

The Reality H helicopter simulator has achieved dual FTD level 3 and FFS level B certification by the French civil aviation authority (DGAC) in line with the European Air Safety Agency's CS-FSTD(H) standards.

Boeing to Maintain US Navy Maritime Patrol Aircraft Trainers

December 5, 2012
ASD News

New 5-year contract includes maintenance on training devices for 6 platforms

Boeing [NYSE: BA] will maintain U.S. Navy aircrew training devices for six aircraft types under a new $56 million contract, setting the stage for the company's expansion into trainer maintenance for militaries worldwide.

The five-year contract, which began Dec. 1, involves P-3C, EP-3, P-8A, EA-6B, EA-18G and SH-60B training devices. They are located at Naval Air Station (NAS) Jacksonville, Fla.; Marine Corps Air Station Kaneohe Bay, Hawaii; NAS Whidbey Island, Wash., and Kadena Air Base, Japan.

"This addition to our portfolio is strategically important as we bolster our maritime patrol trainer maintenance business, especially internationally," said Mark McGraw, Boeing vice president for Training Systems and Government Services.

Under a separate Navy contract, Boeing will deliver training systems for its P-8A aircraft to NAS Jacksonville next year. Other sites will follow as that program moves into full-rate production. Boeing will provide trainers and all support functions for U.S. Navy P-8A aircrew training.

Barco Partners with ST Electronics Training & Simulation Systems

December 5, 2012
ASD News

Visualization pioneer Barco announced today that it has signed a Service Partnership Agreement with ST Electronics (Training & Simulation Systems) in Singapore to provide first-level support services for Barco's Training & Simulation products in the Southeast Asia region.

Barco provides high-quality display systems for training and simulation programs in a number of markets, ranging from flight and air traffic control to ship navigation and driving instruction. As Barco's Training & Simulation business is growing rapidly across the Southeast Asia region, the company has decided to work with a local service partner to provide customers with top-quality service and support more efficiently.

ST Electronics (Training & Simulation Systems) is well established as one of the largest systems integrators for simulation display systems in Southeast Asia. As part of the partnership, Barco will provide regular in-depth product training to ST Electronics (Training & Simulation Systems) engineers, and in turn ST Electronics (Training & Simulation Systems) will stock spare parts and consumables for Barco's products.

Aaron Koh, Deputy Air Business Division Manager, ST Electronics (Training & Simulation Systems), commented: "ST Electronics is very pleased to have Barco as a partner in our region. We will provide Barco customers with expert first-level service support during regular office hours, on-site intervention, and problem diagnosis. In the area of hardware support, we will also provide support for consumables and parts."

"This service agreement covers six countries: Singapore, the Philippines, Pakistan, Thailand, Vietnam and Myanmar," added Glenn De Vos, Director Customer Services, Barco Simulation. "Most of Barco's SIM series of simulation projectors are included in this agreement. We are very excited to have ST Electronics (Training & Simulation Systems) as a partner – their skills will help us fulfill our commitment to provide our customers with the very best services."

Thales Wins MASTER Contract for Training in Deployment and Operation of Transmission Networks

December 5, 2012
ASD News

The French defense procurement agency (DGA) has awarded Thales the MASTER contract (Moyen Adapté à la Simulation des Transmissions en Réseaux) to design, deliver and support a transmission network simulator. The MASTER simulator will enable the training of French Army personnel responsible for deploying components of the RITA system (Réseau Intégré des Transmissions Automatiques) in all the relevant operational environments.

MASTER will combine simulation techniques with actual transmissions to support training in the deployment and operation of transmission networks at the French Army's signals academy (ETRS) in Rennes and at signals regiments.

The MASTER simulator will be operational and made available to the ETRS signals academy in May 2014, following a qualification period of several months. The contract also calls for through-life support for three years from 2014.

MASTER will provide instructors with the facilities they need to run exercises in the form of operational scenarios as well as assess trainees and perform end-of-course debriefing. By connecting to MASTER and the exercises developed by the ETRS signals academy, regiments will benefit from the simulated network environment, avoid the need to deploy real equipment in the field, generate substantial savings and minimize the ecological footprint of their preparations.

MASTER will replace the SEMSIC simulator, previously implemented for the instruction and training of personnel in the use of the RITA network. Building on the expertise gained through the SEMSIC system and incorporating a number of significant advances (databases, usability, additional links, etc.), MASTER covers the management of friendly and hostile forces. Focused on training in a joint forces environment, MASTER effectively combines the technological functionality of tactical networks with human factors during operations to enable signals personnel to master these critical capabilities in readiness for actual deployments in the theater. With this new simulator, Thales is providing its customers with the advanced functionality and effective support they need to meet their long-term operational requirements.

CAE Wins Military Contracts Valued at More Than $70 M

December 4, 2012
ASD News

Today at the Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC), CAE announced it has won a series of military contracts valued at more than C$70 million. They include a contract from the United States Navy to develop two MH-60R tactical operational flight trainers (TOFTs) for the Royal Australian Navy under a foreign military sale program, a contract from the Australian Defence Force to provide King Air 350 simulator services, and a contract from the Royal New Zealand Air Force to provide C-130 training.

"CAE has a long history of providing the Australian Defence Forces with world-class flight simulators and training services, and we are pleased our MH-60R training systems will play a role in preparing the aircrews who will operate Australia's next-generation multi-role naval helicopter," said Gene Colabatistto, Group

President, Military Products, Training and Services, CAE. "Our strong position on programs that have long-service lives ahead of them, such as the MH-60R helicopter, will continue to drive opportunities for CAE's comprehensive portfolio of simulation-based products and services. In addition, our established presence in Asia and the Pacific will provide for growth opportunities as these regions become more important to defence customers worldwide."

CAE was awarded a contract to develop two MH-60R tactical operational flight trainers (TOFTs) for the Royal Australian Navy under the United States foreign military sale (FMS) program. CAE USA will be the prime contractor responsible for the design and manufacture of two MH-60R TOFTs that will be delivered in 2015 to HMAS Albatross, located near Nowra in New South Wales and home of the Royal Australian Navy's Fleet Air Arm.

The MH-60R TOFTs include both a full-motion operational flight trainer (OFT) that will be used to train Royal Australian Navy MH-60R pilots and co-pilots as well as a weapons tactics trainer (WTT) to be used for training rear-crew sensor operators in the MH-60R Seahawk helicopter. The MH-60R operational flight trainers for the Royal Australian Navy will include the CAE True electric motion system, motion seats, 220-degree by 60-degree Barco visual display, and the CAE Medallion-6000 image generator. The MH-60R OFT and WTT can be operated as standalone training devices, or networked to become an MH-60R tactical operational flight trainer to provide a total aircrew mission training system. The MH-60R TOFTs for the Royal Australian Navy are based on the MH-60R TOFTs that CAE is delivering to the U.S. Navy.

CAE Australia will support CAE USA in the development of the Royal Australian Navy's MH-60R TOFTs by customizing and leveraging Australian-specific common databases (CDB) already developed by CAE Australia for other programs in Australia.

The Commonwealth of Australia selected the U.S. Navy's MH-60R Seahawk helicopter as their new multi-role naval combat helicopter last year to fulfill the Australian Defence Force's AIR 9000 Phase 8 requirement. Australia is acquiring a fleet of 24 MH-60R Seahawk helicopters via the U.S. Government's FMS program. This is the first-ever procurement of the U.S. Navy's most advanced anti-submarine and anti-surface warfare helicopter outside the United States. The U.S. Navy is supported by Team Seahawk, which consists of MH-60R airframe manufacturer Sikorsky Aircraft, mission systems integrator Lockheed Martin, engine manufacturer GE, sensor supplier Raytheon Corp., and training supplier CAE.

Royal Australian Air Force

CAE has signed a contract with the Australian Defence Force (ADF) to provide Hawker Beechcraft King Air 350 training until 2018. CAE will deploy a CAE 5000 Series full-flight simulator (FFS) representing the King Air 350 with Proline II configuration to a training facility in Sale, Victoria. Under terms of the contract, CAE will provide simulator services for Royal Australian Air Force (RAAF) and Royal Australian Navy (RAN) King Air 350 aircrew who train on the aircraft for a range of missions, including tactical support, maritime surveillance and light transport.

"The simulator services provided by CAE will play a key role in the cost-effective training of RAAF pilots, air combat officers and RAN aviation warfare officers," said GPCAPT Gregory Hoffmann, Officer Commanding Training Aircraft Systems Program Office (TASPO).

The CAE 5000 Series King Air 350 FFS will be qualified to Level D, the highest certification for flight simulators, by Australia's Civil Aviation Safety Authority (CASA). The King Air 350 simulator services will support the RAAF's No. 32 Squadron at RAAF Base East Sale, as well as the School of Aviation Warfare (SAW). This will be the second King Air 350 FFS that CAE has deployed in Australia, following the inauguration in July this year of a King Air 350 ProLine 21 FFS in Melbourne. CAE has commenced delivery of training services to the RAAF's No. 38 Squadron using this simulator.

CAE has signed an agreement with the Netherlands Ministry of Defence (NLMoD) to market and sell third-party training services on a CAE-built C-130 Level D full-mission simulator. The C-130 full-mission simulator, which CAE delivered for the Royal Netherlands Air Force (RNLAF) in 2010, is currently housed at CAE's Amsterdam Training Centre in Hoofdorp. In addition, CAE has signed a contract with the Royal New Zealand Air Force (RNZAF) to provide comprehensive C-130 training. The RNZAF C-130 aircrews will receive simulator instruction from CAE at the Amsterdam Training Centre, including training on the RNLAF C-130 simulator that closely matches the configuration of the RNZAF's upgraded fleet of C-130H aircraft. The RNZAF also trains in-country on a CAE-built C-130H flight training device, which CAE delivered to the RNZAF base in Auckland under the C-130 Life Extension Program (LEP) and is currently upgrading for the RNZAF.

Pilatus Signs Agreement with Rockwell Collins for Simulation and Training Systems

December 4, 2012
ASD News

Pilatus Aircraft Ltd. has selected Rockwell Collins to provide simulation and training products and systems as part of a long-term agreement announced today. The first programs to launch under the agreement will include Rockwell Collins providing its EP-8000 and EP-80 image generators and SpectraView™ displays for customers in Asia and the Middle East.

“Pilatus chose Rockwell Collins based on our track record as a proven integrator of the most advanced simulation and training products,” said LeAnn Ridgeway, vice president and general manager of Simulation & Training Solutions for Rockwell Collins. “We back that up with our flexible approach and by supporting our systems with the global reach of our engineering and operations teams.”

The Rockwell Collins EP®-8000 image generator system introduces a new paradigm for high-end training applications. It combines groundbreaking realism and performance with a scalable, adaptable design that meets the most complex training requirements now and in the future – at the lowest life-cycle cost.

The Rockwell Collins EP®-80 employs breakthrough, second-generation EP2 (environment processor) real-time software to provide full functionality within a high-resolution, round-earth environment. Compatible across the complete line of EP image generators, the EP-80 enables customers to combine COTS PC training devices with high performance systems, yielding a wide array of training capabilities that share common real-time software, databases and host interfaces.

SpectraView displays are ideal for fast-jet, wide-body and rotary-wing flight simulation applications. Its scalable solutions range from small radius, compact projection systems to sophisticated multi-channel full field-of-regard domes.

At the forefront of technology, Rockwell Collins continues to enhance training effectiveness by providing the most advanced training solutions with the lowest cost of ownership. By leveraging strengths in avionics systems development and training systems design, Rockwell Collins delivers total integrated solutions. The company’s diverse portfolio spans the entire training life cycle, from instructional systems design through fully integrated, high fidelity training systems and support.

LM Delivers 1st US Army Digital Range Training System

December 3, 2012
ASD News

Lockheed Martin [NYSE: LMT] delivered its first Digital Range Training System to the U.S. Army for live fire gunnery qualifications by armored vehicle crews and has begun development on a third range under a $13.8 million contract award.

The Digital Range Training System provides a realistic combat environment for Abrams, Bradley and Stryker crews. The initial range is now operational at Fort Bliss, Texas. A second range is on schedule for delivery to the Pohakuloa Training Area, Hawaii, in early 2013.

The Army also awarded Lockheed Martin a contract for a third range in September 2012 for delivery to Fort Bliss by the end of 2013.

“The quality of feedback a soldier and platoon receive about their decisions can make the difference for survivability and mission success in the field,” said Jim Weitzel, vice president of training solutions for Lockheed Martin’s Global Training and Logistics business. “The Digital Range Training System is designed to capture imagery and audio inside and outside vehicles from multiple angles, providing commanders and soldiers with actionable data.”

Lockheed Martin won the five-year Digital Range Training System contract in 2011 to modernize training ranges with digital instrumentation, including cameras, targetry systems with audiovisual effects, scenario development technology and range control centers. During individual and crew qualification exercises and platoon-level collective training, the system integrates live fire with threat, neutral and friendly simulations.

Boeing and JVC Add More Realism to Military Training Simulation

December 3, 2012
ASD News

This week at the 2012 Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) in Orlando, Boeing [NYSE: BA] is demonstrating new technology with its Constant Resolution Visual System (CRVS) that allows the system to deliver almost four times the resolution of high definition for more realistic and effective military training.

JVC's new e-Shift 8K projection technology brings CRVS' visual acuity closer to 20/20 while keeping the system’s projector small and affordable. It nearly doubles a projector’s resolution horizontally and vertically, approaching 8K performance from a 4K device.

"CRVS previously provided the highest-resolution, lowest-cost solution on the market," said Barry Kuhlmann, Visual Systems engineering manager at Boeing. "Now, with JVC e-Shift 8K projectors, CRVS has taken another leap forward in visual performance and fidelity to better prepare military pilots by allowing them to train in a more realistic yet safe environment."

"We believe that image quality counts, whether it’s for entertainment, education or next-generation flight training," said Rod Sterling, chief engineer, JVC Technology Center. "We designed our e-Shift 8K projector to register down to 1/16th pixel accuracy to provide the unparalleled clarity and sharpness that Boeing customers demand."

CRVS provides constant target visibility throughout the entire field of vision by surrounding the pilot and cockpit in an eggshell-like environment that visually transforms into cities, landscapes and complex combat scenarios. JVC e-Shift 8K projectors further enhance the training experience and enable pilots to identify targets at real-world ranges.

CRVS is compatible with a wide range of fast jet and rotary-wing cockpits and aviator night vision goggles, and easily integrates with current and future head-mounted displays. Existing CRVS customers can upgrade to JVC e-Shift 8K without modifying screens or structure.

Elbit Announces Details of Flight Training Center for Future Trainer Aircraft Program

December 3, 2012
ASD News

Elbit Systems Ltd. announced the details of its flight training center, which it will establish and operate as part of the Israel Ministry of Defense (IMOD) contract awarded in September 2012 to TOR - Advanced Flight Training, a jointly-owned company of Elbit Systems and Israel Aerospace Industries. TOR was established to carry out the Israeli Air Force's (IAF) future trainer aircraft program for the Aermacchi M3461 training aircraft.

With the introduction of the M346I trainer aircraft, more emphasis will be given to ground-based training for the IAF's flight school cadets, combat pilots and navigators. Elbit Systems' ground training center will incorporate a wide variety of cutting edge trainers and simulators while offering the experience of real flight. The cadet pilots and navigators will drill skills ranging from basic familiarity with the aircraft to the highest level of combat flight competence. In addition, Elbit Systems' array of training aircraft simulators will enable flight school cadets to practice unusual and emergency flight procedures, and at a more advanced level, to simulate complex combat scenarios acting as solo pilots or as part of a formation. The ground-based flight training center is expected to begin operation in mid-2014.

Once ground-based training is completed, the cadets will proceed to airborne training using Elbit Systems' EVATM (Embedded Virtual Avionics) which allows the trainee to gain vital experience operating advanced systems, such as radar, optical sensors and early warning systems, as well as virtual weapons.

Elbit Systems' Aerospace Division's VP for Training and Simulation, Alon Afik, commented: "Once again, Elbit Systems is honored to play a part in the training of the IAF's flight school. The selection of this array of flight trainers and simulators for the IAF's new trainer aircraft is yet another vote of confidence in our extensive training and simulation capabilities."

Blending combat experience with today's innovative simulation technologies, Elbit Systems offers operational and tactical, virtual and embedded trainers and simulators to leading air forces worldwide. Our modular, flexible training solutions for airborne systems are designed to evolve and grow with customer needs. We offer computer-based trainers, partial task trainers, full mission trainers and complete training centers that comprise mission planning systems, simulators and debriefing systems. Our advanced combat training system introduces a cutting-edge training concept for lead-in trainers as well as fighter aircraft. Based on data link technologies incorporated into navigation and display systems, the system generates virtual sensors and systems as well as multiple types of threats – both airborne and ground. We provide customized training and ongoing logistic support solutions for virtually any platform type.

CAE Launches Dynamic Synthetic Environment Capability

December 3, 2012
ASD News

Dynamic, persistent, scalable and open synthetic environment enhances realism for virtual mission rehearsal and decision support

Leverages common database (CDB) architecture

Today at the Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC), CAE introduced a next-generation capability and solution called the CAE Dynamic Synthetic Environment(TM).

The CAE Dynamic Synthetic Environment is an integrated solution combining an architecture based on the shared, public CDB specification; content creation software tools from both Presagis and CAE; core DSE simulation software; and DSE-enabled products such as image generators and computer-generated forces software. This seamless, integrated solution is designed to create a virtual synthetic environment that more accurately and realistically simulates the real world.

"We are introducing a capability that we believe represents the future of how synthetic environments will need to serve defence forces in an integrated live, virtual and constructive environment over the next decade and beyond," said Marc St. Hilaire, Vice President, Technology and Innovation, CAE. "There is no doubt defence forces must increasingly leverage simulation for mission training, rehearsal and decision-support because of its flexibility and inherent cost advantages. Extending the use of simulation requires a synthetic environment that lives, breathes and changes just like the real world and that's what the CAE Dynamic Synthetic Environment delivers."

CAE continues to develop the fundamental architecture and framework for a dynamic synthetic environment, which began more than two years ago as part of an internal research and development (IRAD) program. The company has established several objectives that the CAE Dynamic Synthetic Environment needs to address, including:

Dynamic - the synthetic environment database must have the ability to change anywhere in the world in real-time without advance preparation;

Persistence - once the synthetic environment changes as a result of any interaction with simulations such as weather or a weapons detonation, those changes must be able to "persist";

Scalable - the synthetic environment needs to support single users on a mobile or laptop-based system all the way up to large, distributed live-virtual-constructive federations;

Open - the underlying database architecture must be based on an open specification such as the CDB to enforce correlation and interoperability.

"The fact is that synthetic environment databases today are static, and to change them requires significant time, effort and money," said St. Hilaire. "With the CAE Dynamic Synthetic Environment capability, whether it is weapons, combat engineers, weather or the latest intelligence from the real world, all of this can be reflected in a dynamic synthetic environment."

Adacel and Simlat Announce Collaboration

November 29, 2012
ASD News

Simlat Ltd., renowned for its cutting-edge UAS training solutions, and Adacel, an industry leader in Air Traffic Control (ATC) simulation and training, has recently announced a mutual collaboration. The initial collaboration will include integration of Simlat's flagship products, the STAR/C-STAR UAS trainers, with Adacel's Air Traffic Control in a Box (ATCiB) simulator.

Simlat announces collaboration with Adacel, including integration of Simlat's STAR/C-STAR (UAS Training Systems) products with Adacel's ATCiB simulator. This collaboration adds an automated air traffic control environment to UAS simulation, providing a more realistic and immersive training environment for the UAS operators, a most relevant issue as for the integration of unmanned aircrafts into the national airspace. The integrated solution is already being used in various projects, and will be displayed at upcoming events.

"The collaboration with Adacel was a natural move for Simlat," says Yuval Peshin, Simlat President. "With unmanned aircrafts' nearing integration to the national airspace, training for all players in this domain is more essential than ever. The C/STAR integration with the ATCiB is the first step toward achieving such training in a high fidelity environment for operators and controllers alike. We are proud to work with Adacel and believe that this initiative will be good for the customers of both companies".

"The integration of Simlat's UAS Training systems with Adacel's automated ATC environment is an exciting extension of Adacel's technology and will provide a significant increase in training capability for UAS operators." says Seth Brown, Adacel CEO. "We must recognize that to safely extend UAS operations into any national airspace, UAS operators will need immersive training tools that include a realistic air traffic control simulation. Our collective solution is a natural evolution in the training environment. We are very excited to be working with Simlat on this endeavor".

1-6 Infantry Evaluates Maneuver Capabilities of Motorcycles, ATVs During NIE 13.1

November 28, 2012
ASD News

Soldiers from 1st Battalion, 6th Infantry Regiment, 2nd Brigade Combat Team, 1st Armored Division, are evaluating how motorcycles and all-terrain vehicles can help the maneuverability of Soldiers during reconnaissance missions conducted in scenarios during Network Integration Evaluation 13.1.

Soldiers from 2-1 AD provide immediate feedback that allows U.S. Army Training and Doctrine Command, or TRADOC, to assess concepts, identify implications, and enables Army Test and Evaluation Command to assess the technical performance of materiel technologies.

Capt. William Branch, a commander for C Company, 1-6 Inf., said as far as warfighting functions are concerned, the use of motorcycles and all-terrain vehicles, or ATVs, addresses the maneuver side of the house because they allow the dismounted Soldier to get from point A to point B without any kind of fatigue.

"It leaves him ready to take the fight to the enemy when he finally gets to his location," said Branch. "It also allows for him to move stealthily through the battlefield in the event that he is establishing an [observation post] as maybe a scout -- he can infiltrate inside and outside enemy lines using his motorcycle and not be very visible audibly to the enemy."

Soldiers said the motorcycles and ATVs are an integrated base defense mobility package that allows them to conduct reconnaissance and patrols around their perimeter to make sure it is safe.

"Once we have identified targets and have collaborated those with the systems that we have, we're able to use the motorcycles and ATVs to go out and make contact with that enemy," said Branch.

Pfc. Joshua Doster, a tanker with 1-6 Inf, who is one of the Soldiers testing the motor vehicles, said he feels the motorcycles and ATVs will increase the range of tasks Soldiers can perform in the area of scouting missions and area reconnaissance.

"Just being a smaller vehicle [it is] able to move under cover without the noise and the profile of a lot of these larger vehicles that we've been using," said Doster.

Branch said the integrated base defense system is in Afghanistan but it's not integrated with motorcycles and ATVs.

Elbit Systems Delivers ISTAR Trainers and Armored Driving Trainers to IMOD

November 28, 2012
ASD News

Elbit Systems Ltd. announced today the delivery of two ISTAR (Intelligence, Surveillance, Target Acquisition and Reconnaissance) Trainers to the Israel Ministry of Defense (IMOD) for the training of surveillance and observation activities to be carried out on Israel's borders. Elbit Systems will also supply Armored Driving Trainers (ADTs) for combat vehicle training during the first quarter of 2013.

Elbit Systems' ISTAR Trainer is a combat support and field intelligence trainer, designed to enable full simulation of real-life battlefield situations for Forward Observers ("FOs") and sensor operators posted in all types of terrain, performing border control and protection activities. The ISTAR Trainer allows FOs to practice joint strike and reconnaissance missions. The scenarios offered by the ISTAR Trainer are realistic situations depicting the actual borders to be observed by each FO. Interoperable with C4I and communication systems, the scenarios include fire planning, ranging and field operation as well as target detection, recognition, identification, acquisition and engagement in diverse environmental conditions, while using a wide variety of day and night sensors. The ISTAR Trainer is already in use; training new users and maintaining the operational readiness of those professionals already in service.

The Armored Driving Trainer (ADT) is mounted on a 6 DOF (Degree Of Freedom) moving platform specifically designed to provide drivers of combat vehicles with a highly realistic driving experience. The system supports driver training in a wide range of combat and non-combat scenarios, as well as in diverse weather and harsh field conditions, thus creating vital practice situations, such as driving under enemy fire or on dangerous slopes. The ADT is cost effective; saving time and expense, while providing mobile, scalable and modular deployment, multi-platform type support and a network-based and user-friendly interface. Since receiving the current order for ADTs from the IMOD, Elbit Systems has received additional ADT orders from international customers.

Elbit Systems Aerospace Division's VP - Training and Simulation, Alon Afik, commented:" "These orders for Armored Driving and ISTAR Trainers position Elbit Systems as a front runner in providing multi-faceted training technologies, such as border protection simulation, sensor simulation and C4I training."

CACI Awarded $31 M to Provide Training and Simulation Support to US Army Reserve

November 26, 2012
ASD News

CACI International Inc (NYSE:CACI) announced today that it has been awarded a $31 million task order contract to provide simulation and training solutions to the U.S. Army Reserve Command on the Mission Command Training Support (MCTS) program. The award is for three years (one base and two option years) and was issued against the OPTARSS II (Operations, Planning, Training and Resource Support Services) contract vehicle. This new work strengthens CACI's business in the training and operations arena as well as its presence in its C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) market.

The U.S. Army Reserve Command controls and supports all Army Reserve troop units in the continental United States and prepares them for mobilization and deployment. For the MCTS program, CACI will help integrate live, virtual, and constructive simulations with Army Mission Command systems, giving commanders a better situational understanding of unit activities and capabilities in theater. CACI is providing pre- and post-mobilization training support that includes developing scenarios for battle simulations and integrating these scenarios with the Reserve Command's digital systems, networks, and infrastructure.

As a major provider of training development services, CACI is especially qualified to perform this work and has the capability and experience to deliver mission-oriented training solutions that meet Department of Defense standards. CACI also has an in-depth understanding of the U.S. Army Reserve Command's mission as well as the applications and functionalities of its C4 systems.

According to John Mengucci, CACI Chief Operating Officer and President of U.S. Operations, "CACI is uniquely suited to support the U.S. Army Reserve Command on the Mission Command Training Support program. Throughout our more than 50-year history, we have excelled at providing modeling and simulation solutions for the Department of Defense and U.S. forces."

CACI President and Chief Executive Officer Dan Allen said, "This new work with the U.S. Army Reserve Command grows CACI's training capabilities and increases our footprint in our C4ISR market. It is a strong demonstration of our success in pursuing new business that aligns with our nation's highest priorities — in this case, assuring mission readiness for our armed forces."

Aptima's SPOTLITE Gives Instructors All-in-One Mobile Performance Measurement

November 26, 2012
ASD News

An instructor watches an infantry exercise with an expert's practiced eye, but in trying to capture vital training feedback misses the action itself. To solve this problem, Aptima has created SPOTLITETM, performance measurement software for mobile devices that allows instructors to collect, analyze, and visualize human performance data for immediate debrief and trend analysis.

The SPOTLITE app, which runs on Android-based tablets and smartphones, gives observers an all-in-one, hand-held tool for easily and precisely measuring individuals and teams during live and simulated training exercises. Marrying robust performance measurement software with the intuitive interface of touchscreen devices, instructors can uninterruptedly rate, video, and tag trainee performance in real-time, then with single-button control, deliver thorough feedback and after-action reviews.

"Observers play an essential role because they see the skills in action that are most relevant to a soldier's readiness. The friction occurs in trying to capture and revisit the details of an exercise to impart improvement," said Davey Lind, Senior Military Analyst with Aptima and Master Sergeant (Ret.) U.S. Marine Corps. "You don't want to be looking down to take notes or try to recall from memory the nuanced behavior of trainees negotiating with a crowd of hostile nationals. If we can give instructors a tool to streamline measurement, to better show and tell their feedback, and help keep their eyes on the exercise, we'll improve training."

SPOTLITE in action

Whether evaluating team collaboration in an Air Operations Center or a live field exercise, using SPOTLITE is as simple as thumb-tapping preconfigured menu buttons. Holding a tablet like a game controller, the observer can rate key performance variables, shoot photo or video, and make annotations, all while staying focused on the scenario, without juggling tasks or looking down to take notes.

SPOTLITE's interface and controls are designed around the unique requirements of the training environment. Observers can quickly respond to distinct scenarios, such as a dynamic target or simulated IED attack, by selecting an event from a list. Measures for the live or LVC exercise then populate the navigation panel for rating by the observer. Should performance or training conditions fall outside of specified ranges, SPOTLITE can cue the user to collect additional data.

After the live or simulated exercise, follow-on screens let the observer examine the assessments and highlights, roll-up, and aggregate scoring. "A significant payoff in improving trainee performance comes from delivering immediate, accurate, and thorough on-the-spot feedback. SPOTLITE provides instructors all those tools, eliminating the subjectivity, biases and holes that come from incomplete documentation, relying on recall, and 'in head' averaging," said Ryan Marceau, Aptima's Training Systems Team Lead.

Soldiers At NIE Run Network Equipment Through Life-Like Combat Scenarios

November 26, 2012
ASD News

Testing networked equipment in a lab ensures functionality, but only a field evaluation with Soldiers ensures it will work as designers intended in an operating environment.

At Fort Bliss, Texas, and on its training ranges just north of the border in New Mexico, Soldiers with the 2nd Brigade, 1st Armored Division, completed Network Integration Evaluation 13.1, Nov. 17. During the month-long Network Integration Evaluation, or NIE, Soldiers in a field environment tested and evaluated 26 pieces of equipment for their usability and compatibility with existing Army networks.

Soldiers with the 2/1 AD, part of the Army's Brigade Modernization Command, or BMC, are not evaluators or equipment testers by trade. They are a regular, warfighting, combat-training brigade combat team that could be tasked to go to Afghanistan like every other Army brigade.

The difference is, when the 2/1 AD trains, the Soldiers are tasked to include in their preparations new equipment the Army wants to integrate across the larger force, to make sure it is combat-ready and Soldier-usable, and to evaluate its readiness to be integrated into existing systems before it is fielded to other units.

"The NIE is about taking the equipment that's been nominated to fill what the Army deems as a gap in what our capabilities (are), and putting it into the hands of real Soldiers, Soldiers trained to deploy and fight," said Lt. Col. Andy Morgado, the G-3 operations officer for the Brigade Modernization Command. "They are a FORSCOM brigade that has been put on loan to the BMC to do this very thing. We put this equipment into a realistic environment, and try to break it, and see how it works. That's what we're trying to do."

Among the equipment at the most recent NIE were 21 systems under evaluation, and five systems under "test," including Nett Warrior; Joint Battle Command Platform; RAM Warn; and Spider XM7. Additionally the Paladin PIM was under test at Yuma Proving Ground, Ariz.

NETT WARRIOR

"Nett Warrior is for battlefield communication, like a 'Blue Force Tracker' on the ground," said Staff Sgt. Alex Carter. "It lets you know where team leaders and above are. The effects it has on the battlefield are amazing. For something as new as it is, I thought there would be a lot more glitches. I thought it would be just another piece of junk. But I'm very impressed by it."

The Nett Warrior system includes an Android-driven, smartphone-like device mounted to a Soldier's chest and attached to a radio system. Using applications installed on the system, Soldiers at team-level and above can see the mapped-out locations of other Soldiers wearing the device, communicate with each other via text message, as well as have visibility of "chem lights" dropped onto the mapped environment by other Soldiers to mark things such as improvised explosive devices or locations that require fires support. The markers can also designate locations where a platoon leader might want a team to move, for instance.

"Sometimes towns are very condensed," he said. "With this you can tell exactly where Soldiers are. Every step you take you are a little bubble, you are a blue arrow. It shows exactly. When a team is bounding across the objective, you just pull this out and look at it. It's real-time, it's real effective."

Carter said he's impressed with the system, "you can send up a 9-line (medical evacuation request) in less than 30 seconds," he said. And he's also impressed with the texting function. It would have been a "combat multiplier" for him during the 29 months he served in Afghanistan.

"If you don't have comms, you can still send text via satellite: this is our position, we're holding here, here's our liquid, ammunition, casualty and equipment report," he said. "You can get [operations] orders, fragmentary orders, whatever you want through text messages. That way you're not clogging up the radio net."

Capt. Josh Horner, Alpha Company commander, 1/35 Armor Battalion, said the system has created a better common operating picture between himself and his platoons. But he's also got some suggestions about the system -- things that need to be improved.

"There are some shortcomings in the system at this point," Horner said. "I'm on a classified system, my platoon leaders are not on a classified system. So I can't talk to them. If I want to drop some sort of information on my Net Warrior device, they are not getting them. So I call them up on voice communications."

Both Horner and Carter agree the Nett Warrior needs more graphic symbols on the screen, and in more colors, to differentiate a wider array of things for Soldiers to take note of when using the system.

"There's not enough graphics on there so I can correctly identify," he said. "When you look at the operating picture, you got all these different colored dots all over the place. And unless you have really good SOP within your unit, you might not know what they are. I'd like to make it clearer what they are."

Having something to say about the equipment they are using is something expected of both Horner and Carter during the after-action reviews and formal surveys that follow their evaluation of the system; because they are not just training for combat at Fort Bliss -- they are evaluating the systems they may eventually take with them to combat.

Still, Carter said, "It's very quick, and it's probably the best combat multiple I've ever see. This thing; I stand by it 100 percent."

JOINT BATTLEFIELD COMMAND PLATFORM

Billed as the "next generation" of Force XXI Battle Command Brigade and Below, which is known as FBCB2, the Joint Battlefield Command Platform, or JBC-P, system has a redesigned graphical user interface and can be used jointly to convey both command and control messages as well as situational awareness.

"It allows us to have more situational control of the battlefield," said Sgt. Joshua Perkins. "We can see what's going on a lot faster, especially where the FBCB2 didn't allow us to see where the dismounts are on the ground. But with the integration of Nett Warrior and JBCP, you can see the dismounts on the ground. It gives us better situational awareness, better information on the battlefield, it's more time-efficient. Overall it's a good program."

Sitting at a JBC-P mounted on the passenger side of a mine-resistant, ambush protected vehicle, or MRAP, Perkins had only one complaint about the system: his plastic stylus for interfacing with it had broken.

"Hopefully most guys will write positive, professional criticism, as well, that way we can take what we learn, keep using that and whatever needs improvement they can fix and then send back out for us to re-evaluate," he said.

GLOBAL NETWORK ON THE MOVE ACTIVE DISTRIBUTION

The Global Network on the Move Active Distribution system, or GNOMAD, is a modular, scalable, broadband satellite communications on-the-move system of systems capable of supporting mission command on-the-move.

"The GNOMAD is actually a very fascinating device in that it can be used in multiple functions," said 1st Lt. Zachary Taylor. "We use it two ways. The primary way we are using it throughout this operation is in an on-the-move capability. Every mission we are going out, platoon-wise, company-wise, STX (situational training exercise), we are actually pushing out as a command and control element. We are using it on a trail vehicle, we're using it as a relay station from the platoons to company, and company to higher echelons, such as battalion and brigade."

The GNOMAD system can be used on the move, or in a tactical operations center, Taylor said, though he said in future operations, he sees it as "more of a mover."

"My experience with GNOMAD, and running it on STX lanes, is that it provides us with more eyes on the ground, and also more intelligence assets at the fingertips of the commander and of the platoon leader on the ground," he said. "The GNOMAD will improve the command and control on the ground, which will also improve the situational awareness, and allow commanders to make a better decision, more quickly. In my opinion, it is a plus for the Army."

ROAMER NET

Taylor and his Soldiers are also evaluating the "Roamer Net" system, which allows companies and platoons to communicate with outside units tasked to support them. One example might be if a support aircraft comes in to their area of operations.

"A bird comes into our battle space, they contact me, and I push them out over the company network," Taylor said.

With Roamer Net, Soldiers were tasked to answer questions like "What tactics, techniques and procedures did you use to operate and sustain a Soldier Radio Waveform/Roamer Network?" And "How reliable was the Roamer Network at supporting air-ground data/voice communication?"

During training, which Taylor said is his priority in the field, Soldiers will evaluate Roamer Net for how it changes the way they operate -- for good or for bad. Afterward, During after-action reviews, Soldiers -- depending on what equipment was in their unit during training -- will be asked to discuss how things like Net Warrior, GNOMAD, JBP-C, Roamer Net, or any other equipment enhanced or detracted from their mission.

Taylor said Soldiers will need to consider the reliability of a system, how easy it is to use, how often it was operational, how easy it was to bring it back when it went down.

"Once you kind of peel back that onion, you're looking at the meat and potatoes of the operation," Taylor said.

He said each Soldier must answer the question: Can he use it? Can he trouble shoot it?

"When we have an issue, do we have to call field service representatives, or can we learn this operation? Then you can see if it's a burden or an asset for the company. Each piece of the equipment has its pros and cons, and each piece of equipment also provides something new to the company and something new for the Soldier. It doesn't matter if it's at the headquarters element, it provides intelligence all the way down to the lowest Soldiers, and that provides more situational awareness."

Taylor said Soldiers can come easily to learn how to make a piece of new equipment work, to turn it on and to make sure it's connected properly. But the implementation of that system is more complex, he said.

"That's what we're trying to evaluate," he said. "Is the implementation of it and the difficulty of it worth the meat? Or do we need to go back to a more simplistic concept?"

Soldier feedback at NIE comes quickly, said Morgado. Soldiers are in the tactical environment the whole time, on four-day "mission cycles." But on the fourth day of that cycle, he said, they harvest Soldier feedback and collect data from equipment in the field to be evaluated and fed back to 'big Army' to decide which systems need more work, which systems might be ready to move ahead, and which systems might not be so good for the Army.

"We're not waiting until the last day of a 32-day exercise to ask how they felt about something from day one of an exercise," Morgado said.

The most important thing about NIE, Morgado said, is that the data collected there is collected by real Soldiers doing real training -- just like every other Soldier in the Army.

"It's not testers there. It's real Soldiers evaluating this stuff" Morgado said. "The main stuff we're asking our Soldiers from private to brigade commander is, 'will you take this thing to combat?' It's a really realistic and pertinent question for them because they might be taking it into combat. The feedback we get from them is extremely important because it comes from an operator."

Japanese Live-Fire Exercise Builds Partner Capacity for U.S., Japan

By Spc. Adam Garlington
November 22, 2012
ASD News

For the past 48 years, the U.S. and Japan have worked together and conducted missile live-fire exercises during the Japan Ground Self-Defense Force's Annual Service Practice here.

"Missile training isn't able to take place in Japan because of range restrictions," said Maj. Gen. Hisakazu Kakegawa, Japan Ground Self-Defense Force, or JGSDF, Air Defense Artillery School commandant. "Since there is no place in Japan to conduct this kind of exercise, we have been conducting the training for the last 48 years (near) Fort Bliss (Texas) at McGregor Range."

According to Michael Radford, Unit Training and Certification Division chief, the Chu-Sam and Hawk missile ASP, which began Sept. 29 and is on-going through Dec. 15, provides 17 JGSDF fire units the opportunity to test their equipment, validate their training, and gain confidence in their weapon systems by conducting live-fire exercises.

"The ASP is important because it shows our ally that we're confident in their ability to effectively fire their Chu-Sam and Hawk missile systems," Radford said. "The ASP gives the JGSDF units confidence in their weapon systems and their ability to support allies and defend their country."

Kakegawa agreed with Radford's statements that live-fire exercises provide indispensable learning tools that soldiers can take back to Japan to improve their operational capabilities and readiness.

Although the soldiers are here to train, Kakegawa said he wanted them to experience the U.S. culture by interacting with as many people as possible and exploring the local area.

"Through those experiences, I believe they can enlarge their view of life," he explained.

"Teamwork is the key to accomplishing the mission," Kakegawa said. "On behalf of the JGSDF personnel of past, current and future, I appreciate very much our counterparts and host families for supporting our training. Thank you very much."

Thales Simulator Update Supports RAAF Training

November 21, 2012
ASD News

Thales Australia's Wedgetail E-7A Flight Simulator has received a major update to its visual system, which has been granted the highest level of accreditation in Australia.

The new visual system delivers significantly better colour and brightness uniformity, sharper imagery, superior edge blending, and more realistic weather effects. Other benefits include greatly improved reliability, growth potential and lower lifecycle cost.

Thales worked closely with Boeing Defence Australia on the project, which involved replacing the simulator's obsolete calligraphic CRT projectors with Christie Matrix StIM LED DLP projectors and introducing the latest ThalesViewNG image generator.

The accreditation of the new visual system to FSD-1 Level 5 standard means the system is set to support Royal Australian Air Force 2 Squadron for many years to come.

Located at RAAF Base Williamtown, New South Wales, the Wedgetail E-7A Operational Flight Trainer is a key component of the RAAF's Wedgetail AEW&C pilot training program. It is the sole Wedgetail pilot training device used by the RAAF, and delivers realistic and high-quality simulated flight crew operations.

Commanders and Officers in the Royal Netherlands Army will Train in a Variety of Fighting Scenarios with the Help of Elbit New CST

November 20, 2012
ASD News

Elbit Systems Ltd. announced today that it has supplied an advanced training and simulation solution for the Royal Netherlands Army (RNLA). The system enables all levels of staff training with support for joint NATO missions. RNLA operational units will use the system during 2013 for command and staff exercises. In addition, the trainer will facilitate concept development and experimentation (CD&E) as well as mission rehearsal events.

The CST system is designed for training battalion, brigade and higher levels, encompassing a wide range of fighting scenarios - both low and high intensity conflicts, as well as other non-military settings, such as operations other than war (OOTW). Furthermore, the CST enables training for civil-military cooperation (CIMIC) – such as military forces operating with municipal authorities, police and medical organizations such as the Red Cross.

Situated at operational headquarters, the CST's advanced high level architecture makes it suitable for the specific needs of every trainee and combines full training with qualitative debriefing. The simulation integrates with command, control and communications systems using Battle Management Language (BML) protocols. With the help of a user friendly interface and advanced artificial intelligence, the trainer also enables minimal use of personnel and thus lowers training costs as well.

Elbit Systems operates across the entire spectrum of military training and simulation systems, in Israel and throughout the world, utilizing its advanced technological capabilities, particularly in the area of software for complex project systems, as well as in the upgrade of military platforms.

SAIC to Provide Exercise Design and Control Support to the FEMA National Exercise Division

November 15, 2012
ASD News

Company to Support National Preparedness Across Homeland Security Enterprise

Science Applications International Corporation (SAIC) (NYSE: SAI) announced today it was awarded a prime contract by the Federal Emergency Management Agency (FEMA) to provide exercise design and control support services to the FEMA National Exercise Division (NED) to enrich the National Exercise Program (NEP). The single-award, cost-plus fixed-fee contract has a one-year base period of performance, four one-year options, and a total contract value of approximately $39 million, if all options are exercised.

The NEP base plan is the foundation for FEMA's collective effort to assess and evaluate national preparedness across the homeland security enterprise. Under the contract, SAIC will provide exercise design and control

support services to the NED, including Homeland Security Exercise and Evaluation Program (HSEEP) compliant support to the Federal Interagency and whole community at the national, state, territorial, tribal and local levels over the course of the NEP two-year cycle.

"We look forward to providing design and control support services to the National Exercise Division to enrich the National Exercise Program and enhance the nation's collective capacity to confront threats and hazards," said JT Grumski, SAIC senior vice president and business unit general manager.

"This win demonstrates SAIC's understanding of the National Exercise Program mission for examining preparedness and measuring the readiness of the United States across the entire homeland security enterprise through a progressive cycle of all hazard exercises," said Michael Simms, SAIC senior vice president. "It reflects both the strength of our exercise design and control capabilities as well as our commitment to enhancing the nation's preparedness."

USS Nimitz Completes Joint Training Phase

November 14, 2012
ASD News

JTFEX is designed to test a strike group's ability to operate in hostile and complex environments with other U.S. and coalition forces.

The integrated exercise combines specific warfare areas with the purpose of making preparations for the strike group's upcoming deployment.

"Nimitz, CSG 11 and CVW 11 displayed enormous resilience and competence while being tested as an integrated force in the Joint Task Force Exercise," said Commander, CSG 11 Rear Adm. Pete Gumataotao. "I am confident with the integrated training we received we are now fully capable and combat ready to quickly respond to any maritime operation."

More than 8,000 Sailors worked together to hone their operational skills in preparation for their upcoming deployment. Upon completion of the exercise, U.S. Third Fleet Commander, Vice Adm. Gerald Beaman certified the CSG as "major combat operations ready" and ready to deploy. The Nimitz CSG is now postured and capable of supporting any of the Navy's maritime strategy missions prior to its deployment.

"I'm very proud of Warrior Team 11's performance during these past two months of integrated and joint training," said Gumataotao. "We are ready to support our Navy's mission anywhere, anytime."

The Nimitz CSG includes Commander, Carrier Strike Group Eleven (CSG 11), Carrier Air Wing 11 and Commander Destroyer Squadron 23. Ships assigned include: USS Higgins (DDG 76), USS Princeton (CG 59), USS Shoup (DDG 86), USS Stockdale (DDG 106), USS William P. Lawrence (DDG 110), USS Preble (DDG 88) and USS Antietam (CG 54).

Third Fleet leads naval forces in the Eastern Pacific from the West Coast of North America to the international date line and is responsible for providing realistic, relevant training necessary for an effective global Navy.

CSC Awarded $34 M Contract Modification to Upgrade Training Simulation Technology

November 13, 2012
ASD News

The United States Army has awarded CSC (NYSE: CSC) a firm fixed price (FFP) contract modification to upgrade a simulator-based flight and related aviation training device for the U.S. Army Aviation Center of Excellence at Ft. Rucker, Ala. Awarded in the second quarter of CSC's 2013 fiscal year, the contract modification has a six-month base period and ten one-year options, for a total value of $34 million. The contract modifications were awarded under the Flight School XXI indefinite-delivery requirements contract, which CSC won in 2003.

Under the terms of the agreement, CSC will upgrade the Reconfigurable Collective Training Devices (RCTD) to more closely simulate the Block 2 model of the OH-58D aircraft and enhance the interoperability between new and existing technologies.

"Since the Reconfigurable Collective Training Devices reached full operational capability in 2007, the simulation technology has advanced and increased the fidelity of training," said Alan B. Weakley, vice president and general manager of CSC's North American Public Sector Defense Group. "These upgrades will allow the U.S. Army to conduct collective training missions, such as aviation exercises using the Block 2 configuration of the OH-58D Kiowa Warrior aircraft."

Under the Flight School XXI contract, CSC provides cost-effective simulation training in realistic combat environments that supplement the live aircraft experience. Students experience combat conditions in realistic environments on terrain that they will see in the future while learning to fly and fight.

The RCTD allows units to train collectively to most closely simulate the roles and responsibilities of each individual as they relate to the overall situation and includes 18 manned-modules that are representative of and can be reconfigured to U.S. Army aircraft, including the OH-58D Kiowa Warrior, AH-64D Apache, UH-60A/L Blackhawk and CH-47D Chinook.

Sonalysts Awarded Naval Training Products and Services Contract by NETC

November 8, 2012
ASD News

Sonalysts, Inc., an employee-owned national defense contractor, announced it won a prime contract from the Naval Education and Training Command (NETC) to provide various training solutions to the Fleet Training Centers. Each award to Sonalysts and eight other contractors, has a value of $97 million over a 3 year period of performance.

Through this contract, NETC intends to procure training products and services in the five distinct functional areas: Planning and Assessment; Curriculum Development; Curriculum Maintenance; PC Modeling and Simulation; and Program Management and Staff Support. These training products and services will be used by NETC Training Centers to train aviation, surface and undersea personnel.

"This contract extends Sonalysts' 40-year tradition of working with the Navy to ensure our warfighting advantage is maintained. We look forward to applying our training expertise to help sailors and crews improve their knowledge and skills," said Milt Stretton, President of Sonalysts.

CAE Launches UAS Mission Trainer

November 7, 2012
ASD News

Open, integrated product solution designed to meet training and mission readiness requirements in growing unmanned systems market

Today at the Unmanned Systems Canada conference, CAE announced the launch of its UAS Mission Trainer product.

The CAE UAS Mission Trainer combines an open architecture with commercial-off-the-shelf hardware and simulation software to provide a comprehensive, platform-agnostic training system for UAS pilots, sensor operators, and mission commanders.

The CAE UAS Mission Trainer is currently being installed at the UAS Centre of Excellence in Alma, Quebec, where it will be used to train pilots and sensor operators of the Miskam UAS. CAE and Aeronautics are using the Miskam UAS, which is a Canadian version of the Aeronautics Dominator XP, to demonstrate how unmanned systems can be used for civil applications such as remote inspection of pipelines and hydroelectric installations, surveillance of forest fires, observation of critical natural resources and a range of other applications.

"Unmanned systems are changing the nature of warfare and will continue to bring new capabilities to defence forces, and in the future will find a role in civil applications," said Gene Colabatistto, Group President, Military Products, Training and Services, CAE. "To fully leverage the capabilities of unmanned systems requires well-trained pilots and sensor operators, and integrating unmanned systems into the broader distributed mission operations environment. Our UAS Mission Trainer was specifically designed as an open, flexible product ideal for individual, crew, or networked training."

The CAE UAS Mission Trainer is platform-agnostic, meaning the product can be tailored to simulate any specific UAS with any sensor payload suite. Leveraging the common database (CDB) open architecture and commercially available technology, CAE's UAS Mission Trainer is not subject to any international traffic in arms regulations (ITAR) or restrictions. The completely immersive synthetic environment provides capabilities for training as well as mission planning and mission rehearsal. The CAE UAS Mission Trainer is available as an integrated product that includes:

- Ground control station (GCS) that is STANAG 4586-compliant;
- High-fidelity simulation software for sensors such as electro-optical
- (EO), infrared (IR), synthetic aperature radar (SAR), and others;
- Simulated communication systems;
- Simulation software for generating training scenarios;
- CAE Medallion-6000 image generator;
- Tactical synthetic environment and computer-generated forces
- representing maritime, ground and air assets;
- Instructor operator and mission brief/de-brief station;
- Correlated weather simulation.

"By addressing the often difficult integration issues and basing our product on an open architecture and COTS software, we have developed a cost-effective, low-risk UAS Mission Trainer that will help customers train and prepare their UAS mission crews," said Colabatistto.

L-3 Link Simulation & Training upgrades Boeing 777 FFS with ReaLED technology

November 6, 2012
ASD News

Today's commercial aviation operators are looking for cost effective, high-fidelity and stable solutions for visual displays. The brand new Boeing 777 full-flight simulator (FFS) is being manufactured by L-3 Link Simulation & Training UK (L-3 Link UK) at its Crawley, UK facility.

The Boeing 777 FFS uses the very latest projectiondesign® FL35 projectors integrated with RSI Visual Systems' XT4 Image Generators and meets the stringent requirements of Level D Certification.

"L-3 Link UK asked RSI Visual Systems to provide a visual system that was fully compliant and the most cost effective solution. As an integrator of visual systems, RSI has found a lot of interest in using LED-based DLP® projectors. This is mainly down to their superior picture quality, low cost of ownership, and stability of image. Once fully calibrated, the LED projection system does not need to be touched for another 9-12 months."says Ralph Baker, Director, European Business at RSI Visual Systems.

"For this project, what is a real benefit is that three FL35 projectors illuminate 12 million pixels, which enables the RSI XT4 Image Generator to produce a field of view of 200 by 45 degrees collimated display. The increased vertical FOV is in the lower half of the screen and is particularly useful for pilot training when practising circling approaches."

The FL35 from projectiondesign uses no lamp or consumables and is designed to create the world's most stunning image at a pixel precision of 2560 x 1600. With its 2nd generation LED illumination system the FL35 shows the amazing picture at double the resolution and at 50 % higher brightness than any other LED-illuminated projector with an unmatched 100,000 hours life-time of the LED light source.

The projectors utilise adjustable SRP™ smear reduction processing. "The smearing is significantly reduced, thus enabling pilots to read signboards when they are turning on the ground at a greater distance than they would on other types of projectors," explains Baker.

"Our ReaLED technology will provide benefits that support improved operation up-time and drastically reduced maintenance, operating costs, and technical resources," says Maria Dahl Aagaard, Product Marketing Manager at projectiondesign.

SDS to Provide AAcuity IG Under Sub-Contract with Atlanta-based Company MTSI

November 5, 2012
ASD News

SDS International (SDS) will deliver its AAcuity® PC-Image Generator (IG) software to Meggitt Training Systems for use on a UK MoD contract to support implementation of Future Integrated Soldier Technology (FIST) device simulators to the UK MoD's existing Dismounted Close Combat Trainers (DCCT). The device simulators developed and delivered by this contract provide virtual capability enhancements that complement current training and front-line application of live fire FIST devices. Designed and manufactured by Meggitt Training Systems, with ongoing Contractor Logistics Support (CLS) provided by Meggitt Defence Systems Ltd (MDSL), the DCCT remains the primary small arms training system of the UK MoD since 2003. Meggitt delivered the first small arms training system to the British Army in 1992.

The AAcuity® IGs will be provided by SDS International's Advanced Technologies Division, Orlando, Florida as part of the ongoing SDS/Meggitt relationship aimed at maintaining Meggitt's position as a recognized leader in virtual training solutions through use of high-fidelity, PC-based image generation. This delivery represents a significant benchmark in that relationship as it surpasses a total of 3,000 AAcuity® IGs delivered to Meggitt to help ensure cost-effective training using a wide spectrum of simulation training products including Meggitt's CGI-driven Small Arms Trainer (SAT), Indirect Fire Trainer (IFT) and Indirect Fire Forward Air Control Trainer (I-FACT™).

AAcuity® IGs are designed to provide low-cost, high-fidelity scene generation for flight, space, ground and maritime-based training applications using virtually any OpenFlight, Paging OpenFlight or TerraPage database; and ensure maximum cost effectiveness through reuse of existing databases and commonality with other simulations during Distributed Mission Operations (DMO) activities. AAcuity® also supports use of SDS' LIFE-based Artificially-Intelligent (AI)-driven scene content (vehicles, aircraft, humans, animals, and special effects) generation capability used to support realistic tactical training. Applications include effective ground-based simulation training; and airborne Intelligence, Surveillance and Reconnaissance (including ROVER feeds) and weapons employment training using manned and unmanned aircraft simulations in virtually any urban, open-terrain or maritime simulation training environment. In addition to being included on Meggitt simulation training systems and a number of other third-party host simulations, AAcuity® IGs are also included on all SDS LiteFlite® manned-aircraft, ROVATTS™ unmanned vehicle (flight, ground and sea-based), SPIDER™ Small UAS, RASP-reconfigurable airborne sensor platform and Hero-First Person Shooter (FPS) simulators.

Argon and Smiths Detection Sign Five Year CBRN Simulation Agreement

October 31, 2012
ASD News

Argon Electronics and Smiths Detection have signed a five year agreement granting Argon exclusive worldwide rights to design, manufacture and market training simulators for the Smiths Detection range of Lightweight Chemical Detectors which includes the LCD 3.2E, LCD 3.3, M4A1 JCAD, M4E1 JCAD and LCD-NEXUS detector series, of which in excess of 80,000 have been sold worldwide to date.

"The signing of this agreement which extends the existing agreement between Smiths and Argon for a further five years underpins the success and value of this arrangement to Smiths as a CBRN detector manufacturer. It also reaffirms Argon's position as world leader in the design and manufacture CBRN simulation and training systems" Stated Managing Director, Steven Pike. "Despite these economically challenging times, it is clear Governments worldwide are placing a very high degree of importance on CBRN training which has been reflected in both contracts and new enquiries received at Argon"

Rod Wilson, Vice President of Product Management at Smiths Detection added "Our partnership with Argon is already a great success. Through this further extension, we will continue to partner together to provide our customers with world class training, allowing them to get the best performance from our products."

AVIATION WEEK & SPACE TECHNOLOGY

Elbit Takes The Lead In Cyberwarfare Training

David Fulghum
December 17, 2012
Aviation Week & Space Technology

With virtually every cybernetwork in the world in jeopardy of attack, Elbit Systems has positioned itself over the last three years to cash in on the escalating need to be prepared for digital disaster.

A program here is training teams of cyberwarriors for companies, government agencies and military organizations that want an in-house defense capability. That can be done at Elbit's facilities, or the company can provide a customer with the system, build the facilities and provide trainers for those that want a turnkey, in-house facility.

Elbit has produced a cyberwarfare training center that can be exported, updated and tailored for customers facing digital attacks.

The key institution is a cyber-range that combines a training facility with a cyberlaboratory. The range is used both to training cyberworkforces to cope with different types of known attacks. At the same time, it can be used by Elbit to test and evaluate new technical solutions to both defense and attack.

"It is an isolated environment, so that you can inject new attacks into it without fear of risking the production environment," says Eran Barak, a product manager for Elbit's intelligence and cybersolutions group. "It was a prototype and now it is a mini-system. We have an infrastructure that simulates customer networks and we have the tools to train Blue Team defenders."

There are hints that offensive skills are not completely ignored. Scouting of other people's networks is not part of the business, he says but the difference between scouting and trying to penetrate a network is not very great. Similar principles are used for both, so trainers concentrate on defending against scouting and penetration using known attacks that can be found in open literature.

Bucking the trend of teaching cyberwarfare theoretically, the company's objective is to search out customers that want hands-on training. It then provides the White Team trainers and the Red Team attacker, although the latter is a human-free capability.

Elbit teamed with the U.S.-based Breaking Point cyber-security company, which developed a new traffic generator engine that has been integrated into the cyber-range, Barak says. It operates automatically to inject attacks into the simulation structure. The training network was designed as an open, generic and modular system that accepts off-the-shelf products.

The company only offers courses for cyberdefense Blue forces, but those teams can train and re-train in several areas, including advanced courses for cyberattack. Once the students cope with an attack, they are debriefed to check skill levels. The trainers then develop a new plan—using a Network Management System—to inject customized scenarios that reflect individual training needs.

"It's a scalable process," Barak says. "A scenario can take 1-2 hours or a day. It depends on the skill levels that customers bring with them. We recommend teams of four people with a commander and a person each responsible for the database, the active directory of emails and network administration because we want to check the teamwork."

Elbit embraces the philosophy that the best hacking and network defense is conducted by closely knit groups of specialists, not the lone-wolf cyberwhiz.

"You have to find people who can work together because teamwork is more difficult in the cyberenvironment than on the battlefield. Attacks are dynamic and you never know where they are going to come from," Barak says. "The main threats [today] are coming more from a national level, so you need to build an infrastructure [of cooperating teams] for cyberwarfare.

"A team can have a mix of experience, but usually you work with people who are at the basic level of training," Barak continues. "We are seeing teams coming back for more sophisticated training. We can provide the capability as training or as a service."

The training system can generate traffic immediately with many kinds of protocols and then inject the scenario into the simulation network. Trainees can put new rules into the firewall so they cannot be attacked again from the same IP address. They can jump between events, see all the recorded data and compress time between events.

Elbit uses two business models: professional services for training people at its facilities on a generic network, or a turnkey project for which it creates the system, builds the facility and trains the trainers.

Simulator And Training Tweaks Target LOC Problem

John Croft
December 3, 2012
Aviation Week & Space Technology

Several small steps in simulator and flight-training methods could soon lead to giant leaps in airline safety.

Working under the auspices of the Royal Aeronautical Society, a group of more than 80 specialists worldwide have developed improvements to airline pilot flight training, in an effort to prevent loss of control (LOC) accidents in the future.

The group was created in June 2009 at a flight simulation conference during which LOC incidents loomed large. The Colgan Air Bombardier Q400 crash in Buffalo, N.Y., had occurred in February that year, as did the Turkish Air Boeing 737-800 crash in Amsterdam. In both cases, improper pilot inputs had led to stalls. Then, on the first day of the conference, Air France 447, an Airbus A330, crashed into the Atlantic Ocean on a flight from Rio de Janeiro to Paris, an accident later attributed to loss of control.

"There was a huge interest in the growth of LOC problems," says Sunjoo Advani, an aerospace engineer who was tapped to run the nascent International Committee for Aviation Training in Extended Envelopes (Icatee) group. "There was a growing concern already at the time of pilots losing their abilities in manual flight control."

Results of more than three years of work by the group, including a training matrix and an upset prevention and recovery manual, will be forwarded to the International Civil Aviation Organization this month for review, says Advani. Once approved, the manual will be available to all member states potentially by mid-2013.

The group identified a variety of training shortcomings, including the limited envelope that pilots are exposed to in training, simulator reality at the edges of the envelope, g-force awareness, and difficulty in creating a "startle and surprise" environment in a simulator. "Very simple improvements to how we use existing simulators can achieve 75% of our goal," says Advani.

Per licensing requirements, it is mandatory that pilots learn cues for an aircraft in its normal envelope, with pitch less than ± 30 deg. and ± 60 deg. of bank. "As it turns out, one of the biggest problems is startle and

surprise during unexpected and unforeseen events," says Advani. "LOC exposes [the pilots] in such a way that they have to go from a low state of arousal to a quick and effective response; and those responses can be counterintuitive." Included are psycho-physical responses such as pulling on the yoke after being startled, even though a stickshaker or stickpusher is attempting to reduce angle-of-attack to avoid a stall.

"We found that a string of events leads to an upset," Advani says. Included are systems failures, cockpit resources management issues and "not paying attention to signs of a developing threat." He says simulator training can be improved by teaching pilots to recognize changes in aircraft handling and control as an upset condition is approached in increments, and practicing recoveries along the way.

"For high-altitude stall training, you should not be putting the pilot in the simulator and saying 'recover'," says Advani. "Pilots need to recognize the signs, the buffet, the stall warning, the stickpusher, and learn not to fight those systems. These are basics that we have not adequately or consistently trained for."

To address the other 25% of its goal, Icatee would like to see extended flight envelopes for full-flight simulators, which today match the actual aircraft in handling qualities to near-stall conditions but not beyond. "There are huge gaps between current simulations and reality [in the stall], says Advani. He notes that a stall in a large transport aircraft simulator today "feels very benign," marked by "a little buffet" and a stickshaker, followed by "mushy" control characteristics and a "steep glide down to the ground" in a deeper stall.

In the reality, he says the stall experience in an actual transport, as relayed from a Boeing 777 test pilot, is a "physically painful" and "violent" experience in terms of buffet, and much less stable in terms of roll and yaw-damping after the stall compared to the simulator.

"We want to identify which elements of reality are important for a pilot to know to never go there . . . but not making them masters of the proper stall," says Advani. With that goal in mind, he says, a "representative" model of a transport category aircraft for the simulator will likely be adequate to teach pilots to reduce angle of attack and wing loading, even in a startle condition.

Peter Grant, a human control expert in the vehicle simulation group at the University of Toronto, also believes that a generic model "is plausible" for positive transfer of training between the generic simulator and specific aircraft in terms of upset prevention and recovery training (UPRT), but that more studies are needed. "We have empirical evidence and we believe generic models can solve part of the problem, but we don't have proof," he says.

Grant's group has developed a new adaptive motion drive algorithm for the university's Boeing 747-100 simulator using NASA wind tunnel data for a generic two-engine large transport. The algorithm maps the limited motion of a full-flight simulator to the large motions that would occur in reality during stall, wind shear and "large attitude deviation" events.

Figuring out how to startle and surprise pilots in a simulated environment without sustained g-levels could prove to be more difficult.

"The problem always remains—how do you create g awareness," says Advani. "We can't create negative-g or high-acceleration environments in the real transport category aircraft." Instead, Icatee proposes that newly hired commercial airline pilots be exposed to inflight upset maneuvers with an instructor who will teach them recovery techniques. "They're not learning aerobatics; they're learning upset recoveries," he says.

Advani says instructors during inflight training can create scenarios, such as the aircraft turning from base leg to final when encountering wake turbulence, and have the pilot recover. "There are two fundamental benefits—it teaches them how to apply the upset recovery skills and how to manage the startle factor," says Advani, adding that an aerobatic aircraft may not be required.

"We will advise people on which maneuvers they need to do in what aircraft," he says. "If you combine that with the simulator experience and provide basic learning through academic materials, you can deal with most severe upset situations."

That combination of training is already on the menu at CAE in partnership with Mesa, Ariz.-based Aviation Performance Solutions (APS). APS currently has a fleet of six two-seat Extra 300 aerobatic aircraft that it uses for UPRT training largely for corporate and private customers at its headquarters. With CAE, APS is providing UPRT to 200 flight instructor and pilot candidates at the CAE Oxford Aviation Academy. Student pilots will receive a two-day, three-flight course; flight instructors will undergo a 3-day, 3.5-flight regime. CAE had previously offered any of its customers the option of taking UPRT with APS.

"We see day in, day out with our clientele that a tremendous amount of training is in technology management and integration," says APS President Paul "B.J." Ransbury. "Issues that we've seen are pilots being able to deal with situations when technology does not work. Flying skills have been sacrificed for tech training."

APS will soon open a second location in Dallas for UPRT using the Extra 300, as well as one in the Netherlands, using Slingsby T-67 aerobatic side-by-side two-seaters. APS also links inflight experience to simulators, demonstrating what does and does not transfer using CAE Embraer ERJ 145 full-flight simulators in Mesa.

Each Extra 300 flies 4-5 times per day and 80-90 flights per five-day week. The company plans to train more than 1,000 pilots in UPRT in 2013.

"Simulation has a tremendous amount of benefit, but we don't think you can get away from the aircraft," says Ransbury. "We use a heavy emphasis on transferability of skills. We expose pilots to upsets in the aircraft, then put them in the simulator to see what is representative and what is not. It is easy to make correlations."

With that methodology, he says pilots' simulation experience is enhanced because they "recently experienced real-life cuing of upsets." He says APS recommends recurrency training at least every five years, but corporate flight departments are "self-selecting" 2-3 years for refresher courses.

Though the Airline Safety and FAA Extension Act of 2010 will require the FAA to institute UPR and stall training starting in August 2013, the agency has not yet stated whether simulator, inflight training, or a mix of the two, will be required along with academic training.

Icatee believes the current airline pilot population, at a minimum, should receive dedicated simulator sessions in UPR during training. "They would get a dedicated upset program or set of training objectives, and go into a fully developed stall to learn the cues," says Advani. Included would be "specific elements that can create surprise in the simulator." For recurrent training, he says Icatee recommends that pilots be exposed to upset events or upset-specific training once every 3-5 years.

"We're starting with Part 121 [airline transport pilots], but we don't see any limitations to taking it outside of there," says Advani.

Head Start: Can Better Conceptual Design Tools Guarantee Program Success?

Graham Warwick
November 19, 2012
Aviation Week & Space Technology

Decisions that determine whether a program can be successful are often made before the contract is even won. But conceptual design is still more art than science, practiced by talented engineers without the sophisticated, integrated tools available for development and manufacturing.

So says Dassault Systemes, the leading supplier of three-dimensional design software, to explain its launch of a suite of design, collaboration, simulation and management tools aimed at the conceptual phase. Called Winning Program, the product brings to the early stages of a program capabilities available in the development phase through its integrated suite of Catia 3-D design, Dymola modeling, Simulia simulation and Enovia product data-management systems.

"The early phase is still quite unstructured, and an area of opportunity to improve processes," says Mich Tellier, vice president for aerospace and defense. "We have built a product lifecycle management platform to address the early phase and support teams of engineers involved in product definition."

Citing the development problems with several defense programs, Tellier says, "It's challenging to deliver on the promise of a proposal." Consequently, when the Pentagon evaluates bids, "they are not just looking for the best configuration, the best proposal, but who is the most credible, who can deliver to budget and schedule, or they throw in a risk factor that skews the proposal."

Winning Program will help tackle the challenges industry faces by providing better tools at an earlier stage, Tellier says. "We have got to deliver programs more effectively. We have got to be better at collaborating, and at proving designs are producible. And we have to capture the institutional knowledge.

"When we talk to the customer, the initial answer is, 'We know how to respond to a request for proposals'," Tellier says. "But how are you at delivering on a promise? Will you be able to do it three years time?" he says, referring to the wave of retirements that faces industry. "These are senior people on the design team, and it's a skill-based process. The retirements have not really hit engineering yet, but it's a ticking clock."

Also, in preliminary design after contract award, there is little reuse of work done during concept design, he says, and no "feedback loop" where difficulties encountered during development are fed back into concept design.

This is because the design teams and tools are not connected. Conceptual design teams are "historically populated by the best and brightest engineers.

This is not necessarily a community that collaborates effectively," he says.

Winning Program has four major components. A management platform allows the entire process to the program launch and start of preliminary design to be laid out, including conceptual and advanced design, case studies, technical trades and risk management. "It allows us to simulate the program itself and as we look at design trades, to simulate their impact on the program."

A conceptual design platform allows the product to be defined and its performance simulated using a "behavioral digital mock-up." This is an early-phase equivalent to the 3-D digital mock-ups produced using Catia, but focused on optimizing the systemlevel behavior of a design.

The conceptual model allows engineers to do architecture design using system models. "They can take the requirements, identify the functions needed, such as power, lift, etc., put those into a logical structure, such as propulsion, engine, etc., and mathematically model the design," Tellier says.

This virtual functional model can then be "flown" through the flight envelope in simulations to analyze its behavior.

The third element of Winning Program is a simulation platform to prove out virtually the manufacturability of a design, and allow sourcing and production strategies to be decided.

The fourth element is used to simulate operations and demonstrate integration of the design into the customer's environment, "to prove you can deliver effective value in the contexts of what they have," Tellier says, such as simulating unmanned-aircraft operations on a virtual aircraft carrier (see photo).

"Our target is very simple. It's to increase by one to two orders of magnitude the number of trades and iterations they can do," he says. "That's what matures designs, and Winning Program will accelerate design maturity in the early stage."

AFRL's Invent Program Tackles Aircraft System Efficiency

Graham Warwick
November 5, 2012
Aviation Week & Space Technology

What began as a program to tackle heat issues on stealth fighters is evolving into the centerpiece of a U.S. initiative to address aircraft energy demands, and leading the drive toward engineering methods based on dynamic models.

At the heart of the Energy Optimized Aircraft (EOA) national plan will be the U.S. Air Force Research Laboratory's (AFRL) Integrated Vehicle Energy Technology (Invent) program, which is developing adaptive, smart aircraft power systems using model-based design.

U.S. Air Force and Navy next-generation fighters, eyed for 2030 and beyond, will require adaptive engines and systems providing high power with high efficiency.

Invent will be one of four core technical products of the EOA plan. The program's goal is to integrate hybrid-electric systems to maximize energy efficiency, minimize thermal challenges, and provide power and cooling on demand, based on the duty cycles of individual aircraft systems.

The Pentagon's EOA plan will set the goals for a broader technology initiative to enable energy-efficient aircraft with enhanced operational capabilities, minimized thermal constraints and increased power growth capacity.

Invent and the EOA plan to address two interrelated challenges: increasing aircraft fuel efficiency to reduce Pentagon energy demands and managing thermal issues on stealth aircraft that have nowhere to dump waste heat but into the fuel. "More efficient engines shift the balance—25 percent less fuel burned is 25 percent less heat that can be dumped," says Steve Iden, AFRL Invent program manager.

"And it will only get worse," he says. The Lockheed Martin F-22 and F-35 have up to five times the heat load of the company's F-16, and the next generation of fighter will be the first with directed-energy weapons, which will require megawatt-class power and cooling. "All that power does not leave the aircraft. It turns into low-quality heat in the aircraft, which becomes a flying thermos bottle," says Iden.

Invent got its start in 2007, after a study showed not enough attention was being paid to the energy balance in fuel systems, leading to temperature runaways that affect aircraft performance. “We've got to a position where we run out of capability” because of the need to retain fuel for cooling, he says. “We bring back hot fuel, rather than burn it. We are looking for thermal persistence to stay in the fight.”

The $150 million program has three phases. Spiral 1 focused on near-term technologies that could be spun off to the F-35 to help tackle thermal-management problems. Goals include doubling ground hold time, and increasing flight time at low altitude fourfold—both times when fuel heats up in the absence of effective cooling.

Spiral 2, now underway, is aimed at midterm requirements for next-generation energy-optimized aircraft. Goals include a 10% increase in range/endurance from integrated systems, a five-fold increase in power and cooling capacity, on demand, with no thermal restrictions.

Invent aims to cut energy demand by reducing combined subsystem weight, now twice that of a single engine, and reducing bleed-air and power-extraction to minimize the fuel-consumption and thrust penalties. The program is demonstrating three key systems for the next generation of more-electric aircraft: adaptive power and thermal management (APTMS), robust electrical power (REPS) and high-performance electromechanical actuation (HPEAS).

APTMS will adapt to the best available heat sink: fuel, ram air or the additional “third-stream” flowpath provided by the next generation of variable-bypass engines being developed under AFRL's Adaptive Versatile Engine Technology and Adaptive Engine Technology Development programs. APTMS will be able to provide transient peak cooling for high power, but low duty-cycle systems like laser weapons.

More-electric architectures have altered the dynamics of power flow. Peak-to-average ratios can exceed 5:1, across milliseconds, and power-by-wire flight-control actuators can produce regenerative loads that equal peak power. REPS will provide an on-demand power capability able to meet peak demands and manage regenerative loads while delivering high-reliability power to flight-critical systems.

Technologies include bus architectures that allow power to flow both ways, from multiple sources, and electrical generation from both spools of the engine to meet peak demand. HPEAS will provide fail-operational/fail-safe actuation for flight controls, utilities and engines.

Tackling the challenges requires a culture change, says Iden. Today, aircraft systems are designed for peak power, which results in large inefficiencies when operating at lower demand. “They are on all the time, and cannot be modulated. We use them at low-duty cycle with big waste—5-10 percent of fuel burn,” he says. “We want that energy back, not in waste heat. That means more adaptive systems that match the adaptive-cycle engines.”

Iden cites the late-1990s Joint Strike Fighter Integrated Systems Technology (J/IST) program, which took the traditional engine starter/generator, auxiliary and emergency power units, and environmental control system (ECS) and consolidated them to minimize volume for low observability. “It was a good volumetric design, but it hurt performance as it's pretty inefficient,” he says.

The problem is the starter and ECS have two different operating points, “so they designed for the starter and the ECS fell out,” Iden says. “The starter is used for 30 seconds on the ground out of a two-hour flight. It's designed for a very small part of the mission, and the fallout is the ECS runs inefficiently. It takes a lot of bleed air off the engine and rejects a lot of heat into the fuel.”

The answer is to design systems that adapt to changes in demand across an aircraft's entire flight envelope. “Don't design for the peak, design for average power and thermal loads,” he says. “Look at demand across an entire mission and design with just enough margin. And for any shortfall, use energy storage.”

An electrical accumulator, for example, can provide peak power to a system and avoid having to oversize the generator. “There is a big impact if you design for peak. When you are not able to design for an average that is a fifth to an eighth of the overall peak, you carry around a lot of dead weight,” he says.

Invent is looking at developments in component technology, such as silicon-carbon power electronics that are more efficient and operate faster. “They have to pump cold air to cool the [power-by-wire] actuators on the F-35. That's lost air and lost pressure. We would not have to actively cool the actuators with silicon carbide.”

Power electronics are fuel-cooled and the highest temperature they can withstand is a key constraint in thermal-management system design. The heat rise in the system being cooled sets the maximum fuel inlet temperature. On a 120F, the 140F temperature limit on today's electronics leaves only 20F heat capacity in the fuel. “We'd like to raise that at least 50 F without any more weight,” says Iden.

Electronics that can operate to higher temperatures would reduce the heat dumped into the fuel. “We have a goal of 190F, and we'd like it to go to 250F. There are a couple of technologies out there. It's a question of how to integrate them and make them adaptive.”

To make power and thermal systems adaptive, Invent is pioneering a rapid model-based design approach. Today, airframers ripple down requirements to suppliers as static documents. “That doesn't work. It's not how we use the systems,” says Iden. “We want to pass down dynamic models that reflect how the systems work.”

The Invent modeling requirements and implementation plan is a government/industry collaboration on a framework that defines the interfaces and interactions between models, and sets fidelity and verification requirements. The goal is to replace the steady-state lookup tables used in design with dynamic, time-accurate mathematical models that address the control interactions and transient responses in on-demand systems.

To address the simulation rates required, two different tip-to-tail model fidelities have been defined—segment and mission. “Segment-level is very detailed, with small time steps. A mission-level model is less detailed, to answer questions like 'Is there enough battery storage?” he says.

“Invent is walking industry down this path,” says Iden. Northrop Grumman is looking at how Advent and Invent integrate, while Lockheed Martin is working on the F-35, tactical transports and other platforms. “Boeing is looking at the outer envelope, at F-X,” he says, referring to the Air Force's possible 2030 tactical fighter. “What is the worst case out there? Tactical is always the toughest task—it's a do-all aircraft: air-to-air, ground attack, ISR.”

Working with Boeing is AFRL's first chance to look holistically at adaptive systems. “Can you get the systems to add, or do they work against each other?” asks Iden. “What can you do with modeling and simulation? We are starting to get answers.” Under a $56 million contract half funded by AFRL, Boeing is to lead an Invent integrated ground demonstration that will start in fiscal 2014 and be completed in 2016.

“We have to virtually link labs, which will be a challenge,” says Iden. Ultimately he expects a J/IST-type flight demonstration will be needed. The ground demo will show the benefit of adaptive systems, “but sooner or later we have to fly or no one will believe us.”

Technology Driving Competence Beyond Regulatory Requirements

Jerome Greer Chandler
November 5, 2012
Aviation Week & Space Technology

While the switch from knowledge-based to competency-based maintenance training is a philosophic fait accompli, the issue facing the MRO industry remains one of getting that "knowledge transferred into actions," says Holger Beck, chief commercial officer for Lufthansa Technical Training. In other words, translating theoretic lessons into real-world abilities. Airline and MRO executives believe the answer lies in integrating new technology and new methodologies, while maintaining the benefits of tried-and-true teaching techniques.

Not all that long ago, maintenance training was a bifurcated affair. First came a classroom lecture. Then it was time to practice the particulars of the airframe arts out on the hangar floor. That approach was "not efficient at all," says Beck, carrying with it inherent risks of an unforgiving learning curve.

Gameco's training center offers initial and type training.

When done right, competency-based training doesn't eschew the classroom; rather, it front-loads the learning process so students can make mistakes "in the protective learning environment [of] the classroom," says Beck.

That path, paved with sophisticated technology and illuminated by creative teaching techniques, just may be the training template of the future. Many MRO executives assert such a formula—properly applied—can cut training costs, maintain quality and better prepare technicians to repair the new generation of aircraft just beginning to enter service.

"That's certainly the path we went down with the 787," says Steve Pennington, senior manager for maintenance training at the Boeing Commercial Airplane Co.

Learning starts in a special 787 classroom. Boeing has nine of them sited around the globe, a quartet in Seattle alone. Those classrooms are fitted with flat-screen monitors, around which partnered pairs of technicians gather. The screens afford students access to a 3-D virtual simulation of the seven-eight, which allows them to "virtually" navigate around the aircraft.

In addition to the fixed flat panels, they are armed with tablet PCs that access the aircraft's digital documentation screen. In turn, the tablets are linked, via Wifi, to the 787 simulation. The actual 787 onboard Ethernet connects to maintenance tablet PCs. Pennington says that means classroom students "can actually connect to the airplane simulation using exactly the same software, and in exactly the same manner, as they would out on the flight line."

All Nippon Airways, the 787 launch customer, accomplishes lots of training via Boeing's Digital Turning Tool. The DTT, operating in concert with laptop PCs linked to the 787 Tool Box, allows technician "trainees to simulate troubleshooting and repairs using the [digital] training manuals," says Akihiro Terada of ANA's engineering and maintenance's training department. He says the combination gives trainees a real edge, enabling them "to experience those practices which were [once] only available using the actual aircraft or a full-flight simulator."

Then there's the on-airplane component. Initial training starts on the flight line at Boeing Field, just south of Seattle. The practical training program's next stop is the customer's facility and their own airplane. The hands-on component dovetails nicely with the classroom instruction, so much so that Pennington says, "the combined program reduces the on-airplane training time by approximately 30 percent." That equates to immediate cost-

savings for customer carriers as well as “reducing the potential for training-related incidents on or around the airplane.”

Traditionally, as aircraft become more complex the time spent learning about them increases. Pennington contends the 787 training regimen breaks that mold. In terms of time and cost, he says, “We've actually gone down in overall footprint compared to a similar course on the Triple-Seven.” What once took as many as 45 days now can be accomplished in as few as 35.

Cutting training costs isn't confined anymore to curtailing direct costs. Lufthansa Technical Training (LTT) is focusing on Total Cost of Qualification, says Beck, or TCQ. “Direct training costs are only about one-third of the TCQ,” he says. “We are looking at finding ways to significantly reduce the remaining two-thirds . . . and at the same time increase the efficiency of our competence-oriented training.”

One way Lufthansa is doing that is encouraging student-paced distance-learning. Central to that effort is making courseware available via an iPad LTT Viewer. Classroom simulation and easy accessibility are key components of the emerging template across the MRO spectrum.

ST Aerospace just upgraded its training systems, employing computer-based training and simulation, spurred by the belief that both knowledge and competency skills are “acquired more readily through [their] effective use,” says Stephen Chung, vice president of ST Aerospace's training center.

Elsewhere in Asia, Korean Air just implemented a new enterprise resource planning system that encompasses maintenance and engineering. The division is experimenting with the use of mobile devices, such as Galaxy Notes and iPads to distribute data and put it where technicians can get at it fast.

Technology begets access, and access engenders efficiency. Stephen Chung thinks the maxim is particularly applicable to next-generation aircraft. The sheer portability of data can boost competence. For instance, says Chung, “a trainee may copy pertinent maintenance information [from] the aircraft into storage devices like thumb drives or applications upon the completion of the training courses.”

Digital diagnosis and digital dispersal of information are integral to maintaining aircraft just beginning to enter the fleet. Beck believes training syllabi are beginning to reflect the fact that the emerging fleet of integrated aircraft “make it impossible to train on a single system . . . . You have to see the aircraft as a whole.”

For all the fascination, all the focus on cutting-edge tools and techniques, the irreducible element in the education equation remains the instructor. “Despite all the great advances we see in technology,” says Pennington, “a good instructor is really at the heart of a great maintenance training program.” In some MRO shops you're more likely to find one out on the floor, mentoring a trainee than shackled to a lectern with a pointer in hand. That's the case at AAR's Oklahoma City facility, where structures trainees undergo 18 months of mentoring from an experienced mechanic, a de facto instructor.

The aim is to build trainee confidence, and concomitant competence, says Philippe Fisher, AAR's Oklahoma City training manager. The new mentoring initiative is predicated on Fisher's remembrance of what happened “the first time I went up to an airplane after school.” He approached the aircraft and said to himself, “Now what do I do?”

Mentoring already has paid dividends for AAR. Since its implementation, Fisher says it has saved the facility “probably 30-35 percent” in terms of rework. He sees a direct correlation between the tried-and-true process and the reduction of reworks.

AAR reflects the fact that not everyone's working on the 787 just yet, and that there are resurrected training techniques which can—if properly applied—enhance quality and cut costs for today's fleet of commercial aircraft.

Ken Tacket appears cut from the same cloth as Philippe Fisher. “We feel we get more bang for our buck out of hands-on training,” says Pemco's director of quality and planning. That hands-on curriculum is underpinned by the use of mock-ups, where tasks as elemental as metal-forming are carried out before trainees hit the hangar floor. Harkening back to Holger Beck's assessment that it's best to front-load as much of the learning as possible, Tacket says, “it's imperative that instructors see students successfully perform tasks “in a hands-on, controlled environment.” That way, students receive immediate feedback.

Closing the feedback loop, and doing it such that the lesson sticks, is fundamental. It is the most classic of educational tenets, and it is just as applicable when teaching someone to work on next-generation aircraft as it is on today's fleet. “Feedback shouldn't be six weeks [later]. It should be immediate,” says Beck.

This is part of reason that Lufthansa Technical Training has significantly reduced the amount of time it takes to impart computer-based training. What once took as many as 40 hr. to cover as an overall topic now takes considerably less by focusing on methodological learning. For example, if LTT wants to teach a technician how to start an auxiliary power unit or an engine, and just that, “It takes only three to five minutes of computer-based training. Afterward, we discuss in a group what we have learned.” In such a setting, the feedback/reenforcement loop flourishes, and so does competency-based training.

But the tools to perform the training have to be readily available. Gameco General Manager Norbert Marx says, at least at this point, that engine run-up training doesn't satisfy the Chinese MRO's needs because of the absence of a simulator. That means “all engine run-up training would need an actual aircraft in the hangar, which may not suit the training schedule or may impact the production schedule.”

If the MRO industry is really to successfully front-load the learning process, simulators must continue to heighten the learning experience, cut the time it takes impart critical skills, and keep costs under control. In part, that's because “younger maintenance engineers have less real-life experience [because] we now have fewer troubles and repairs on the aircraft,” asserts ANA's Akihiro Terada. “Experience and knowledge are the aspects of being a maintenance engineer that only real-life incidents can nurture.” He says the industry struggles to compensate for that, especially on aircraft such as the 787 that employ Digital Turning Tools.

More broadly, Pennington argues that the industry needs to train for technology far earlier in the mechanic formation process. “Mostly, the emerging technologies are not adequately covered at the basic license level,” he contends. Moreover, “the added complexity of advanced system architectures is not always well provided for” in the early stages of the game. Far too often he believes training organizations focus “purely on the theoretical elements.” He says this is fine if the aim is to simply certify that someone has completed the requisite coursework, but not so good if on-the-hangar-floor competence is the goal.

Pennington maintains it would help if regulatory agencies revamp their requirements to keep pace with the technological tone of the times. “One of the biggest challenges in competency-based training is it's kind of outside of the requirements that the regulators publish at the moment,” asserts Boeing's senior manager for maintenance training. He says that while most worldwide regulatory requirements address knowledge-based and accompanying practical training, nowhere in the regulations do they talk about training to a level of competence. “It's a gap,” he contends, “that we need to close.”

Pennington believes that gap continues to exist, even in an age of Digital Turning Tools, 3-D simulations, iPads and innovation because of the perception among some that “training for competence . . . increases the overall cost of training.” And that, he says, “is a slightly more challenging proposition for the industry as a whole,” a challenge that's only going to become more acute with the influx of new fleets.

Advent, Invent Address F-35 Needs And Look Ahead

Graham Warwick
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Aviation Week & Space Technology

There is no guarantee that the next generation of U.S. tactical aircraft will be fielded, as hoped for, some time around 2030. Instead, the adaptive engine and system technology now being developed will find its home first in upgrades to the Lockheed Martin F-35, the only U.S. fighter in production through the 2020s.

Although aimed at the "next-generation air dominance" platforms being eyed by the U.S. Air Force and Navy, the closely related Advanced Versatile Engine Technology (Advent) and Integrated Vehicle Energy Technology (Invent) programs led by the Air Force Research Laboratory (AFRL) are structured to spin off upgrades for the F-35.

And while the F-35 provides a reason to mature adaptive technologies sooner rather than later, the Pentagon is launching a prototyping initiative for the next fighter that includes using the latest automated design tools, modeling and simulation to reduce the chances of inefficient development.

In an early October memo to the Air Force and Navy, Frank Kendall, undersecretary of defense for acquisition, outlined plans to begin exploring next-generation air dominance concepts, leading to a prototyping program to be completed within five years. The program is to begin with an 18-month concept definition effort funded by the Defense Advanced Research Projects Agency (Darpa), says the memo obtained by Bloomberg News.

"It is not too early to begin consideration of the next generation of capability that will someday complement and eventually replace the F-35," Kendall says in the memo. "In addition, the F-35 has been the only high-performance vehicle in development in the U.S. for approximately a decade … and I am concerned that our ability to design cutting-edge platforms of this type is already atrophying."

The effort will be an opportunity for design teams to apply the adaptive technologies and model-based tools being developed under programs like Advent, Invent and Darpa's Adaptive Vehicle Make. AFRL has already selected General Electric and Pratt & Whitney to demonstrate variable-bypass, adaptive-fan engines under the follow-on to Advent, the Adaptive Engine Technology Development (AETD) program.

GE and Pratt will run fan, core and nozzle rigs in 2016, allowing for a notional full engine test as early as 2017. Although intended for a next-generation stealthy, supersonic-cruising fighter, the AETD engines must be designed to fit in the F-35, providing 5-10% more thrust with a 25% reduction in fuel consumption over the current engine.

The Invent integrated ground demonstration, meanwhile, is also planned to culminate in 2016, around the time the initial system upgrades developed under Invent Spiral 1 could be finding their way into production F-35s. One of those upgrades, the capability to calculate the F-35's remaining thermal capacity in real time, is at the heart of Invent's drive to move the industry to using dynamic models and away from static specifications.

Being developed under a Phase 2 small-business innovative research contract with PC Krause and Associates, the real-time thermal capacity algorithm "will allow the pilot to know if he is adding heat to the fuel versus cooling it, to know if he is jeopardizing the mission," says Sam Septembre, a senior analyst with the Navy's futures branch. If too much heat is being added, the pilot could climb to a higher altitude to let the fuel cool down. The capability could be in the aircraft within 3-4 years, he says.

Initially the algorithm, derived from detailed models of the F-35 thermal-management system and designed to adapt to changing environmental and mission conditions, would be used in the preflight mission planning system. Later the aircraft fuel tank would be instrumented and a gauge in the cockpit would show if heat is being added or rejected, allowing the pilot to take an active role in thermal management.

Spinning technologies off to the F-35 while continuing toward development of an energy-efficient, sixth-generation fighter with high-power capacity and no thermal constraints will be key to sustaining industry's capabilities over the next decade. Without a “meaningful opportunity for leading-edge design, build and test,” says Kendall in his memo, the U.S. capability to design high-performance aircraft “will not be preserved, and our technological advantage in [air dominance] will not endure.”

DefenseNews

Industry, U.S. Army Pushing for More Helicopter Teaming

Paul McLeary
December 20, 2012
Defense News

While the role of UAVs is expected to grow in future operations, one senior U.S. Army official says manned aircraft won’t go away any time soon.

In fact, the Army and industry want to empower those pilots by giving them the ability to control several UAVs at once.

“It will always be a balance” of manned and unmanned assets, Lt. Gen. Bill Phillips, principal military deputy to the assistant Army secretary, told an Army Aviation Association of America conference in northern Virginia on Dec. 12. “You need situational awareness, and you need the curiosity of the human inside the cockpit.”

But as budgets flatten in coming years and planners are hard pressed to find efficiencies, the temptation to field more unmanned systems, which are less expensive, might be hard to resist, Phillips admitted.

While budget cuts “may drive us toward [more unmanned systems], at the end of the day we have to get it right and ensure that there is the appropriate balance,” he said. “I don’t think you’ll ever get the human out of the cockpit,” Phillips continued. “Having someone there who can see the battlefield 360 degrees — it’s so important.”

The Army isn’t planning to jettison its fleet of attack and reconnaissance helicopters. But as Phillips said, there are many reasons for the service to invest more in its unmanned fleet and explore more ways in which its manned and unmanned aircraft can work together.

The AH-64 Apache Block III helicopter comes equipped with software that allows it to receive data and imagery from Gray Eagle UAVs, while the OH-58 Kiowa Warrior helicopter has been pairing with Shadow UAVs. Phillips said the Army is studying the capabilities of the Block III upgrade and what it offers when evaluating future moves.

While Boeing and Lockheed Martin have been working on these capabilities with the Apache program, Bell Helicopter and AAI — operating under the Textron corporate umbrella — are also making a big push to get involved in the emerging manned-unmanned pairing.

On Dec. 4, the companies unveiled a laboratory in Huntsville, Ala., that will be used to train pilots and UAV operators in the latest tactics, techniques and procedures, while also helping the Army experiment with and evaluate new technologies, according to company officials.

The lab provides "simulation, modeling and new engineering capabilities" that bring together AAI's Shadow UAV, Bell's Kiowa Warrior helicopter and the Universal Ground Control Station while allowing users to combine live data feeds in high-fidelity simulated environments, said Bill Irby, senior vice president and general manager of AAI Unmanned Aircraft Systems.

The simulation capabilities will be key, Irby said, since they will allow users at the lab to tie in with major Army exercises such as the Network Integration Evaluations at Fort Bliss, Texas, and at other training and evaluation events. The ability to realistically simulate events will also help the service drive down training costs, he said. The lab is capable of streaming live imagery collected from Shadow UAVs at the Army's Redstone Arsenal, Ala., for use during simulations and tests.

A major component of the lab is a Bell helicopter simulator linked to multiple generations of the Shadow UAV, from older systems to more recent Tactical Common Data Link-equipped systems.

"We're able to do interoperability with all of these assets with the actual tactical software that's out there, which is unique," said Peter Blocker, vice president of Huntsville operations for AAI. He said the company is interested in exploring with the Army the ability of a single helicopter to interact with or control several UAVs at once.

"Today, the only manned/unmanned capability that's there is one unmanned asset and one helicopter. One of the ideas this lab can look at is two or three unmanned aircraft with a helicopter," Blocker said.

Ellen Lord, president and CEO of Textron Systems, said the company has made a "significant" financial investment in setting up the lab, but declined to provide any dollar amount. But given the financial realities of the moment, she said, "we are making choices about discretionary spending and capital investment, and we believe that unmanned teaming is a critical area for the military, so we are putting our money behind the concept."

China And Turkey Battle for Sales in Pakistani Arms Fair

Usman Ansari
November 10, 2012
Defense News

KARACHI — Chinese and Turkish companies have been fiercely vying for business at Pakistan's bi-annual International Defence Exhibition and Seminar (IDEAS) arms fair in Karachi.

Cancelled due to the devastating floods in 2010, IDEAS2012, which started on Wednesday and runs through Sunday, has taken place amid tight security and an uncertain financial climate. Despite the financial climate however, there was still a reasonably strong showing of international defense companies hoping to secure orders from a country facing a constant threat of insecurity.

These ranged from German marine systems firm Atlas Elektronik, a supplier of torpedoes and sonar equipment to the Pakistan navy, to Ukrainian state-owned military import and export company UKRSPECEXPORT, which hopes to secure more Pakistan orders — especially for armored fighting vehicles. Ukraine has been instrumental in the development of Pakistan's main battle tank, the Al-Khalid.

Absent were previous strong participants such as France's state-owned shipbuilder DCNS and Germany's HDW. Both had been vying for orders for submarines for Pakistan's navy with their Scorpene/Marlin and Type-214 designs, respectively. The Pakistan Navy selected the Type-214 and in 2008 a deal for three of the submarines was close to being signed. However, Pakistan's financial downturn squashed the deal and the

absence of both companies at IDEAS2012 may indicate neither has realistic expectations of a deal despite the program not being formally cancelled.

A Pakistani industry official, who did not want to be named, told Defense News the Type-214 deal might be cut down the road — but not in the near future.

A showcase for UAVs

Despite the financial situation, domestic defense firms have showcased their products and highlighted their progress.

Domestic UAV firm Integrated Dynamics told Defense News that a prototype of one of its small UAVs was undergoing operational evaluation with the Pakistani military in the Waziristan region as part of operations against the Taliban.

Due to the prevailing hostility to the CIA's armed UAV operations in the tribal areas along the border with Afghanistan, the company stressed that its products are unarmed. This may perhaps be in part an effort to dispel any speculation it was part of the reported indigenous 'Baraq' UCAV program.

However, as the UCAV has not transpired, analysts are no longer sure if the program is still being developed or has been abandoned. No official information is available.

Pakistan has a vibrant UAV development capability, however, as the Advance Engineering and Research Organisation (AERO), which is part of the state-owned Global Industrial & Defence Solutions (GIDS) conglomerate, showcased with its 'Shahpar' tactical canard pusher UAV.

The autonomous UAV has an endurance of seven hours and can relay data in real time out to a range of 250km.

Another company somewhat reluctant to discuss its full range of products was the Military Vehicle Defence Research Establishment (MVRDE). It showcased a variant of its Dynamic Integrated Training Simulator for Tanks.

However, a MVRDE spokesman was mum on the firm's aircraft simulators, despite one being included in its brochure.

In 2008 MVRDE revealed it was being tasked with developing a simulator for the MFI-17 Mushak basic prop trainer aircraft, and it has been reported that this work would lead to a simulator for the JF-17 Thunder multi role combat aircraft.

A range of domestic and foreign companies are jockeying to help the Pakistani military make the switch from analogue to digital communications however, and these included the Chinese firm Hytera in partnership with long-established local firm Micro. Similarly, National Radio Telecommunication Corporation (NRTC) is also part of this effort as is U.S firm Harris through its Pakistan-based presence.

Each has already successfully sold equipment to the military, but the digital switch holds out the promise of lucrative future contracts.

U.S. Brig. Gen. Maps Out Future Network Exercises

Paul McLeary
November 9, 2012
Defense News

As head of the U.S. Army's Brigade Modernization Command, Brig. Gen. Randal Dragon is one of the service's point men when it comes to biannual network integration evaluation (NIE) exercises. So when he says, "we're really at a start point" with where the service wants to go with the event, it's a significant statement.

NIE was designed to be an event that can change with operational requirements while addressing the needs of the overall force. Dragon explained how each event has already changed in its two years of existence.

For the NIE that kicked off Oct. 16, called NIE 13.1, Training and Doctrine Command's Intelligence Support Activity (TRISA) played a large, if unheralded, role, helping to plan scenarios for the 3,800 soldiers of the 2nd Heavy Brigade Combat Team, 1st Armored Division, to evaluate the radios, communication equipment and the network for Capability Set 13. This set is already in the hands of two Afghanistan-bound brigade combat teams from the 10th Mountain Division.

The Army is using simulation and live operations in 13.1, and Dragon said this type of scenario, "which at the company and troop level is situational training, with a simulated wraparound for the entire brigade," is something the Army hopes to increase at 13.2, scheduled for next spring.

"When we get into the 14 series [in 2014], we're really focused on increasing the joint intergovernmental interagency participation. I really see us moving in that direction," he said. "We've been working the network hard over the past three NIEs," Dragon added, and now his team is preparing to "take a hard look at joint fires, intelligence and the aerial tier through aerostats, UAVs and rotary wing aircraft" in upcoming evaluations.

The three maneuver battalions involved in the exercise will face a threat much like they faced during previous NIEs: a mix of state and nonstate actors, along with criminal elements and host-nation forces with whom they must decide how — or if — to partner. But this time, 2/1 will also partner with a simulated Marine Corps flank element linked to the NIE testing grounds at White Sands Missile Range, N.M., from Twentynine Palms, Calif.

Brig. Gen. Dan Hughes, the head of the Army's System of Systems Integration office, backed up Dragon's contention that the NIE will continue to change, saying that "every six months we can tune this up."

The fall events each year "are going to be the shiny new object events," where industry hands over to the Army the best new equipment it has for evaluation. The spring NIEs "are going to be the validation and verification of the network baseline" for the next round of capability sets.

Capability Set 13, which is deploying to two Afghanistan-bound brigades next summer, will also be issued to another brigade combat team yet to be determined. This year, Army leaders said a set was heading to the 2nd Infantry Division in South Korea, but Hughes said discussions are ongoing as to where the set will be assigned.

Beginning in 2014, Capability Set 14 will be issued to four to six brigades, which will be the general pace for capability sets in subsequent years. Initially, the Army had planned on equipping eight brigades a year with the capability sets, starting in 2013.

This June, the Army submitted a $140 million omnibus reprogramming request to Congress to pay for the integration of new communications systems on combat vehicles for the first round of capability sets. Hughes said, "we're trying not to do the reprogramming again, but there might have to be some of that" as requirements change.

"We've identified next year that we're going to do Strykers and what goes into Capability Set 14 will be similar to what is in Capability Set 13, so we're planning now to influence that early, and we believe that will limit the number of above-threshold reprogrammings we have to do," he said.

The Next $1 Trillion Market: F-35 Sustainment Work

Aaron Mehta and Marcus Weisgerber
November 4, 2012
Defense News

Pentagon Hopes Competition Will Lower Costs

With the Pentagon set to purchase fewer large platforms in the coming decades, defense companies are positioning themselves for the next best thing: the repair and upkeep of existing military equipment, a business that could be worth trillions of dollars.

That shift will be on full display starting Nov. 14, when more than 100 defense firms will descend on Washington for an industry day focusing on sustainment of the multinational F-35 Joint Strike Fighter program. Sustainment of the aircraft is projected to cost more than $1 trillion over the next 50 years, and the companies will be scoping how to snap up their piece of the JSF sustainment pie.

The JSF program office (JPO) in Arlington, Va., will host the sustainment-themed industry event, with the hope of creating more competition to drive down costs.

"We want to reduce F-35 life-cycle costs by injecting competition into the program," said JPO spokesman Joe DellaVedova. "Our goal is to maintain a performance-based logistics strategy, where products and services are delivered on time and at, or below, costs."

Companies are scheduled to hear presentations from program leadership on the first day of the meetings, followed by a series of 20-minute "one-on-one" sessions. DellaVedova said the meetings, which will be constrained to small groups, were so popular that the JPO had to add a third day to accommodate everyone.

The $1 trillion F-35 sustainment estimate has caused sticker shock among U.S. and foreign lawmakers, prompting program officials to look for every possible way to lower the costs. Robust competition for sustainment is one way F-35 officials believe they can reduce spending.

This month's meeting with companies is an early step toward developing a long-term sustainment plan. The event will have four main focus areas: supply chain management, such as warehouse concepts and shipping containers; simulation training services, such as infrastructure for training centers and simulators; support equipment; and the Autonomic Logistics Information System (ALIS), a comprehensive software-intensive system designed to manage maintenance and spare parts.

The F-35 program office released the names of companies participating and their areas of interest on a federal contracting website.

Most companies listed multiple areas, with 43 companies expressing an interest in supply chain management, 38 in support equipment, 31 in training and simulation, and 41 in ALIS.

An industry source said the goal of the event is to "listen and learn" from the program office in the hope that information will aid in future contracts for JSF sustainment.

In addition to companies, representatives from the eight JSF partner nations have been invited to attend the open briefing. Partners can also set up a 20-minute time slot, but so far only the government of Australia has signed up to participate.

The industry event is closed to the public, and only companies that have been accepted as participants will be allowed to attend.

The meeting was announced in late September, shortly after Air Force Maj. Gen. Christopher Bogdan, the F-35 deputy program manager, suggested that competition and performing sustainment work within the military might help lower cost estimates for the program. Bogdan has been nominated to succeed Vice Adm. David Venlet as head of the F-35 program.

DellaVedova said "introducing competition to the program office has always been part of the plan.

"This doesn't move us away from the baseline sustainment strategy," he added.

The program office has already taken steps to create competition, awarding BAE Systems a contract to develop an alternative design for the high-tech helmet necessary to employ the advanced combat features of the F-35.

BAE will be well-represented at the industry event, having reserved five time slots for presentations — the most of any participant. Spokeswoman Kristin Gossel confirmed the company's presence but said the details about who would be presenting and what coordination there would be among the company units was still being discussed.

Representatives from Lockheed Martin, the primary contractor on the F-35, also will attend.

"While we won't deliver a formal presentation, we will participate in industry day and are supporting the JPO's efforts to find opportunities to reduce F-35 sustainment costs," Lockheed spokesman Michael Rein wrote in an email.

Suggestions Welcome

Just as companies hope to gather information from the event for future contracts, the program office hopes to collect ideas on how to move forward with its acquisition and sustainment strategy.

There are no plans for a follow-up industry event, but DellaVedova said he could envision one.

The sustainment plan for the F-35 is still in the "preliminary" stages, according to Rebecca Grant, president of the IRIS research group, which is not unusual for a project that has produced only a handful of jets to date. What is unusual, she said, is seeing the focus on sustainment this early in the project, before a significant number of hours have been flown on the aircraft.

Projecting plans and costs for the F-35 based on the data available now is "like looking at a kindergartner and asking how he'll do at college," Grant said.

A December 2010 Defense Department report put the sustainment cost for the U.S. F-35 fleet at $1.1 trillion, a number said to cover all costs for the roughly 2,500 fighters over 50 years.

Grant, like other experts, questions that figure.

"To think you can accurately project a number that far is a little silly," she said.

While the trillion-dollar price tag is eye-catching, Grant believes the cost of the jet will come down as more planes are built and that the costs will eventually be on par with the F-16s — one of the fighters it will replace — over the 50-year period.

Fierce competition is also expected for U.S. and international F-16 modifications and upgrades in the coming years. Over the past year, companies have competed for F-16 sustainment contracts in South Korea and Taiwan, with BAE winning the former and Lockheed winning the latter contest.

Combined, those contracts are worth nearly $3 billion. The U.S. Air Force plans to upgrade 300 F-16s in the coming years, piquing the interest of many companies.

The F-35 will replace four aircraft variants across the Air Force, Navy and Marine Corps.

The Air Force will replace its A-10 attack jets and F-16s, the Navy its older F/A-18 Hornet strike fighters and the Marine Corps its AV-8B Harrier jump jets.

The Pentagon handles sustainment of these aircraft differently. In most cases, the government has allowed the original equipment manufacturer (OEM) — or the company that acquired the OEM — to perform some sort of sustainment work. The military also does some sustainment work at logistics centers.

In the case of the A-10, three companies — Lockheed, Boeing and Northrop Grumman — each compete for incremental upgrade work.

Thales, Transas to Develop Full Warship Simulator

Albrecht Müller
October 29, 2012
Defense News

Bonn — Thales Germany and Transas Marine International have agreed to develop and market a system that can create a virtual simulation of an entire warship for training purposes, according to both companies.

Called a "Full Warship Coach," the modular, configurable system will simulate various stations, such as the ship's control on the bridge, the work in the engine room, the combat management system, door gunner exercises for helicopter missions and weapons training for boarding teams.

Teams can train individually or all teams can operate as a complex unit.

"We are delighted to have found a highly regarded partner for this project, who will contribute its comprehensive knowledge in the bridge simulation field and who is well-positioned internationally," said Holger Brandt, vice president, Defence & Security Systems, Thales Germany.

Transas is an international developer and supplier of software, integrated solutions and hardware technologies for the marine, aviation, energy and transportation industries. It develops ship bridge simulators and engine-room trainers.

Thales Germany has experience in developing generic tactical and strategic trainers, as well as weapon simulators for civilian and military users.

"We expect to gain a clear competitive edge from this cooperation with Thales Germany," said Ralf Lehnert, managing director, Transas Marine, based in Hamburg. "The synergies for the customer are clearly evident, since two technology leaders are combining their core competencies to create an exceedingly capable and cost-efficient team training system."

Thales and Transas officials said that in addition to its role as a training device, the system could also help develop deployment principles and procedures and play a part in future procurement projects. Since both partners plan to contribute their already proven product portfolio, they expect a first-generation configuration to be available on the market soon.

TSJOnline.com
Training & Simulation Journal

U.K. Aircrew Training Holds Steady

Alan Dron
November 29, 2012
Training & Simulation Journal

LONDON — The quality of aircrew training among NATO's European members is holding up despite the strains on defense budgets from the continent's ongoing financial crisis, a senior British analyst said.

The most recent theater to expose the levels of competence of NATO's European members was the 2011 Arab Spring revolt in Libya, as the West backed anti-Gadaffi rebels in their campaign against the Libyan leader's armed forces.

There were some problems, notably the rapid diminution of precision guided weapon stocks in what was a relatively limited campaign. However, countries were "able to turn up and slot into a very ad hoc coalition," said Douglas Barrie, senior fellow for military aerospace at London's International Institute of Strategic Studies. "Once they sorted out the politics and command structure, the actual operations went reasonably well. They did more than muddle through."

The average annual training figure for NATO air arms is 170 hours. Some, notably the U.S., comfortably exceed this, meaning other nations come in below the average figure.

"Some countries are closer than others in hitting the NATO target," Barrie said. "Standards do vary. But generally in NATO countries people make real efforts to keep up their standards as much as they can."

Actual operations can replace training sorties "up to a point," Barrie said, but the risk is that campaigns such as Afghanistan and Libya can skew pilots' capabilities towards a relatively narrow spread of skills.

This can be a risk for air forces that want the ability to move from COIN to full-blown, high-intensity conflicts. The tendency to focus on one particular area of operations in a crisis is a particular problem for medium-sized air arms that do not have the resources available to train for other roles while engaged on actual operations.

Although defense budgets have shrunk, so have the inventories of aircraft and pilots. This means that the smaller amount of money available is generally still able to cover training for admittedly smaller numbers of pilots.

The increasing sophistication of simulators means that a greater proportion of training syllabi can be carried out in them, with the attendant substantial savings in costs.

"The interesting question is how far you can go with synthetic training," Barrie said.

For example, the U.K. Royal Air Force and Royal Navy plan to conduct 50 percent of their training on Lockheed Martin's forthcoming F-35 on simulators.

"If you hit a problem in a simulator you can wipe your brow and walk away. But in a fast jet blasting down a Welsh valley at 200 feet, you can get yourself into a real mess," Barrie said.

"As always, the proof of the pudding will be in the eating. They may find they can do even more — or they may find you actually need to put the men or women in the cockpit, otherwise the veracity just isn't there."

Textron, Bell and AAI Launch Collaboration in Manned/Unmanned Teaming

December 5, 2012
Defense Systems

Textron Systems and Bell Helicopter, a subsidiary of Textron Inc., have opened the Textron Systems Integration and Collaboration Lab, as well as the Bell Helicopter/AAI Unmanned Aircraft Systems Manned/Unmanned Operations (MUMO) Capability Development Lab. Based at Textron Systems' Huntsville, Ala., location, these labs combine live data feeds, high-fidelity simulated environments and field equipment to enable rapid system integration and testing, and the demonstration and proof of operational concepts.

"Our U.S. Department of Defense customers are facing a period of profound change," said Textron Systems president and CEO Ellen Lord, in a statement. "Now more than ever, they need affordable technologies that can be deployed rapidly against their most pressing requirements. These new lab capabilities enable our customers to achieve this while reducing program risk."

The Textron Systems Integration and Collaboration Lab incorporates AAI's unmanned platforms, command and control solutions, and training and simulation equipment, along with technologies for real-time collaboration and tasking. Paired with live data feeds, the lab lets customers integrate and troubleshoot new components and assets.

Similarly, the Bell Helicopter/AAI Unmanned Aircraft Systems MUMO Capability Development Lab advances customer development of tactics, techniques and procedures. A high-fidelity Kiowa Warrior helicopter simulator linked with unmanned assets, feeds and simulations supports the development of cognitive skills for MUMO.

"We are not only exploring next-generation concepts for situational awareness, we are rapidly developing both the solutions and cutting-edge technologies that bring them to life," said John Garrison, president and CEO of Bell Helicopter, in a statement.

Sentek to Help Navy Dominate Battlespace with Critical Intel

November 16, 2012
Defense Systems

Sentek Global has won a prime contract from the Navy to compete for upwards of $100 million in battlespace awareness task orders from the Space and Naval Warfare Systems Command's Systems Center Atlantic, the company said Nov. 13.

The San Diego, Calif.-based IT services provider will compete for task orders covering technical and program management, research and development, and enterprise analysis support, the company said. The company also expectds to furnish specific modeling, software engineering, simulation and production support.

Sentek Global is qualified to do the work because of relevant senior military operational experience coupled with domain technology expertise in command and control systems that enable it to not only tackle large contracts, but also produce creative solutions, company officials said.

Tight Budgets Drive Training into the Networked Virtual World

Charles Hoskinson
November 15, 2012
Defense Systems

Technological advances have made the task of preparing troops for combat more efficient and less expensive

Tighter budgets have pushed military leaders toward increasing the use of simulation for training, which has sparked technological advances that have made the task of preparing troops for combat more efficient and less expensive, military and industry experts say.

By combining live, virtual and constructive experiences in a networked environment, warfighters can be trained more efficiently wherever they are around the globe.

The Army debuted its Live, Virtual, Constructive (LVC) Integrating Architecture in September at Fort Hood, Texas, and the service plans to field the system at four other installations in 2013 and four more in 2014. The system links live players and virtual and constructive simulators into a network known as the Integrated Training Environment (ITE).

In April, the Air Force demonstrated its first operational use of its network training center at Luke Air Force Base, Ariz., where F-16 pilots can hone their aerial combat skills against computer-generated adversaries.

What both systems – along with other live, virtual and constructive training networks – share are several factors that make them attractive to military planners.

Most important among them is cost. “It conserves a huge amount of money,” said Mike McCarthy, operations director of the Army’s Brigade Modernization Command’s Mission Command Complex at Fort Bliss, Texas.

A typical brigade rotation to the National Training Center at Fort Irwin, Calif., costs $24 million to $25 million, $20 million of which is for transportation. Increased use of networked simulations eliminates most of the transportation requirements and frees that money for other uses, McCarthy said.

But networked training that combines live and simulated experiences also creates a more efficient environment for training warfighters. McCarthy said networked simulations can be used for development of basic skills so troops enter live training at a higher level – and are thus better able to take advantage of it. They can also help train combat leaders without the need to waste their troops’ time on a live-fire range, he said.

Networked simulations “don’t replace the value of live training. They only make live training more effective,” added McCarthy.

Networked simulations also are useful when live resources – such as advanced jet fighters likely to be flown by enemy forces – aren’t readily available.

“The ability to repetitively train pilots for complex adversarial encounters is difficult to service purely by live aircraft in today’s resource-constrained environment,” said Col. Robert McCutchen, a veteran F-16 pilot and flight simulation engineer for Lockheed Martin, which runs the Luke Air Force Base center for the Air Force. “LVC events take mission readiness to a new level by allowing pilots to experience the challenging environments they could face in combat.”

The Army’s LVC-IA provides improved realism over previous simulations by creating a common operating picture with data from live, virtual and constructive systems that mirror reports from live units, said LTC Shane Cipolla, director of the project office for integrating architecture at Fort Leavenworth, Kan., which comes under the Army’s Training and Doctrine Command.

"The COP that these data create gives the commander and staff the ability to practice decision making in a very realistic setting. One significant advantage is that the ITE allows multiple echelons to train simultaneously, without having to put entire units in the training area," Cipolla said. "It even creates synthetic training areas for simulated units to maneuver, without actually having to have the physical space on the ground. The ITE does not replace live training, but does help the commander meet his or her training objectives and help his unit enter live training at a higher level of proficiency."

One part of the networked architecture is the Multiple Integrated Laser Engagement System, or MILES, a familiar training tool for soldier for decades that now also includes a radio frequency component to simulate indirect fire and tank fire through walls or other obstacles in urban environments.

Cipolla said the Army is also looking at several new technologies for the next version of LVC-IA, including those that would enable the system to link with classified networks, support simultaneous training at several installations, engage multiple brigades simultaneously and be interoperable with systems used by other services, including coalition partners.

At Fort Bliss, soldiers are testing new simulation technologies that enable a single brigade to plug its live training into a larger, virtual unit, along with ones that enable units to train in their own facilities as if they were on a live range, McCarthy said.

Industry also is developing even more advanced solutions. For example, Cubic Defense Systems offers networked simulation training systems that are deployable, so units can take them to Afghanistan and other hotspots around the world. The systems also are adaptable to changing conditions, enabling troops deployed for one mission to quickly train for another, said Bert Ges, director of Cubic's warfighter effectiveness group.

The company's Mission Rehearsal Planning System enables leaders to test different scenarios while a simulation is running, Ges said. "It's all about minimizing surprise for the decision-maker," he said.

"Nothing replaces fieldcraft, and nothing replaces moving around out there," but networked simulation systems are becoming more realistic and capable of closely replicating the realities of modern combat, even to the point of giving soldiers a realistic sense of the terrain on which they would fight, he said. "It's not exactly alike, but it's pretty good."

National Cyber Range Follow-On Work goes to Lockheed

William Welsh
November 13, 2012
Defense Systems

The Army intends to award Lockheed Martin a five-year, $80 million contract to continue providing hardware and software support for National Cyber Range (NCR) operations, according to a procurement notice.

The service said it wants to continue Lockheed Martin's support for the NCR in its existing unique physical, virtual, environmental and electromagnetic configuration, according to a special notice posted on the FedBizOpps website. The award is scheduled to be made in 2013.

NCR comprises a series of custom configured government- and Lockheed Martin-owned hardware and software housed in a specially architected sensitive compartmented information facility with appropriate security protocols to allow execution of missions through top secret and special access programs. NCR replicates the Internet and other networks to provide for the modeling of cyberattacks, as well as the test and evaluation of

cyberattack impacts upon that infrastructure. It is designed to rapidly reconfigure between events and to simultaneously execute parallel events at multiple security levels as required.

The Program Executive Office for Simulation, Training and Instrumentation Project Manager for Instrumentation, Targets and Threat Simulators, is the contracting activity.

Air Force Awards $851M Engineering Support Contract to Small Businesses

October 30, 2012
Defense Systems

The Air Force Life Cycle Management Center has awarded an engineering and technical advisory and assistance services contract worth up to $851 million to five small businesses.

The Engineering and Technology Acquisition Support Services (ETASS) II multiple-award contract covers a wide range of services, including acquisition support, provisioning and logistics support, modeling and simulation, and configuration and data management. It also covers architectural support, test and evaluation, security engineering and certification, capability based planning, and integrated master planning and scheduling.

The five small businesses are:

- Abacus Technology
- EIS
- Odyssey Systems Consulting Group
- P3I
- SpectrumS4

SpectrumS4 is a joint venture between Spectrum Comm and S4.

The majority of the work will be performed at Hanscom Air Force Base in Massachusetts. ETASS I contract was a single award to Jacobs Engineering.

Navy, Alion Team on Training Systems Upgrade

October 23, 2012

Defense Systems

Alion Science and Technology has won a $63 million contract award from the Navy Warfare Development Command to enhance the service's training systems, company officials said Oct. 23.

The company will provide a wide range of technical services in support of the Software, Networks, Information, Modeling and Simulation program, the company said. Specific services covered are modeling and simulation, software development, system architecture, training systems integration, network engineering, and research and development.

The goal is to furnish realistic training of naval forces through synthetic training, they said. The program helps warfare commanders synchronize their training in real-world scenarios.

The contract runs through September 27, 2015.

U.S. Department of Defense
Office of the Assistant Secretary of Defense (Public Affairs)
News Release

Army, Joint Staff Team Up for Training, Tech Experiment

Karen Parrish -American Forces Press Service
October 23, 2012
Defense.gov

WASHINGTON, October 23, 2012 – Fort Benning, Ga., long known as the home of the U.S. Army's infantry, also recently served as host for a precedent-setting Army-Joint Staff collaboration aimed at testing new technologies for infantry squad-level training.

Army Training and Doctrine Command and the Fort Benning-based Army Maneuver Center of Excellence run a program called the Army Expeditionary Warrior Experiments, or AEWE, which is now in its eighth year and focuses on network-enabled, small-unit warfare.

The Joint Staff, meanwhile, sponsors a series of coalition capability demonstrations and assessments dating back to 2001 and known as Bold Quest. From Sept. 17 to Oct. 19, the two programs' staffs merged to assess squad-level live, virtual and immersive training in Army, Marine Corps and Canadian army forces.

The partnered event, known in military circles as AEWE-BQ12, also drew military observers from about a dozen partner nations, as well as Army Test and Evaluation Command analysts and evaluators to report detailed results.

Technology in Training

John Miller, the operational manager for Bold Quest and a member of the Joint Staff's command, control and communications directorate, told American Forces Press Service during a recent interview that the Joint Staff's involvement with Bold Quest "goes back well over 10 years."

"In 2001, what we now know as Bold Quest began as an advanced concept technology demonstration," he said. While the focus was initially narrow, Miller added, by around 2008 "it became apparent that internationally, there was an appetite … for continuing these capability demonstrations, and expanding their focus, on a regular basis. So we settled into a recurring series of what we now call Bold Quest operational demonstrations."

Before the linkup with Fort Benning's AEWE, Bold Quest had been a stand-alone event, he noted. The September-October partnered event was "a significant precedent" for the Joint Staff, he said, adding that partnering with the services for future Bold Quest cycles is something members of the Joint Staff want to continue.

Miller said AEWE and Bold Quest have similar goals.

"They call themselves an experiment. We call Bold Quest a capabilities demonstration and assessment, but the aims are very similar: bring warfighters, developers and analysts into an early partnership, provide the warfighters an opportunity [to work with emerging systems] … and get their feedback," he said.

Developing Capabilities

The Joint Staff exists, in part, to set the conditions for the U.S. and other nations' military services to succeed and to cooperate effectively, he said.

An example of that condition setting, he said, occurred during the dismounted squad experiment. “Most people would think that something as basic as infantry marksmanship would be pretty standard around the world. … [But] it’s been eye-opening for all of us, this week, to bring these nations and services together,” Miller said. “Even infantry experts from those nations were … surprised [and] informed to find out that the approaches to basic marksmanship vary considerably from service to service and nation to nation.”

Encouraging varied militaries to congregate and learn together leads to shared viewpoints and exposure to new methods, Miller noted. “Everybody goes away better off,” he added.

The Joint Staff “is not in the business of buying things; we are in the business of making sure the overall capabilities, joint and coalition, get developed in the most efficient way they can for everybody,” he said.

Joint Staff planners approach Bold Quest in two-year increments, as in the current 2012-2013 cycle, he said. At the beginning of that cycle, “the Joint Staff puts out a memorandum of invitation, essentially saying, “The next cycle is beginning. What are your priorities and initiatives for demonstration and assessment?” Miller explained.

The invitation is widely distributed to NATO and other allied and partner nations, he said.

“Then over the next six months, we’re in the ‘receive’ mode,” Miller added. “Because we’re in touch with priorities and capabilities development, there are not a lot of surprises when [responses] come in. But we … get those all on the table, and when you see very clearly that a number of services and nations are all lined up and trying to achieve the same capability, then that tells us the kinds of venues we need to go to.”

Depending on the emphasis, the venue could center on littoral operations along a coastline, or an infantry post such as Fort Benning, he said. Once the location is identified, “then collectively we work out the timing: everybody is grouped up and aimed at the same capability goal: When do we all think we can get there within this two-year cycle?”

Analyzing the Action

Miller said the Army organizations taking part in the most recent Bold Quest divided objectives for the event into “learning demands” that included situational awareness at the dismounted squad level and immersive-system marksmanship, along with an overall emphasis on immersive systems in infantry training.

He pointed out that while virtual and immersive systems played a central role in the experiment, each squad also completed several days of advanced situational awareness training, which was nonvirtual, real-world, classroom- and field-based instruction intended to train soldiers and Marines to be human “sensors.”

“The analysts have taken varied looks at what’s the best progression here,” he said. “How do you take the live and virtual pieces and best sequence them so the soldiers and Marines come out with the optimal outcome?”

ATEC analysts will compare results from each squad and each training sequence, Miller said, noting that some of the most valuable Bold Quest results can come from simply putting systems in troops’ hands. Service members often suggest changes to increase ease of use, field of view and other variables, he explained.

“All kinds of very specific warfighter subjective desires always come out of these things, but you never get them until you get everybody together,” he added.

The Joint Staff is not finished exploring dismounted infantry squad capabilities, Miller noted.

“As we always are in Bold Quest, we’re executing one and in concept development for the next one. … This effort's going to continue, so the outcome of AEWE-BQ12 doesn’t put a wrapper on these efforts,” he explained. “This will provide a foundation for similar partnerships in [2013] and beyond. It’s a building block.”

In the experiment’s aftermath, developers will “tweak their systems” based on feedback, Miller said, while Joint Staff members will plan the next logical level for further demonstrations.

"There was a wrap-up comment made by one of the Army representatives that I think we all agree with," Miller said. "The most bang for the buck is in training, and that's what this event was all about, … [and] the results will be widely distributed. The outcomes will be eagerly awaited."

Training for the Future

Several key leaders for AEWEBQ12 detailed the experiment for defense reporters during a telephone interview Oct. 16.

"We're not an acquisition experiment, so there won't be any recommendations coming out of this experiment for the procurement or acquisition of anything, said Gary Daniel, an AEWE Maneuver Battle Lab project lead. "Rather, we're going to provide insights in terms of the 'goodness' … of virtual and/or immersive training systems to help inform a couple of efforts: one, to help the [directorate of training and doctrine] here at the Maneuver Center of Excellence develop the future training strategy for 21st century training."

Secondly, he said, the experiment will inform the Army initiative known as Squad: Foundation to the Decisive Force.

"We're really looking to see what capabilities have been brought to bear in the experiment that have promise for the future, [and] what limitations are out there from an immersive training environment [perspective] that we need to overcome through live training or technology development," he said.

Immersive training will never replace live training, Daniel said. "But how can it enhance a training program at the small-unit level," he added, "to make their live training more effective and more efficient?"

A standard eight-man infantry squad can use immersive training to "do lots of things to some benefit," he said.

"They can practice their tactics, techniques and procedures for a given mission; they can practice their squad and platoon battle drills; they can actually conduct an upcoming mission in a virtual environment to refine their scheme of maneuver and to modify their [standard operating procedures] inside the unit if necessary," he said. "So those are the things that are jumping out at us right away."

Virtual Training Strengths, Weaknesses

Army Lt. Col. Aaron Lilley, lead ATEC analyst for the exercise, told reporters training technology improves each year, but hasn't reached the point at which a soldier can suspend disbelief. For example, he explained, immersive training can't yet replicate real-world sensations.

"Motion is a critical part of that," he said. "A soldier wants to move his character in the system by actual movement, so of course then you start getting into questions of scale, for instance. A basketball-court-sized space supports some number of soldiers training; what is that number?"

Sensory "feel" in the systems is a challenge too, he added.

"[A soldier preparing to enter and clear a room] should be able to feel the soldier he is moving up to and behind, who is immediately in front of him in the stack," Lilley explained. "He'd like that feel of the soldier behind him saying, 'Yes, I'm here, we are ready to go.' Obviously, that's a sophisticated concept … [and] it could be years away."

Jim Morris, chief of the Maneuver Center of Excellence training development division, discussed how well an infantry soldier's performance in simulated training matches up with what his real-world results would be.

"We don't know, necessarily," he said. "That's part of what we're trying to get to. … In virtual tools, we're trying to find the art of the possible, and reasonable, and cost-effective … new capabilities for better-trained soldiers to accomplish their mission."

Lilley noted that virtual tools offer trainers advantages the real world can't match.

"[When] a soldier goes to either a live range or a virtual range, what the soldier with the weapon is going to do is practice, and that's not going to change, whether it's live or virtual training," he noted. "But to the observer standing near him on a live range, the outcome of his next shot is rather random."

A coach at a live range can't share the shooter's sight picture or aim point, so can't reliably identify sources of error, Lilley pointed out. "Various [simulation] systems can present the soldier's point of aim, live, as he is drawing his sight picture on the target in the virtual system," he said. "And then the coach can see where the round impacted after the trigger squeeze. … So the coach gets an incredibly valuable [after-action review] tool that doesn't exist on the real range."

One question the Army has "on the fringes of the experiment," he said, is what the right mix of live and virtual training would be.

"Can you avoid live [training] time on a range or at a MOUT site and still gain … a trained and ready squad?" he asked. A MOUT – military operations in urban terrain - site typically has several mock buildings where infantry troops can practice cordon-and-search, entrance and clearing procedures they'd typically carry out in a real-world town or city.

With improved technology, virtual training alone could probably get close to that result, he said. But as a leader, he added, he still would want to evaluate that squad on the live range.

Morris pointed out training simulations allow troops and leaders to learn some things they otherwise couldn't. "How many opportunities does a [squad] leader have to employ a UAV, an unmanned aerial vehicle? Not very many," he said. "In an immersive environment, every single soldier can do it, and it doesn't cost much money."

Similarly, he asked, how many helicopter pilots have trained live on what to do if their aircraft loses a tail rotor? "None," Morris noted. "However, they've all practiced it in immersive trainers. … There are a lot of things that we can do in immersion that you really can't do any other place."

Lilley pointed out an immersive trainer also allows the leader to alter the training environment, and with a few keystrokes take his squad from city to desert to jungle to grasslands. "Even on a very large training footprint, I don't know that you can get that variety of environments at one home station," he noted.

Morris and Daniel both noted virtual trainers also allow easy changes to training conditions, so the training leader can dial in factors such as the number of enemies present and the behaviors of noncombatant civilians.

"You can present [soldiers], in a very short period of time, multiple scenarios that are a pretty good training ground for developing leaders and creating conditions where they have to make a rapid assessment of the situation, develop a course of action, implement a decision and pass out instructions to their soldiers," Daniel said. The same variation in training conditions would be much harder to effect in live training, he noted.

Field Demonstrations

Lilley explained the latest experiment allowed service members three days of training with a virtual technology before they moved to field demonstrations.

"We're taking each of these several squads, on the fourth day, out to the McKenna MOUT site here at Fort Benning and giving them the opportunity to execute the same tactical mission, in scenario, in the live environment that they were practicing for the prior three days," he said.

That sequence, he said, allows observers to measure troops' performance "according to a mission success profile we developed, looking at the key tasks identified by the commander … and how well the unit is able to accomplish those tasks."

Lilley said service members taking part in the experiment also complete several surveys on their experience and participate in thorough after-action reviews to capture their opinions and experiences during the training.

Each squad trained on each virtual system in isolation, one squad per system, but the squads came together on field assessment days for the assigned missions: area reconnaissance, cordon-and-search and deliberate attack, Lilley explained.

During field assessment, the squads worked together to perform platoon-level missions. “They execute in round-robin fashion, and each squad has the opportunity to become the main effort of the platoon,” he said.

Daniel said the experiment’s designers didn’t include specific objectives for multi-squad training beyond gaining more insight through joint and coalition participation.

“We’re seeing, as an aspect of the Marines’ and the Canadians’ involvement, different ways of doing things [and] different tactics, techniques and procedures, different approaches to learning inside the system – so it’s been pretty good for us,” he noted.

Harry Lubin, chief of the Maneuver Battle Lab’s live experimentation branch, said the experiment was “the first time we’ve worked at this level of detail with the Joint Staff.” Based on what the level of success in the first partnered experiment, he added, “We do anticipate this carrying on … as an annual event.”

That yearly look into new systems and simulators from the joint and combined, small-unit perspective, he said, will ensure continued exploration of new and evolving training systems and techniques.

Sandy Shows Storm-Prediction Progress

Frank Konkel
November 5, 2012
Federal Computer Week

By any account, the super-storm known as Hurricane Sandy was devastating, claiming 113 American lives and potentially an estimated $50 billion in economic damage as it wreaked havoc on the east coast on the way to becoming the second-costliest U.S. storm behind only Hurricane Katrina.

But the damage could have been much worse – in loss of life and economic costs – were it not for the astoundingly accurate forecasts of Sandy’s path from the National Hurricane Center.

Some of the Center’s model runs pegged the hurricane’s landfall five days out within 30 miles of the actual landfall point. That is 10 times better than the public and emergency personnel bracing for the storm could have hoped for 20 years ago, when NHC’s historic average for 72-hour (three-day) hurricane forecasts were only accurate to about 345 miles of landfall. Had that still been the case here, the best forecast would have predicted landfall anywhere from northeastern Connecticut to northern South Carolina.

In fact, if a storm like Sandy happened more than two decades ago, there’s a good chance meteorologists wouldn’t have predicted landfall at all. Instead they would have used historical data to conclude such a system would take a right turn from a high-pressure system ridge into the eastern Atlantic ocean and away from the coastline, according to Dr. Sundararaman Gopalakrishnan, a senior meteorologist at the National Oceanic and Atmospheric Administration's Atlantic Oceanographic and Meteorological Laboratory in Miami.

"If Hurricane Sandy happened 20 years back, it would almost certainly have been a disaster without much warning," said Gopalakrishnan, who witnessed predictive computer models as they shifted Sandy's trajectory west toward New Jersey as more and more data came in.

He recalls thinking "Oh no. This is not good," he said.

"I'm feeling sad about the deaths caused by this hurricane, but I think if it was not for these kinds of forecasts, there would be much, much more," Gopalakrishnan said. "I can clearly see that from forecasting this storm. This was a unique situation as Sandy was captured in hybrid circulation from the land. I wish it would have turned to the right (east), but it is better to know than not know."

The technology behind the forecasts

When NOAA – a scientific agency housed within the Department of Commerce that consists of six agencies, including the National Weather Service – was formed in 1970, meteorologists had satellites and past historical data to help predict the weather, but they didn't have supercomputers like the IBM Bluefire, which is housed in the bottom levels of the National Center for Atmospheric Research in Boulder, Colo. It has a peak speed of 76 teraflops, or about 76 trillion floating-point operations per second.

Hurricane Sandy bears down on the mid-Atlantic on Oct. 29th in this NASA satellite image.

Massive amounts of data, however, aren't worth much without modeling, and the NHC uses more than 30 different models to predict storm intensity. In 2007, the NHC began utilizing the Hurricane Weather Research and Forecasting (HWRF) model, which analyzes big data collected from satellites, weather buoys and airborne observations from Gulfstream-IV and P-3 jets and churns out high-resolution computer-modeled forecasts every six hours.

Over the past year, Gopalakrishnan said hurricane forecasts have further improved through the use of higher-resolution computer models. Points spaced on weather maps have increased in resolution from 9 kilometers to 3 kilometers, making HWRF the "highest resolution hurricane model ever implemented for operations in the National Weather Services" according to Richard Pasch, senior hurricane specialist at the NHC.

Forecasting a hurricane takes big data, high-resolution models that incorporate large-scale physics and an accurate representation of initial conditions, and NWRF's simulations have been successful thus far, Gopalakrishnan said, helping to improve hurricane forecasts by up to 20 percent.

Beginning five days before Sandy's landfall, the NHC's NWRF model ran 23 simulations of the hurricane's expected path – one every six hours, and each simulation taking about 85 minutes to complete.

Simulations and other such data are shared immediately with other federal agencies including the Federal Emergency Management Agency, according to Erica Rule, spokesperson for the NOAA.

"When there is an active storm threatening landfall, there is extremely close coordination," Rule said.

Not everything about Sandy was predicted as accurately as its landfall. Critics have questioned why predicted wind speeds in Washington, D.C. were higher than what was experienced, and the storm's predicated landfall missed by a few hours.

Yet these errors in NHC forecasting seem small compared to yesteryear's predictions.

Today, the NHC's average miss in hurricane landfall predictions is a scant 100 miles. In 1970, NHC meteorologists missed by an average of 518 miles. Major improvements have been recognized in precipitation

estimates and wind speed forecasts as well, which can prove vital in predicting storm surges and imminent flooding.

The increased predictive power decreases what scientists call a hurricane's "cone of uncertainty," or the area that includes all the possible paths a hurricane might go.

The better the predicted path of a hurricane, the less uncertainty of where, when and who it might strike, and Gopalakrishnan said "next-generation" efforts in hurricane prediction promise to further reduce uncertainty.

Wanted: Portable Simulators for in-Theater Training

Paul McCloskey
December 6, 2012
Government Computer News

The demands of maintaining troop readiness have become so severe and continuous that it is now something of a liability -- and a costly one -- to wait until troops are between deployments to train them in the latest battlefield techniques.

The solution? Inexpensive, portable simulators that can be used to train troops while they are in theater, according to U.S. Marine Corps Maj. Gen. Glenn Walters, who spoke Dec. 4 at the Interservice/Industry Training, Simulation and Education Conference.
"It has got to be smaller. It has got to be transportable. It has got to be cheap, because we're going to have forces spread out all over," Walters said, according to a report in National Defense magazine. Walters is Commanding General of the 2d Marine Aircraft Wing.

Portable simulation technology would not only enhance military readiness, Walters told contractors, it would do so at a cost that is more in line with today's lean budget realities. A case in point, he said, was the shortage of trained joint tactical air controllers at the beginning of both the Iraq and Afghanistan wars.

"Our JTAC training is on track," Walter said, according to National Defense. "About a third of their training is now done on a simulator. Personally, I think it needs to get up to 50 percent."

Without the training and simulators, he estimated the military would have seen double or triple the casualties, according to National Defense.

That type of cost-benefit trade-off makes simulation-tech providers more optimistic about maintaining demand for the technology during the current budget negotiations, according to LeAnn Ridgeway, vice president of simulation and training services at Rockwell Collins.

"With sequestration, we understand that DOD funding might be cut across the board," she told Military Training and Simulation News, "however, there will still be a need for simulation and training systems to enable the DOD to remain mission ready."

GOVERNMENT TECHNOLOGY

Florida County uses Video Game Simulation to Teach Teens about Drunk Driving

December 6, 2012
Government Technology

A new program in Lee County, Fla., will supplement driver training for teens by showing how being drunk, drugged, drowsy or distracted impairs driving ability. Members of the Lee County Injury Prevention Coalition announced the program, called One Simple Decision, on Dec. 4 by as part of the monthly Lee County Young Driver Safety Program.

"As the holidays approach, more people will be on the roadways, rushing around to get ready for the holidays, attending holiday parties and traveling for holiday gatherings," said Syndi Bultman, injury prevention manager for Lee Memorial Health System and chairperson for the Lee County Injury Prevention Coalition. "It's an especially important time to remind people of the dangers of drinking, drugs, distracted and drowsy driving."

One Simple Decision is a computer simulation that helps young drivers understand how being under the influence of drugs or alcohol, or being tired or distracted can affect a person's ability to drive. In conjunction with the simulation, coalition members will also share statistics with students about the number of drug- and alcohol-related fatalities. During the 2011 holiday season, which is Nov. 20 though Jan. 5, Lee Memorial Trauma Services treated more than 200 patients who had been involved in vehicle collisions and six of those patients died.

The Lee County Injury Prevention Coalition is composed of more than 80 health and safety agency officials and has promoted health and safety in Lee County since 1995.

I/ITSEC Show Daily

ONR Process Facilitates P-3C Training Capability

December 3, 2012
I/ITSEC Showdaily

One new US Navy training capability in the spotlight at I/ITSEC 2012 is the P-3C Air Crew Tactical Team Trainer (PACT3), which will be demonstrated at the Navy booth [2362].

According to Jonathan Glass, Naval Air Warfare Center Training Systems Division (NAWCTSD) program manager for PACT3, the system provides a deployable training capability that fits on a standard cargo pallet for transport via organic military airlift. The commercial off the shelf (COTS)-based elements can be installed in remote locations with no special facility requirements.

PACT3 emerged from the Office of Naval Research (ONR) Rapid Technology Transition (RTT) program.

"It was an ONR rapid technology transition project that was completed in January 2011," Glass said. "The fleet accepted the prototype in January 2011. Following that, PMA-290, who is the P-3 platform sponsor at NAVAIR, funded the fielding of eight devices.

We received that funding in April 2011 and since then we have been procuring the hardware for those eight devices; putting those together; and delivering the devices."

"ONR's RTT program looks for prototype R&D candidates that they can accelerate into production for rapid fleet use," offered Brian Hicks, program director for Cross Warfare Programs at NAWCTSD and portfolio manager for a range of training systems including PACT3. "They select certain candidates every year. PACT3 was submitted, accepted and training device," Glass noted.

In addition to NAWCTSD and Alion Science, the PACT3 Integrated Product Team (IPT) includes PMA-290, program office for the P-3 platform, and PMA-205, the training systems program office.

"Part of the success on the ONR side is that this is a transition program," Glass explained. "For example, once the fleet accepted the device, PMA-205 accepted the device as part of its regular family of P-3 trainers. It becomes part of the P-3 training inventory they currently have with life cycle support provided for it in the 'out years.' And that's a very important part of the 'transition piece' if you will. So it will be managed by PMA-205 like any other P-3 training device."

PACT3 program success has been recognized by its receipt of the Admiral Luis De Florez Pioneer Award in Feb 2011 and the NAVAIR Commander's Award for Science and Technology in June 2011.

"One of the requirements for the device was for the fleet, the uniform guys, to be able to operate the device, including elements from the instructor's standpoint," Glass explained.

"Traditionally the simulators back home that they use are mostly operated by contractor instructors. So we built a device that they actually can operate, run, use to build scenarios, and do the training they need to do while deployed. There's no other infrastructure required." Hicks emphasized the significance of system deployability to any location where P-3C crews are deployed around the world.

"It's capable of generating readiness while deployed," he said. "It also provides the air crew with opportunities to practice skills while deployed, specifically anti-submarine warfare skills. Those are skills that normally will atrophy during deployment. This device now gives them the capability to not only maintain that skill set but to hone those skills within the AOR in which they are operating."

"One of the other key aspects of this device is that Jonathan and the team have taken the actual tactical software, which is running native in the device," he added. "So the crew is actually using the same tactical software load as on the airplane. And it has a true 'drop-in' capability.

As new revisions to that software on the aircraft are made we can take that software load and drop it right into the device. That's a huge benefit."

RADM Robb Takes the Helm at NTSA

December 3, 2012
I/ITSEC Showdaily

One of the big changes for the National Training and Simulation Association (NTSA) this year has been the transition of the presidency from RADM Frederick L. Lewis USN (ret) to his successor RADM James A. Robb USN (ret). RADM Robb assumed his new duties with the organisation on 1 June and I/ITSEC 2012 is his first big opportunity to introduce himself to the community at large.

With that in mind the Show Daily is taking the opportunity to introduce those attending the event to RADM Robb and his vision for the future of the NTSA.

RADM Robb is a veteran US Navy combat pilot, who served, among numerous other assignments, as officer in command of TOPGUN, the Navy Fighter Weapons School.

The Admiral's Navy Staff Flag assignments included service as the Director of Aviation Plans and Requirements (N880) and as Director of Fleet Readiness (N43). After retirement, RADM Robb has been an independent consultant, specializing in strategic planning, joint operations, defense acquisition reform and global political/military affairs.

Speaking on the eve of I/ITSEC 2012, RADM Robb said he was keen to reinforce the successes of his predecessor.

"Our strategic position as the preeminent training, modeling and simulation association is due in great part to RADM Lewis' strong leadership and passion for the NTSA mission."

"My initial perceptions are that NTSA is strong, relevant and responsive to its constituent base. It is equally clear to me that we are headed into some turbulent times," he continued. "The challenges posed by a sluggish economy and a cloudy budget picture also present an opportunity for us to highlight the value of modeling and simulation as an effective tool to increase efficiency and quality across a wide continuum of public and private activities, both domestic and international."

"We are focused on highlighting the modeling and simulation value proposition to key leaders on the Hill, the services and industry."

RADM Lewis, who served as the President of NTSA for 17 years, will continue to have an advisory role with the organization and is leading efforts to build a National Modeling and Simulation Coalition. During RADM Lewis's tenure, the Association expanded from 55 corporate members to a current total of 230, making it the nation's preeminent organization dedicated to furthering modeling and simulation.

I/ITSEC has become the largest and most comprehensive modeling and simulation conference and exhibition globally. In 2011, the event occupied more than 250,000 square feet of exhibition space and attracted over 550 exhibitors and 20,000 attendees. It is now among the top 100 annual exhibitions in the US.

QinetiQ Project Wins UK MoD Acquisition Award

December 3, 2012
I/ITSEC Showdaily

QinetiQ [Booth 1261], the UK's largest research and technology organization, has received a Ministerial Acquisition Award from the UK Ministry of Defence for its simulation work.

As prime contractor for Project CREOLE, QinetiQ delivered full operational capability in August 2012, supporting the Joint & Battlefield Trainers, Simulations & Synthetic Environments Project Team and Collective Training Group, Land Warfare Centre. Project Creole meets an urgent operational requirement with significant enhancements to existing capabilities already provided by QinetiQ under Synthetic Wrapat training locations across the UK, Canada, Germany and Kenya.

QinetiQ's AIME technology links existing in-field instrumentation to a simulated environment enabling live assets to appear within the virtual battlespace. To enhance training, a Computer Generated Forces capability accurately injects military and civilian activity on demand, and virtual assets, such as unmanned aerial systems,

are available for control in real time. Operational commitments have led to an increased number of ISTAR capabilities becoming available.

Project CREOLE integrates core base ISTAR capabilities into the Synthetic Wrap, including an array of cameras and sensors. The system integrates government-owned COTS and customized components to offer an enhanced training capability within the current training area envelope. Outputs such as Full Motion Video from aerial systems or perimeter cameras, whether live or synthetic, provide realistic training inputs across multiple command levels. A debriefing capability also allows the recording, replay and analysis of an exercise for both training and experimentation output.

MYMIC Unveils CIRTS Capability At I/ITSEC

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The system is a family of game-based training systems for high-priority, low-density specialists and small teams who function in high stress situations and in close synchronization with external organizations such as tactical units. The current emphasis of CIRTS is a scenario of a Combat Medic (CIRTS-CM) at the point of an IED explosion.

CIRTS-CM is a next generation, gamebased system for training Combat Medics and Corpsmen on site management and tactical combat casualty care at the point of an IED engagement. It allows the individual medic to develop his/her high level cognitive and decision making abilities through realistic and increasingly more challenging medical and operational situations. Additionally, CIRTS incorporates critical game design traits that maximize the trainee's experience.

MYMIC intends to extend CIRTS to other first responder trainees.

Lockheed Martin Highlights LVC Success on Centenary

December 3, 2012
I/ITSEC Showdaily

Lockheed Martin [Booth 1749] is demonstrating the latest advancements in simulation and training for I/ITSEC 2012. The exhibit highlights new enabling technologies as well as examples of leveraging available technologies to ensure affordable training solutions.

"This is a special year for us," observed Chester Kennedy, vice president of engineering for Lockheed Martin's Global Training and Logistics business. "We're celebrating our centennial: 100 years of delivering innovative solutions to our customers."

"In August of 1912, with Glenn L. Martin starting his company and the Lockheed brothers starting their company, and over the course of time those coming together, that really created a century of innovation for our customers," he said. "And people are excited about our 100th anniversary as we go to a tradeshow like I/ITSEC."

"One of the things that I am most excited about includes our Live Virtual and Constructive [training environment]," Kennedy offered. "You may have seen some of that around our booth in the past but we have got some new dimensions and 'new flavors' as it applies to flight training."

In particular, he noted that the new dimensions focus on "thinking about 4th generation and 5th generation fighter platforms and how you can really create an environment that will enable the true capabilities of that platform and the operators associated with the weapon systems and the sensors to all get a meaningful training experience, so that when they go into battle they are appropriately prepared to take full advantage of that integrated capability."

Kennedy pointed to another focus area involving cyber solutions, including "being able to robustly test cyber systems and develop training scenarios that would allow offensive and defensive cyber operators to train in a much more realistic and credible environment than they have ever been able to do in the past."

"We've got some very enabling technologies for that work that we are really proud to be showing off at I/ITSEC 2012," he added.

Another Lockheed Martin focus area addresses the movement of training to mobile platforms.

"We have got some of our mobile applications that we will be showing off; some of the stuff that we have done for shipboard engine controllers will be a primary point of display but it will also allow visitors to relate how that technology can be applied in a lot of different domains.

As that technology matures we are able to partner with our customers to bring more affordable training aids into the marketplace for both traditional kinds of training as well as maintenance training," he said.

Expressing his personal belief that maintenance training in the past has not derived "the maximum benefit from technology that it deserves," he said, "We think we have got answers to the maintenance training affordability challenge through some mobile applications."

Another Lockheed Martin exhibit focus area encompasses the Virtual Ship Environment.

Noting the combined challenges of increasingly complex shipboard tasks combined with smaller crew sizes, Kennedy asserted, "We are faced with the challenge of training sailors to be more multi-faceted and to be able to do multiple tasks while onboard the ship. And that certainly creates a challenge on the training side [compared to] what sailors have faced in the past. And we have got some technology based solutions that I think 'are pretty cool' in that space."

Asked about the significance and role of new technologies in the company's solutions, Kennedy described it as "constantly taking advantage of the maturation of technology to be able to improve the affordability of our training solution that we take to our customer."

"A lot of that technological advantage involves leveraging advances in gaming technology – whether it is on the hardware or software side – of being able to do more with lower cost platforms and lower development cycles that are made possible by leveraging those advances that the gaming industry has helped to make available to us," he explained.

Supporting all of the solutions, Kennedy pointed to an underlying company expertise in "learning science behind the technology."

New Dynamic Synthetic Environment Capability Launched by CAE

December 3, 2012
I/ITSEC Showdaily

CAE [Booth 1433] is using this year's I/ITSEC to introduce a nextgeneration capability called the CAE Dynamic Synthetic Environment (DSE), which the company hopes will help revolutionize how simulators develop.

David Graham, CAE's director of technology applications, provided the *Show Daily* with an overview of what was behind the development.

"What we've been trying to do is make this new environment dynamic, trying to make it persist and trying to make it open."

The effort to develop the fundamental architecture and framework for a dynamic synthetic environment began some two years ago as part of an internal research and development program.

The DSE is an integrated solution combining an architecture based on the shared, public common database (CDB) specification; content creation software tools from both Presagis and CAE; core DSE simulation software; and DSE-enabled products such as image generators and computer-generated forces software.

"You can detonate weapons, engineers can dig holes and those things will be stored back to the common database," Graham explained. That is a clear advantage over some of the current static CDBs that "reset" at the end of a training session. Instead, DSE is designed to create a virtual synthetic environment that more accurately and realistically simulates the real world.

In addition, the company hopes that the capability will also include clear advantages when it comes to cost. The fact that current synthetic environment databases are static means that, in many cases, changing them requires significant time, effort and money.

CAE hopes that giving users the tools and ability to change, and effectively rewrite, the database will be more cost effective.

However, Graham sees that there would be challenges in allowing a large number of users to rewrite the database. "We're looking at the administration and how much can you automate through rules to cut down the workload," he stated.

"We are introducing a capability that we believe represents the future of how synthetic environments will need to serve defense forces in an integrated Live, Virtual and Constructive environment over the next decade and beyond," added Marc St. Hilaire, vice president, Technology and Innovation, CAE.

"There is no doubt defense forces must increasingly leverage simulation for mission training, rehearsal and decision-support because of its flexibility and inherent cost advantages. Extending the use of simulation requires a synthetic environment that lives, breathes and changes just like the real world and that's what the CAE Dynamic Synthetic Environment delivers."

Graham said that one of the goals was to make the DSE more scalable. "That's a harder goal. The larger a federation becomes the more heterogeneous it is and the more difficult it would be to agree common standards and goals. You also become more dependent on overall network speed and capabilities."

Looking forward, CAE says it has established several objectives that the DSE needs to address, including:

- Dynamic – the synthetic environment database must have the ability to change anywhere in the world in real-time without advance preparation;
- Persistence – once the synthetic environment changes as a result of any interaction with simulations such as weather or a weapons detonation, those changes must be able to "persist";
- Scalable – the synthetic environment needs to support single users on a mobile or laptop-based system all the way up to large, distributed live-virtual-constructive federations;
- Open – the underlying database architecture must be based on an open specification such as the CDB to enforce correlation and interoperability.

Clever Fox Can Optimize Training Operation

December 3, 2012
I/ITSEC Showdaily

Britannica Knowledge Systems [Booth 2907] is unveiling the latest version of its advanced web-based training management solution, Fox, at I/ITSEC 2012. According to the company, the solution is a highly flexible all-in-one training management information system [TMIS].

Fox enables training operations to increase throughput and reduce operation costs through strengthened decision-making, improved use of resources and staff, and simplified scheduling processes.

With the release of the latest version, Fox 8, Britannica offers enhanced features in the areas of scheduling, planning, curriculum-building, training needs analysis, performance evaluation, test generation, and decision support. These improvements, according to CEO Avi Kadish, ensure that training is planned, scheduled and executed with ease and maximum resource utilization, in support of operational throughput.

"Our vision is to meet all of the complex management needs of the training organization through the delivery of the ultimate, most intuitive TMIS ever created," says Kadish. "We strive toward that vision each day by making constant system enhancements, which in real-time result in the best use of people and resources, a greater understanding of operations, superior training delivery and assessment, and an increase in ROI." Fox's proven solution has been widely field-tested by large training operators such as CAE, the Royal Canadian Air Force, Israel Defense Force, and NASA.

A wholly-owned subsidiary of Encyclopedia Britannica, Britannica Knowledge Systems has been providing solutions for complex training operations in the areas of defense, security, aviation, UAS, and corporate business for over 25 years. The company attributes its success and reputable standing to its robust technology, proven methodologies, and unparalleled commitment to quality.

Spotlight on Shadow Crew Trainer

AAI Corporation [Booth 2467] is increasing the spotlight on its Shadow Crew Trainer for I/ITSEC 2012.

According to John Hayward, director of training systems and services for AAI Logistics and Technical Services, the unmanned air system (UAS) crew trainer has been shown in a mobile configuration as part of the PEO STRI booth over the past couple of years, but 2012 marks the first time it has appeared in the AAI exhibit.

Although the full Shadow Crew Trainer is normally housed in a large trailer, Hayward said that the I/ITSEC 2012 display has reduced the system to the essentials needed to demonstrate AAI's ability to train UAS crews for the Shadow and possibly other systems in the future.

Recent key program milestones helped contribute to the decision to highlight the Shadow Crew Trainer at this year's event.

"Just a couple of weeks ago we received our [Army Aviation Center] Directorate of Simulation certification and we are out fielding what our PEO STRI customer calls the 'final delivered configuration,' which is an update across the board to the Shadow Crew Trainer," he said, adding, "And the importance of the [Directorate of Simulation] accreditation is that it effectively allows crews using the Shadow Crew Trainer to get redit for 'flight time' for each hour they spend in the training device."

The certification will also have a major impact on the company's National Guard customers.

"As everyone is aware, the National Guard units typically train a weekend a month and then two weeks a year," Hayward explained.

"That means they have very limited access to airspace where they can fly their unmanned aircraft systems. As a result, training in this type of [crew trainer] environment is absolutely critical to them for maintaining training currency and certification."

"Our goal, when developing the system for the National Guard, was to help them achieve training and currency without having to gain access to airspace that is cleared for unmanned flight," he said. "Also, as a result of having essentially two unmanned aircraft systems' crew, a crew chief, and a roleplaying station, it allows a tactical operations center player to participate in the training scenario. And that gives them a great opportunity to improve coordination and not only practice the basic skills of flying the aircraft but also the tactics and how the aircraft is used."

As noted above, the company is currently in the process of doing the retrofit/fielding of the "final delivered configuration" updates to the 28 Shadow Crew Trainer systems now fielded.

"We have teams actually this week out doing the installation on two sets of Shadow Crew Trainers," he observed. "And that work continues through the majority of 2013 – at least through the August-September timeframe – of installation, acceptance tests, and then handing the device back off to the National Guard user for their use. So it will be a busy year doing those installations."

Hayward hopes that I/ITSEC 2012 visitors take a few key points from the exhibit.

"First of all, it is a complete crew trainer that can train both the air vehicle operator – you can think of them as the pilot – and the mission payload operator," he said. "It's also a full crew trainer that allows both individual skills training and crew coordination training between the two crewmembers of the UAS system as well as with other crewmembers flying additional Shadow Crew Trainers or working in the tactical operations center. So it allows that entire crew coordination process to happen and for the students to really maximize the knowledge transfer during training."

In addition, Hayward hopes that visitors "can see how the technology we have applied to the Shadow Crew Trainer can also apply to other unmanned aircraft system platforms or remotely piloted vehicles – depending on whether we are talking to our Army or Air Force customers."

Moving Marathon Targets Challenge Shooters

December 3, 2012
I/ITSEC Showdaily

One of the most challenging aspects of live fire training is accurately replicating the movements of a human target. Traditional moving targets have usually been rail-based so a shooter can easily predict their movement after a few exposures. A much more challenging moving target has been developed by Australian startup company Marathon Targets [Booth 2956].

The company was founded in 2007 by Alex Brooks, Alex Makarenko and Tobias Kaupp, all of whom earned doctorates from the Australian Centre for Field Robotics at the University of Sydney.

Working at the center the three collaborated closely with the Australian Defence Force to develop moving targets to improve marksmanship training.

The result of the development effort was the T20 "smart" target which mounts a human-sized all-aspect 3D mannequin on a twowheel Segway Robotic Mobility Platform. The mannequin is made from durable plastic which will withstand hundreds of shots before easy replacement while the Segway is protected by armor plate. The targets use GPS and a scanning laser range-finder for navigation, positioning, and obstacle detection and avoidance.

The targets replicate humans by moving at various speeds and turning abruptly. When the mannequin is shot it tips over at the waist to indicate a hit. When targets are operating as a group they can be programmed to respond by scattering, as civilians are likely to do, or react as an enemy might do either by moving behind cover or advancing toward the firer. Stationary or rugged laptop computers can be used to program the targets.

The Australian Army was the first customer for the T20 target in 2008 and was followed by the US Marine Corps, which purchased targets for evaluation under the auspices of the Foreign Comparative Test program administered by the Office of the Secretary of Defense's Comparative Testing Office. The Marines subsequently awarded Marathon Targets an indefinite delivery/indefinite quantity contract, with a potential value of up to $50 million, for the four-wheeled T40 robot which is better at navigating moderately rough terrain. The first eight robots were shipped to Marine Corps Base Quantico, VA in November 2011.

Other potential customers are also interested in the system. The British Army recently completed trials of the target. "We are always looking to narrow the gap between training and the real thing", said Lieutenant Colonel John Whitchurch, who is in charge of the evaluation.

"These robots give the element of surprise, and judgemental shooting that is often a feature of operational engagements."

projectiondesign Shows Off Latest Innovations

December 3, 2012
I/ITSEC Showdaily

Premiering on the projectiondesign booth [2848] at I/ITSEC 2012 will be the new FS35 IR, which, according to the company, is the world's highest resolution and brightest NVG stimulating solid-state LED projector.

The projector is available in two versions. The FS35 IR features the option of Dual IG input for simultaneous RGB + IR stimulated content, as well as a high-resolution version. With improved IR optics over the previous generation FS projectors, the FS35 IR boasts up to 80% more IR intensity and uses projectiondesign's updated solid-state ReaLED illumination engine, providing unrivalled day and night-time training.

Also showing for the first time is the F35 panorama, a panoramic projector for collaborative C4ISR workspaces. The F35 panorama boasts a wide image aspect ratio of 21:9 (2.37:1), which enables images as wide as 4m (13') to be created in standard office spaces without the need for edge-blending of two projectors. Compared with a two-projector solution, the F35 panorama enables shorter setup and installation time, lower maintenance requirements, less downtime and a lower total cost of ownership.

Presagis CTO Argues for COTS Potential

December 3, 2012
I/ITSEC Showdaily

Once again Presagis [Booth 1609] has a big presence at I/ITSEC and is looking to continue to grow its business, which is based mainly on providing COTS software for the modeling and simulation community.

The company's chief technology officer, Nick Giannias, took the Show Daily, through some of the main areas that the company is focusing on and offered some thoughts on where he believes the technology is going. "We're looking to showcase some of our capabilities in terms of artificial intelligence [AI]. We have a product that is originally based on game technology that is integrated as part of our simulation capability."

The technology in question originated in a company called AI.implant, which was acquired by Presagis several years ago. "It started primarily doing human behavior and that's one of the biggest applications for it. It evolved into doing crowds of vehicles for urban areas. It can be used to make a simulated city look like it has real city life," Giannias continued.

"The software was used by quite a number of games. When we bought that technology we eventually realized it was great for the simulation industry. We decided to focus on that and exited the games market some years ago really because it has a very different dynamic," he added.

During the week leading up to I/ITSEC, Giannias was in London to give a paper on the subject at the Royal Aeronautical Society.

The focus there was on how AI could be used to develop more realistic environments for flight simulators. "One of the areas of development for that is what they call ground traffic or air traffic control.

There are certain rules in place today but they need to be modified and ICAO [the International Civil Aviation Organization] is looking at what technologies can be applied before they write the rules in order to make sure the changes can be supported by the industry."

"It's an interesting application of our AI to actually simulate the ground traffic," Giannias continued. "It creates a more immersive environment for the pilot." Turning to other areas where he sees application for the technology, Giannias explained, "our AI software was designed to handle populations and people…so we've looked at it in terms of applying it to disaster relief scenarios."

"Some folks are using our software to do emergency management situations. For example you would have an accident, a fire, an explosion and the streets would be clogged and you'd have a lot of pedestrians coming around and ideally you want to be able to simulate that."

Looking beyond this technology, Giannias said that Presagis continued to look at what was happening in the games industry and how it could be applied across to modeling and simulation. "We look at what the games industry is doing from a technology perspective in terms of different techniques and algorithms. We also look at what research they are doing and how it can be applied to our products."

"And the third thing we are doing is monitoring what people are doing in gaming and integrating them into solutions, really looking at supporting our customer. So when a customer is combining our constructive simulation, like Stage, with gaming software, like VBS2, we want to make it as easy as possible for them so our tools actually allow you to create the environment for these simultaneously and, of course, interoperate as well."

Looking to the future Giannias said that he believed that the simulation industry has "a wonderful opportunity, particularly in the COTS area, to assist defense customers in maintaining, or enhancing, their capability, while reducing costs. You can't do that by creating everything from scratch. You have to start with a baseline that shows a lot of potential and then add things that are unique to your training or operational or analysis needs. So I think that's our challenge to build good foundational technology capability that can be adapted," he concluded.

Italian Company Announces Simulator Contracts

December 3, 2012
I/ITSEC Showdaily

Selex Galileo, a part of the Finmeccanica group, announced recently that it had been awarded contracts worth around s8 million for simulation systems for Italian and export customers.

The contracts include providing simulation systems designed to train the pilots and mission operators of fixed and rotarywing aircraft and are largely related to the wider business of Finmeccanica, which builds a variety of fixed-wing aircraft and helicopters.

"Selex Galileo has more than ten years of experience in providing training systems for programs such as the Eurofighter Typhoon, Tornado and M-346. We are confident that this experience will allow us to continue to develop our business relating to Typhoon training and will put us in good stead to play a leading role in new programs and with new platforms," said Gianfranco Terrando, senior vice president of Air Systems, UAS and Simulation.

"The simulation business is dominated by big players, but we believe that our expertise in sensors and mission systems, high level of technological innovation and closeness with our customers will allow us to compete strongly in the market by delivering highly customized solutions that meet customer requirements in terms of capability, performance and cost."

With over 20 years of experience, SELEX Galileo is firmly established, in Italy and abroad, in the field of simulation and training," Terrando added.

"For the Eurofighter Typhoon program the company plays an important role in providing the Aircrew Synthetic Training Aids system and, for the M-346, SELEX Galileo is responsible for the construction and logistical support of parts of the Full Mission Simulator including the Instructor Operating Station (IOS). The IOS faithfully simulates the cockpit of the M-346 including the on-board avionics and most of the aircraft's critical systems."

"To ensure the maximum flexibility of all of the company's training systems, Selex Galileo has designed the basic 'building blocks' that form a simulation system. The company has also developed a modular architecture to tie these building blocks together, enabling the provision of scalable systems to cover a broad spectrum of needs," Terrando told the Show Daily.

Boeing Emphasizes Transition to an Advanced Learning Organization

December 3, 2012
I/ITSEC Showdaily

According to John Schwering, Boeing business development leader for integrated Live, Virtual and Constructive training, the company exhibit [Booth 749] is designed to provide I/ITSEC 2012 attendees with "a better understanding of how Boeing's Training Systems and Government Services is moving towards an advanced learning company."

"Our demonstrations – from Integrated Live, Virtual and Constructive (I-LVC) to the Constant Resolution Visual System to some of the Advanced Instructional Systems – will all highlight how we have shifted away from what some may have viewed as a traditional training device organization to an advanced learning organization," he explained.

According to Schwering, recent advances in training technology suggest that future training strategies may be entirely different from current, traditional approaches. As a result, Boeing's Training Systems and Government Services is transitioning to an advanced learning company, focused on blending the science of learning into various training solutions for the warfighter across the entire training continuum. A working definition for Advanced Learning is the application of science and technology to improve training experience, efficiency, and retention. This includes leveraging innovative game based technology, experiential learning, data analytics, intelligent tutoring integrated with end-toend Learning Management Systems, adaptive training techniques, immersive training, distributed training, embedded Integrated I-LVC training, and collaborative tools used for game development.

Drawing from his own 27 years experience as a US Navy aviator, Schwering offered, "that 'Integrated' piece is important. That ability to integrate the Live, Virtual and Constructive environments is all about producing warfighter readiness while optimizing the training experience and producing efficiencies in the flight hour program as well as other fiscal accounts."

The Boeing exhibit will also feature new technology for the company's Constant Resolution Visual System (CRVS) that allows the system to deliver almost four times the resolution of high definition for more realistic and effective military training.

JVC's new e-Shift 8K projection technology brings CRVS' visual acuity closer to 20/20 while keeping the system's projector small and affordable. It nearly doubles a projector's resolution horizontally and vertically, approaching 8K performance from a 4K device.

CRVS provides constant target visibility throughout the entire field of vision by surrounding the pilot and cockpit in an eggshell-like environment that visually transforms into cities, landscapes and complex combat

scenarios. JVC e-Shift 8K projectors further enhance the training experience and enable pilots to identify targets at realworld ranges.

The system is compatible with a wide range of fast jet and rotarywing cockpits and aviator night vision goggles, and easily integrates with current and future head-mounted displays. In addition, existing CRVS customers can upgrade to JVC e-Shift 8K without modifying screens or structure.

Schwering said that other exhibit highlights include the company's F/A-18 Interactive Virtual Environment Maintenance Trainer as well as a look into what the company calls "the advanced science of learning, where we are demonstrating some collaborative tools that are used in developing a training capability; instructional systems; an immersive training environment; and certain gaming techniques and how they can be leveraged to produce or optimize the training experience."

Along the way, the company hopes to demonstrate its complete global connectivity as a global enterprise, not only on the defense side but also through the global depth of Boeing's commercial aircraft business and other associated organizations. Some of those commercial capabilities will be demonstrated during I/ITSEC.

Looking toward the future, Schwering expressed the company's hope to continue its long training history to encompass the US Navy's transition from the P-3C Orion to the new P-8A Poseidon platform.

The first P-8A squadrons are already being trained with an initial operational capability slated for 2013. "As the Navy's Orion aircrews transition to the Poseidon, Boeing is offering a full range of training to support their 'crawl, walk, run' onboarding strategy," he said. "Starting with classroombased courseware, moving into Part-Task Trainers and finally into full-motion Operational Flight Trainers and Weapons Tactics Trainers for the mission crews, aircrews move through a complete spectrum of training. This ground-based training saves time and aircraft wearand-tear and is a fraction of the cost of live-flight training."

Christie Looks for Advantage in Seeing Double

December 3, 2012
I/ITSEC Showdaily

Christie [Booth 2549] is using I/ITSEC 2012 to launch its new Dual-View simulator display. According to the company, the DualView simulator can separately compute and render the same scene from two unique points of view (POV) with excellent image quality, allowing two operators to respond to their own, separately warped, fullscreen image simultaneously.

This achieves essentially zero geometric distortion rather than a compromise single Design Eye Point (DEP) located half way between operators. The system accomplishes this by computing completely separate ideal DEPs for each independent operator working adjacent in the same cockpit, and separating those pilot/copilot views by time, toggling both eyes alternately. It is similar to how alternate eye stereo glasses work.

As a result, the system offers collaborative training that is closer to real-life scenarios where fast action developments require rapid decisions.

It is ideal for applications that involve two operators or pilots such as two-person tandem jets or helicopters, as well as ground vehicles with driver and a gunner behind him/her, or any other training scenario where completely separate views and telemetry/HUD augmentedreality feedback is useful with zero geometric distortion.

According to the company, the main advantage of DualView is that crews can work together cooperatively in a configuration very close or identical to the real thing yet each gets the correct geometric view corrected

perfectly for their unique DEP. There is no compromise or geometric distortion unlike common designs that compute the scene from half way between viewers. Another key advantage is that totally separate information may be provided for each viewer. For example a pilot may see vehicle path info like a HUD, whereas the copilot or mission specialist or gunner can see only what they need for their task. In essence it replaces two completely separate simulators with one.

DualView computes eight separate images, for a total of 18.4 MegaPixels, seamlessly blended such that the pilot sees four combined images and the copilot his/her own separate four combined images. The development of DualView was funded internally by Christie. The company believes that there is a strong interest in the industry for a system that would solve the challenges of tandem simulation. I/ITSEC 2012 will be the first time such a system is presented using Christie's LED simulation Matrix StIM projectors and the company hopes to garner a high level of interest.

"The Christie DualView allows configurations like tandem seating, while offering the perfect viewpoint for pilot and copilot – or any two viewing positions – since the images are computed and corrected specifically for their eye points, not a half-way-in-between," stated Zoran Veselic, vice president of Visual Environments at Christie.

"It's a concept built upon Christie's simulation expertise and experience that includes the world's first dual-input projector, the Christie Matrix StIM LED DLP simulation projector, which renders visible and infrared light simultaneously for night vision goggle training. It reflects our leadership in the industry and commitment to developing a compact, low-cost simulator display without sacrificing on versatility and performance."

Christie partnered with RealTime Immersive (RTI), a simulation and serious games company established to support CryENGINE licensees in the simulation and serious games market. RTI plays a key role in the display at I/ITSEC by providing photorealistic quality undersea demo content.

According to Veselic, the Christie DualView represents a new opportunity in the simulation markets such as government, civilian, and gaming, where cost constraints can force customers to compromise on quality and system capabilities. It also creates a better sense of teamwork and cooperation than systems in which operators occupy entirely separate simulators.

Marines Shift to 'Sustain and Save' in Training

December 4, 2012
I/ITSEC Showdaily

The US Marine Corps is shifting from a "buy, build, and field" approach to its training systems, which has characterised the 11 years since 9/11, to a more fiscally conservative "sustain and save" approach. Col Michael Coolican, Program Manager for Training Systems (PM TRASYS) within Marine Corps System Command (MCSC), spoke with the Show Daily.

"We are coming down from a training high. The Marine Corps has really taken advantage of the available funding over the past 11 years in order to upgrade as well as increase the fidelity within our training systems. Not only the myriad simulators and training devices, but also our live training facilities and ranges. During the past 11 years, PM TRASYS answered the call of the Marines for more immersion training by building a tremendous number of MOUT [military operations on urbanized terrain] facilities and other types of ranges throughout the world in order to provide a more realistic training environment for our Marines globally. These facilities provided an excellent opportunity for small through large scale immersive training. An entire regiment

can attack into the Combined Arms Military Operations on Urbanized Terrain facility, 1,500-1,600 buildings, at Twentynine Palms [CA] and disappear into the environment."

"The Marines have done a tremendous job of taking advantage of the available funding over the past decade to better train them for the battles they were fighting. This includes our live training continuum, training ranges, facilities and MOUTs. It also includes our virtual and constructive training continuums, tactical vehicle and convoy simulators, vehicle and helicopter egress training systems, and many infantry weapons simulated training systems. Now we are moving into a period of fiscal austerity. What that means in specific detail we don't know right now. However, staying in context with Deputy Secretary of Defense Dr. Ashton Carter's Better Buying Power 2.0 memo from November 2012, we must 'do more without more.'"

"We must control cost throughout the product lifecycle. We need to eliminate redundancy within warfighter portfolios, institute a system to measure the cost performance of programs and institutions and to assess the effectiveness of acquisition policies, and we need to improve tradecraft in acquisition services. That is exactly what PM TRASYS' focus is for future acquisitions and management." Col Coolican believes this new era of austerity poses a number of challenges. "We have kept pace with the Warfighter's operational tempo by acquiring, building, fielding and managing high fidelity training simulators, services, training areas and facilities. There is a cost of maintaining these critical programs and keeping them relevant so that Marines can get appropriate, yet safe, training. There are many ways we use strategic acquisition processes to sustain ranges, the MOUT facilities and the life of our training simulators to save money while ensuring we meet the training needs of the Fleet Marine Forces. One such example is consolidating contracts so that we have less management overhead. Another is through more virtual technology. I don't believe we have taken complete and full advantage of virtualization. There are some tremendous savings that can be made.'

"Our Infantry Immersion Trainers (IIT) at Camp Pendleton, Camp Lejeune, and Marine Corps Base Hawaii are amazing training facilities. The first time Marines encounter Afghans either friendly, hostile or something in between is at an Afghan village with role players at Marine Corps bases, not in Afghanistan. These are valuable training tools but the value will diminish when the Marine Corps leaves Afghanistan.

So how do we make these more generic so that they can be rapidly changed from one scenario to another? If, for example, a contingency arises in Korea, Africa or wherever, how quickly can we modify and/or adjust training systems and facilities to take the appearance of different environments without having to buy warehouses full of atmospherics?"

"PM TRASYS continues to maintain frequent liaison and teaming with the operating forces in order to capture every opportunity to improve our systems and the way we manage our programs. For example, the Marine Expeditionary Rifle Squad team at MCSC is building a small, pseudo IIT at Quantico that can be used for experimentation.

They will examine how such facilities can be made more adaptable before PM TRASYS begins spending money on upgrading the three IITs. It is a good example of the larger Marine Corps acquisition picture with everybody working together to ensure that we understand how to best spend the dollars that we have."

"When I talk about the future it is only limited by money. We need to prioritize. We need to focus heavily on capturing the exact requirements of the Marines at homestation and in predeployment in order to ensure appropriate priority of efforts. PM TRASYS does a good job maintaining close liaisons with Marine units in order to capture these needs. Additionally, we work closely with other services in order to capitalize and leverage off of each other's research and experiences to save money and create efficiencies in our resources. Future training systems need to be affordable, they need to deliver more bang for the buck. By working together I believe we maximize that opportunity."

"Fiscal austerity comes at the same time as we are withdrawing from Afghanistan and drawing down the size of the Marine Corps and the other services. I think there is a danger of people saying that we can relax. It is the Navy/Marine Corps team at the forefront, and we must always be ready for the next contingency."

"Without question senior Marine leaders understand the value of simulation. They understand the fiscal reality that it saves money if Marines can train in a simulator. Secondly, Marines are saying it makes a difference when they deploy, they are more successful in their mission because they have trained in facilities such as the IIT or the Combat Convoy Simulator."

Bell Boeing to Supply Additional MV-22 Trainers

December 4, 2012
I/ITSEC Showdaily

The Bell Boeing V-22 team [Booth 749] is producing an additional seven ground-based trainers for the US Marine Corps MV-22 Osprey tilt-rotor aircraft.

The Containerized Flight Training Device (CFTD) is used to train aircrews on basic aircraft familiarization and handling qualities, day and night flying including use of night vision goggles, formation flying, aerial refueling and landing on ships. All CFTDs can be locally networked to one another and to other aircraft trainers to allow for more robust simulations. MV-22 aircrews used simulators to complete more than 50% of their training requirements.

The Marine Aviation Training Systems Site Futenma, Okinawa, which provides training for the 1st Marine Aircraft Wing (MAW), III Marine Expeditionary Force, is the most recent location to receive CFTDs. "The pilots get to conduct the same mission and rehearse communications procedures over the radios in the presence of their instructors," said Major John P. Arnold, the officer in charge of the facility. "This allows the pilots to get instant, direct and invaluable feedback while training."

"The simulator is a fantastic asset for our Osprey pilots, but the actual sensations and feelings experienced in the air during actual training flights are critical," said Colonel Jeff A. Hagan, the assistant to the chief of staff, G-3, operations and training, 1st MAW. "The role of the simulator is to supplement training flights and provide opportunities for pilots to practice a variety of scenarios."

Dave Sullivan, Bell Boeing Training Systems manager in the V-22 program office, told the Show Daily: "Our team was able to work with the customer and put these trainers on the ground in Japan in record time - RFP to final delivery was only 18 months, when industry standard is 36-48 months after RFP."

Bell Boeing has delivered, or is on contract to deliver, a total of 28 Osprey flight trainers to the Marine Corps and the US Air Force.

The first CFTD was delivered in 2007. The latest contract, awarded on 25 September, is worth $74 million and includes an option for an eighth CFTD. The new trainers will be configured for the latest MV-22 Block C standard. The first two of the newly contracted CFTDs are scheduled to be delivered to Marine Helicopter Squadron One at Marine Corps Base Quantico, VA, in May 2014 to support presidential transport activities. Other trainers will be delivered to Hawaii.

Bohemia Interactive Simulations Demos Latest VBS2 Capabilities

December 4, 2012
I/ITSEC Showdaily

At I/ITSEC 2012 Bohemia Interactive Simulations (Booth 735) is demonstrating networked VBS2 being used in realtime collective training events, with large numbers of trainees from around the globe participating in virtual operations within VBS2 v2.0.

The company says that the demo will highlight the robust nature and flexibility of the VBS2 platform for distributed learning. VBS2's proven training capability is strengthened by its ability to leverage high level architecture and distributed interactive simulation to deliver massive multi-player capability.

Players will participate live from across the US, Norway, UK, Australia, Sweden and Canada and are demonstrating the flexibility and distributed training potential of VBS2: allowing instructors to globally network training devices, trainees and intelligence.

Bohemia Interactive Simulations has also improved the capabilities of VBS2, kicking it off with a 64-bit upgrade. The company stated that, "with these new features, coupled with the all-new and recently released 3D terrain editor, VB-Edit, it has never been easier to generate highly realistic, geo-specific terrains for VBS2."

VBS2's terrain enhancements include increased map-loading capacity with the 64-bit version of VBS2, which enables the application to access more memory, allowing the loading of larger and more complicated maps. The previous limit of 4096x4096 for terrain heightmaps is gone for single maps, and larger multimaps can now support larger road networks. The limits now only depend on how much physical memory can be made available to the application.

There is also a more realistic view-distance with the rendering of long view distances visually improved by changing the curve of fog thickness with distance. The changes allow more of the true ground color to be seen without as much haze, providing a more photorealistic view of the terrain surface.

A further enhancement to the product includes two new AI tools for VBS2 called xaitMap and xaitControl. The company has also launched their new online store. The store is a complete one-stop marketplace for training and simulation, offering not only the latest in VBS 2.0 and VBS software, but also a diverse collection of related software, hardware and services.

Pilatus Selects Rockwell Collins for Strategic Partnership

December 4, 2012
I/ITSEC Showdaily

Rockwell Collins [Booth 2501] announced yesterday at I/ITSEC 2012 that it had been selected by Pilatus Aircraft to provide simulation and training products and systems as part of a long-term agreement between the two companies.

The first programs to launch under the agreement will see Rockwell Collins providing its EP-8000 and EP-80 image generators and SpectraView displays for unspecified customers in Asia and the Middle East. Pilatus is keen to continue its growth in the training sector by providing potential customers with a full turn-key training and simulation capability and the partnership with Rockwell Collins will strengthen its offering on the increasingly crucial simulation end of the flight training business.

"Pilatus chose Rockwell Collins based on our track record as a proven integrator of the most advanced simulation and training products," stated LeAnn Ridgeway, vice president and general manager of Simulation & Training Solutions for Rockwell Collins. "We back that up with our flexible approach and by supporting our systems with the global reach of our engineering and operations teams."

The Rockwell Collins EP-8000 image generator system introduces a new paradigm for high-end training applications. The company believes it combines ground breaking realism and performance with a scalable, adaptable design that meets complex training requirements now, and in the future, at the lowest life-cycle cost.

The Rockwell Collins EP-80 employs "breakthrough, secondgeneration EP2 (environment processor) real-time software to provide full functionality within a high-resolution, round-earth environment." It is compatible across the complete line of EP image generators and enables customers to combine COTS PC training devices with high performance systems, yielding a wide array of training capabilities that share common real-time software, databases and host interfaces.

The SpectraView displays are said by Rockwell Collins to be "ideal" for fast-jet, wide-body and rotary-wing flight simulation applications.

"Our scalable solutions range from small radius, compact projection systems to sophisticated multi-channel full field-of-regard domes," the company stated.

Ridgeway told the Show Daily that the company "continues to enhance training effectiveness by providing the most advanced training solutions with the lowest cost of ownership. By leveraging strengths in avionics systems development and training systems design, Rockwell Collins delivers total integrated solutions. The company's diverse portfolio spans the entire training life cycle, from instructional systems design through fully integrated, high fidelity training systems and support."

Rockwell Collins also used this year's event to unveil Simulation and Training – a high realism look ahead, a new eBook that shares a vision for the future of the simulation and training industry and examples of program excellence.

New Head of CAE's Military Business Sees Opportunity Despite Budgetary Pressure

December 4, 2012
I/ITSEC Showdaily

There have been some major changes at CAE [Booth 1433], with a new head of its military business being appointed and with an increased focus on domains other than the company's well known air training business.

The new group president of CAE's Military Simulation Products, Training and Services Group, Gene Colabatistto, took some time from his schedule to sit with the Show Daily and explain his vision for the business. "It is important for us to ensure the market understands and we portray ourselves as not just an aviation training related company. We work in all the domains including land, sea and critical infrastructure and it's not just training: in our training programs we also do a fair amount of systems integration and engineering."

Colabatistto came to CAE with more than 25 years' experience in the global defense industry, and has held leadership positions in both the military and the private sector. Before joining CAE, he was a senior vice president in the Intelligence, Surveillance and Reconnaissance (ISR) Group at Science Applications International Corporation (SAIC) where he was responsible for the growth of their ISR and Cybersecurity businesses.

Before his time at SAIC, Colabatistto found success in a number of executive positions after retiring from the US Marine Corps. During his time in the Marine Corps one of his formative experiences was being the service's representative for satellite and airborne reconnaissance during Operation Desert Storm.

Focusing on the challenges in the land environment first, Calabatistto sees clear challenges and potential in the market as US forces continue to withdraw from Afghanistan. "The thing that will get everyone's attention is the operational tempo of all the training assets.

By virtue of having so many forces deployed they are not occupying time and space in the training environment."

"Now the land forces are going to draw down as one outcome of fiscal tightening. But if the forces are all back in the Continental US or going through normal deployment rotations the training tempo to support those rotations becomes quite high. The availability of the training ranges, which have also been drawn down, means it will be difficult to get on those ranges so they are going to rely more on home station training because of the availability issues, but also because of the cost of travel," Calabatistto continued.

"Having capabilities to integrate immersive training at the home stations and forts will be really important. If you are successful at developing this integrated environment then you remove the requirement to go and move a unit in order to train," Calabatistto explained.

"Over the next few years you will see training continue to be shaped by our experiences in Iraq and Afghanistan, rightly or wrongly,' Calabatistto continued. He pointed to the increased number of urban training areas as one reflection of this. "So part of the challenge will be to figure out what the next war is going to look like and try and figure out the training capability needed. If you build a training capability that can be adapted then it's up to the force to decide how they want to use it. But you don't want your training capabilities to reflect the last war."

Looking more deeply at the fiscal pressures across the services, Calabatistto said he thought that the first thing the services would do would be to cut force structure. "Because along with that person comes a lot of training requirements, equipment, dependents – you know, the whole life cycle costs of the person. So at the top line there will be less forces to train; so in a sense it takes some pressure off the budget. But on the other hand all of this comes out of the base defense budget, so it doesn't have the luxury of dipping into the operational funds," he stated.

"So there is going to be a requirement for efficiencies. Now I think if you can do this right and be more efficient then you can actually get more training out of the available budget rather than simply ramping the budget down," he concluded.

Argon Launches CRBN/HazMat Simulation System

December 4, 2012
I/ITSEC Showdaily

Argon Electronics [Booth 2882] is launching an innovative simulation system for remotely managing CRBN and HazMat simulation exercises at I/ITSEC 2012.

PlumeSIM has been developed to train military and first responders as well as industrial concerns such as nuclear power stations.

It enables a single instructor to configure simulated chemical and radiological releases across a wide area, and then to monitor and manage multiple trainees in real time from a central location.

PlumeSIM allows virtual dispersal plumes and hot spots to be set up quickly and simply. There are multiple scenario options including the type of threat, the point of release or delivery mechanism from single or multiple sources, and a full range of constant or changing environmental conditions. Persistency, deposition, time of release or detonation can also be controlled by the instructor.

The exercise area can also be configured using standard maps or hand drawn sketches of the training area. All exercises can be saved for future use and revision. These can be run in either a classroom environment for table top exercises, with trainees using standard gamepad controllers to manipulate their positions on-screen, with actual simulators responding according to the simulated threat, or as a field based training system.

In field training mode, PlumeSIM works with a variety of high fidelity simulation instruments and GPS-enabled players to allow the instructor to monitor the movement and actions of students and to make real time adjustments to training scenarios. Student errors are reported to the instructor in real time and are also recorded.

Once the training exercise is complete, the instructor can replay the various exercises, providing valuable feedback and advice to students.

The UK Ministry of Defence's Defence Chemical, Biological, Radiological and Nuclear Centre [DCBRNC] at Winterbourne Gunner, UK received the Argon Electronics system, including the latest CAMSIM and LCAD hand held instruments, the MCAD simulator and PlumeSIM, earlier this year. Steven Pike, Managing Director of Argon Electronics, said: "The need for effective training and simulation is becoming increasingly important. As a result, the DCBRNC is playing a vital role in providing world class support to the UK's armed forces, helping to protect both military and civilian personnel. We're delighted that the Centre chose to specify Argon simulation instrumentation and software for this essential function, and have worked closely with the Defence Equipment & Support (MoD's) team at Abbey Wood to ensure our equipment was delivered to a tight time-scale."

Cry Havok and Let Slip the Simulations of War

December 4, 2012
I/ITSEC Showdaily

Havok [Booth 1821] is back for its third I/ITSEC appearance in 2012.

According to Cory Kumm, director of Military and Simulation for Havok, the company got its start about 12 years ago in the commercial game space.

"It started with some research at Trinity College in Dublin, Ireland," Kumm explained. "The original research was around physics.

Physics then became middleware in the game space. That middleware took off and became very popular in commercial games. That then grew into several different products so today we actually have eight products that span from tool chain middleware all the way through visualization."

"All of those technologies we have integrated together into one common technology and framework," he added. "So it makes it very easy for them to go from their content creation tools to import the content, start creating simulation and to produce a training capability.

That's our goal in the simulation space: To make it really easy for people to do less coding and more doing."

Recent company activities include the acquisition of Rocketbox, a leading provider of high quality 3D character models and animations to the training and simulation community. Company representatives note that Havok's

already robust 3D visualization development toolkit will now be enhanced by Rocketbox, enabling simulation customers to build realistic and interactive simulations more efficiently and at a lower cost.

"Our goal in the simulation space is to reduce the amount of effort it takes to produce a very compelling training simulation," Kumm said. "That acquisition actually gives us content on top of technology, so that people don't have to worry about creating animated characters. They have that provided in the box. So they will have their framework and they will have a whole bunch of content and the focus then will really be just on building the training."

"I/ITSEC is an opportunity to show our latest capabilities," he added. "It's also an opportunity to introduce Havok to the simulation community. People may have heard of us and understood that we had a physics capability because of the game space. But they may not have realized that we actually have a complete framework that can help them create a much more realistic simulation. Often we will meet customers who have not heard enough about Havok so it's important for us to be here and show people the breadth of capability that we can provide."

Among the new capabilities that Havok is highlighting at I/ITSEC 2012 will be a deterministic ocean simulation in the Innovation Theater that will be appropriate for simulation in multi-channel environments.

In addition, Kumm said that the Havok booth will spotlight the ability to import content into "very, very large worlds" displayed on a 120 inch screen.

He hopes that I/ITSEC attendees grasp that Havok can help them "obtain a complete technology framework that's easy to use, saves them time, and produces better results for their customers."

I/ITSEC Pays Off for Heartwood

December 4, 2012
I/ITSEC Showdaily

For Heartwood [Booth 2307] chief executive officer Raj Raheja, there was no question about returning to I/ITSEC 2012 as a second year exhibitor.

"The Navy contract we just received originated from I/ITSEC 2011," Raheja said. "The point of contact we developed here gave us another point of contact that led to the contract. But if I go to that original thread it runs straight back to I/ITSEC."

"What Heartwood does is a niche," he explained. "We don't do everything but what we do, we do very well: We empower companies to build, operate and maintain their products using 3D interactive training – just that. We don't do cultural training. We don't do first person shooters. We don't do immersive training."

"What we found out there is that existing software available tends to be 'one size fits all," he added. "Since the software has already been designed they expect the customer to use that 'as is.' But we understand that every training requirement is different, so we decided not to build 'ready to go' software. Instead, we build a base and then customizes the software for every customer."

During their inaugural appearance at I/ITSEC 2011, company representatives stressed their innovative capabilities while describing a goal of becoming "the Apple of the simulation world." Coincidentally, the company leadership received an unsolicited invitation to Apple corporate headquarters in early 2012.

"The reason is that Apple wants to differentiate themselves from all other platforms," Raheja offered.

"And nothing differentiates them more than the 3D graphics capability of their devices versus everyone else, because they are more robust; more definable."

"Not just that Heartwood only does one platform," he cautioned. "We do all platforms."

Raheja said that the corporate meeting resulted in a pilot program under which a half dozen Apple sales executives are currently carrying Heartwood offerings as part of their sales package. While the Apple meeting could be seen as fortuitous, Raheja emphasizes the direct connection between I/ITSEC and the company's recent receipt of a US Navy contract to support the Naval Surface Warfare Center Carderock Division (NSWCCD).

"We not only attribute the contract to I/ITSEC but it may end up becoming our largest customer apart from Raytheon right now," he continued. "Everyone has their 'flagship customer' and ours was Raytheon.

But we have always looked for 'a big one.' And I think this could be it. Given that it originated from I/ITSEC I don't think there is any way we could not be at I/ITSEC. It may have been a mix of a little business development together with serendipity but if we didn't have the booth I don't think we would have the Navy contract right now."

The NSWCCD contract will provide 3D maintenance training capabilities surrounding a ship-based actuator/valve system located on an aircraft carrier.

"The US Navy chose Heartwood to support NSWCCD Philadelphia in the development of Enlisted Engineering Training solutions, using the latest 3D interactive and gaming technologies," acknowledged Steve Dutter, NSWCCD Philadelphia Code 942 Waterfront Training Lead. "They will be designing and developing 3D interactive training applications tailored specifically for the US Navy, that run on PCs, tablets, tough books, interactive smart boards, and DVDs."

"We are building full immersive equipment maintenance training," Raheja said. "It's going to be done on the first time for all devices – so it's going to go straight to web, PC, mobile, and interactive smart boards."

"This division had never done anything apart from Powerpoints before," he added. "So they have never touched 3D before. This is their first step into 3D."

The approach leads directly to his takeaway messages about Heartwood: "If an organization has any kind of equipment and they have ever thought of making their training more visual, immersive or scalable, then we are the right company. We are not burdened by the limitations of any one software. We will give you the right mix of technologies."

He concluded, "Steve Jobs once said, 'It's about what not to do.' And we have taken that stand. We are not doing anything else."

NGRAIN Augments Reality for Maintainers

December 4, 2012
I/ITSEC Showdaily

NGRAIN [Booth 1581] debuted its new Augmented Reality (AR) capabilities at I/ITSEC yesterday. According to Josie Sutcliffe, vice president, marketing, the company "saw an arising market need where people were starting to take virtual training and put it more and more into an operational environment where you actually have the real equipment there and people started talking about AR."

Attendees can interact with the NGRAIN AR demo application and experience how this new technology enables efficient maintainer and technician performance.

Viewing a piece of live equipment through the "window" of an iPad, they can access and see maintenance information about key equipment parts, including 2D/3D graphical overlays, video, and text augmentations; in addition, they will be able to follow the augmented guidance steps to complete a maintenance procedure.

Explaining NGRAIN's unique position in delivering AR for the maintenance community, business development lead Carl Byers told the Show Daily that, "in terms of delivering the value when someone has the 3D model, from a training point of view we can immediately transition that out to the augmented reality environment as well. That historically has been one of the stumbling blocks with AR. Getting content and getting content quickly and making it relevant."

"You can take the content you might be using in the classroom for virtual training and you can take that exact same content and publish it out to an augmented reality environment as well. So we can leverage all the stuff that the technician has already seen and give them tools to refamiliarize themselves in the field on tablets and eventually on glasses and things like that as well," he added.

"Beyond just familiarization, they can go and understand new things about the equipment. So connecting to other kinds of data feeds in addition to training feeds, other feeds related to logistics or parts ordering. All of that kind of stuff and understanding what historically has been done on a piece of equipment based on maintenance records. That would all be available to the technician using a tablet or other device," Byers surmized.

NGRAIN says that AR is a capability that its volume graphics technology is "uniquely positioned to deliver." Volume graphics is based on a series of discrete points in space, pixels that have a third Z-coordinate in addition to X and Y coordinates. By their nature, voxels contain volume: they have both a surface and a core. This means that, with relative ease and simplicity, NGRAIN technology can support: the display of multiple dynamic attributes in real time, such as temperature, or hot-spots the mechanic should avoid.

News in Brief

December 4, 2012
I/ITSEC Showdaily

LIVE Transforms Roleplaying Capabilities

Organic Motion [Booth 1788] has introduced Organic Motion Live Interactive Virtual Environment (LIVE) at I/ITSEC 2012, which it says is a powerful and immersive roleplay training capability.

It is aimed at maintaining the highest level of training in a budget constrained environment and provides highly interactive, realistic and cost effective roleplayer training that maximizes value and reduces overhead. The company says that because LIVE allows roleplayers to drive realistic digital characters from anywhere, fewer roleplayers can deliver more training scenarios, all without the need to travel.

It works by using advanced motion capture technology to transform the roleplayer's performance into a live projected digital character animation within a training environment and because the appearance of the characters can be customized or quickly swapped and placed in training facilities anywhere in the world, a single roleplayer can easily drive complex scenarios that would require multiple roleplayers today.

Coupled with a two-way audio and video link back to the roleplay actor, LIVE offers immersive trainee-character interaction, providing the best aspects of both human roleplayers and virtual digital characters.

Unlike AI (artificial intelligence) avatars, which have limited, pre-defined scripts, LIVE digital characters are as dynamic and unpredictable as the real human roleplayers that drive them.

ASC and CAE Team for Canadian Projects

Atlantis Systems Corp (ASC) and CAE [Booths 1433 and 2991] signed a teaming agreement in November for the provision of training solutions to Canada's Department of National Defence. Atlantis will support CAE as a key technology partner in a number of areas including flight training devices and courseware development. ASC uses its core capabilities in simulation-aided design and engineering and elearning, combined with various technology tools, to help customers in military and commercial markets to ensure the feasibility, capability, and effective utilization of their complex assets.

Europe to improve Helicopter Training

The European Defence Agency (EDA) Helicopter Training Programme (HTP) is to continue organizing military rotary wing exercises over a ten year period, it has been announced. In 2009 the EDA initiated a series of helicopter exercises that are meant to increase deployability by developing, consolidating and sharing best practices of flying helicopters in the contemporary operational environment. The HTP agreement was signed at the latest meeting of the steering board on 19 November with the aim of the pooling and sharing program to address the shortfall in deployable helicopters within Europe by improving training effectiveness. Initially limited to delivering live exercises aimed at disseminating tactical skills, the EDA's helicopter projects now also include a Helicopter Tactics Symposium, an Operational English Language Course at the UK Defence Language School, and a Helicopter Tactics Course.

In addition to the three week tactics course, ten of which are conducted annually, a Helicopter Tactics Instructors Course (HTIC) is being developed. This course will 'train the trainers' in order for them to deliver tactics training within their own organisations.

The first trial instructors' course will be held in March 2013 in Sweden. It is the long term aim for the course to evolve into an event which will attract participants from the various European Union member states on a recurring basis, similar to the Fast Air Tactical Leadership Programme at Albacete, Spain.

In September 2013, a simulator-based training capability concept demonstrator project will be conducted, which will involve a distributed network of simulators in the UK, Germany, Austria and the Czech Republic.

Discovery Machine Highlights AI Advances

Discovery Machine [Booth 2780] is highlighting its latest artificial intelligence advances for a variety of training simulations at I/ITSEC 2012. The Behavior Modeling Console for VBS2 is a middleware product which authors intelligent behaviors for Bohemia Interactive Simulations' VBS2 environment. The console enables instructors (non-programers) to create intelligent adversaries and indigenous populations that communicate with the trainee and each other, follow patterns of life, and dynamically react to their situation.

The VBS2 Console allows for a richer 'true to real life' training scenario where the entities behave and react the same as they would in the real world. Instructors can create complex and realistic situations without having to do any detailed VBS2 scripting.

This reduces the time involved for training development and the overall development costs for the end user. Key features made possible by this console include visual representations of knowledge, intelligent behavior construction using behavior templates instead of scripting, a fully functional situational awareness processor capability, and intelligent communication between players and characters.

BNH Expert Software Releases Latest Version of ADVISOR

BNH Expert Software [Booth 2801] has announced the release of its training planning system ADVISOR Enterprise 10.

"Training needs analysis, in the defense industry, is crucial to operational readiness; and mission success. And so are the decisions that project managers and training leaders have to make," said J. Bahlis, president of BNH Expert Software. "With multiple competing and continually changing priorities, and continued pressure to do more with less, maintaining efficient training strategy is not a simple task."

ADVISOR simplifies and speeds training analysis, facilitates data reuse and simplifies data management; including interdependencies among the entire data set. With ADVISOR, companies can conduct multiple 'what if' scenarios in seconds to assess the impact of various parameters on budget, resources and time to competency, as well as forecast and optimize training resources, improve resource allocation and generate an audit trail to support recommendations.

Past Experience Prompts Brazilians' First Exhibit at I/ITSEC 2012

December 4, 2012
I/ITSEC Showdaily

I/ITSEC 2012 marks the inaugural appearance of two exhibits by the Brazilian Defense and Security Industries Association [Booth 2863/2870].

According to Colonel Paulo Eduardo, head of the Brazilian Army's Combat Simulation Division, the exhibits recognize the significance of the I/ITSEC learning environment.

Referring to his first I/ITSEC visit in 2009, Col Eduardo offered a personal perspective that this year's event contains "some significant differences" from just three years ago.

"There are some different companies but it is also much more sophisticated," he observed. "The whole environment has improved a lot. That's my perception."

Asked if his 2009 experience had led to the implementation of new training technologies back in Brazil, he responded with an unequivocal "Absolutely."

"Especially when you talk about high level architecture (HLA) and the integration of all types of simulation," he continued. "We learned a lot about HLA. We had not been aware of some of these technologies and the software that was available in the market. So we learned a lot."

The I/ITSEC 2009 experience led to the implementation of new simulation technologies to support training by the Brazilian Army. "From I/ITSEC 2009 we began discussions for the best software to use for that integration, specifically focusing on HLA," he said. "And we acquired some systems from different international companies over the last year. Right now we have a group specifically working on the integration. And it's working."

"Currently we are under a transformation process in Brazil," Col Eduardo continued. "And the reason we are here at I/ITSEC 2012 – and the plan is to come each and every year – is that we have been learning and will soon launch a bidding process under which we are going to buy a new constructive simulation. We hope to buy it in March of next year. Our budget for the year is around $45 million, which may not seem like that much, but in our case it is a huge transformation."

The new training capability will be applied to all of the armed services in Brazil.

"Based on the transformation we are changing the way that we use constructive simulation," he offered. "Right now we have a project to create four new simulation centers all over the country. And the idea is to be able to integrate them."

Each of the new Brazilian simulation centers will be slightly different in size and emphasis. The center being established in the southern part of the country, for example, will be larger and will focus on the visual simulations for all armored vehicles.

"We learned a lot from the way we did things in 2008 and we are now implementing those changes," Col Eduardo added. "And the outcomes already are amazing."

"One of the biggest challenges has been to educate our chiefs – the generals and the high level decision makers," he said. "And that has also been amazing. We explained to them what we learned here in 2009 and the technologies we were not aware of prior to our attendance.

They were surprised. But we were able to explain to them the benefits of coming here and learning and sharing information."

In addition to the establishment of a Brazilian exhibit at I/ITSEC 2012, evidence of the command level support can be seen in the budgetary decisions supporting the upcoming constructive simulation procurement.

Col Eduardo noted that the Brazilian booths include a number of Brazilian industry representatives, explaining, "It's natural that we would love to have Brazil have this sort of capability. And it is mandatory under Brazilian laws that a part of the technology be covered under offset contracts – especially when you are talking about technologies like IT and simulation. So we brought the Brazilian companies here to show what they can do. It may be a small participation this year but the idea is to increase this participation in the following years as we take some of the next steps in the technology."

New Portal Launched to Connect the ModSim Community

December 4, 2012
I/ITSEC Showdaily

Yesterday saw the launch of ModSimConnected, a website that has been designed to provide a shared collaborative portal for the modeling and simulation community.

The portal will offer a variety of capabilities across the platform that is optimized for the modeling and simulation community, but operates similarly to the Facebook or LinkedIn-type environments. ModSimConnected will be both web-based and also has a mobile app with synchronized databases.

Companies and individuals will be able to get news out about themselves and events in the modeling and simulation community. The portal will also offer the function to act as a shared workspace for groups.

Announcing the launch, RADM James A. Robb USN (ret), president of the National Training and Simulation Association (NTSA), said, "NTSA is working in cooperation with National Modeling and Simulation Coalition [NM&SC] to attempt to expand the M&S emphasis outside the Department of Defense and create a framework where we could self-organize across all the components of the community."

"Whereas NTSA has been defense-centric in the past we are trying to build a larger collation and in doing that we have built a brand new entity, NM&SC," he continued.

"I'm really happy to be here and be a part of this because we are making a very important step," added RADM Frederick L. Lewis USN (ret), interim chairman of the NM&SC board. "As far as the coalition is concerned we

have a vision, one that many in our community of practice shares, in terms of how we can reach out to all the different domains in our social and economic structure in the nation that utilize modeling and simulation tools."

"The question is how we reach out to those different domains and bring them together under one umbrella. We are looking to set them up in a single galaxy of entities where together they can collaborate and cooperate," RADM Lewis continued.

"To help us along that way we've had numerous benefactors and one of the most important of those benefactors has been the Commonwealth of Virginia. Led by the governor of the Commonwealth himself, who understands the importance of modeling and simulation to the economy, bright people from the Commonwealth have been working with us on this initiative."

Karen Jackson, from the Commonwealth of Virginia, explained that the new portal had originally been intended as a portal for Virginia, but that, realizing the importance of what the shared collaborative space could do, it had been decided to open ModSimConnected up as a national resource.

"It became apparent to us that it's going to take all of us working with ModSim to get our children ready for these careers and that it will take all of the states working across state boundaries to do that," Jackson stated. "We wanted it to be the national portal," she added.

"There is plenty of room for more partners. And there is no cost to belong to the portal. The rationale for us is that I don't know how many of you walk into this hall and meet people that work in the modeling and simulation space that we all work in, but that it's someone you have never met and would not have met if you weren't in the same place at the same time as that person. This portal is a virtual rendering of that show floor," Jackson explained.

"This gives people the ability to come together, share ideas, collaborate and actually become an online community so that we can help each other," Jackson stated. As a result, Jackson said that she was looking for those attending the show to take a look at the capability of MoDSimConnected and urged people and companies to put their hands up and say that they want to become part of the community.

"It can be about your organization, it can be about your university, it can be about whatever you are doing in modeling and simulation.

We want to see it here so that other people can learn about what you are doing," Jackson concluded. Register now at www.modsimconnected.com

Thales Updates Australian Wedgetail Simulator

December 3, 2012
I/ITSEC Showdaily

Thales Australia [Booth 1000] has updated the visual system of the Boeing Wedgetail E-7A Operational Flight Trainer (OFT) for the Royal Australian Air Force (RAAF).

The Wedgetail OFT is located at RAAF Base Williamtown, New South Wales, the home of 2 Squadron, which operates the Wedgetail AEW&C aircraft. Boeing delivered the first two aircraft, based on the company's twin-engine 737 and equipped with Northrop Grumman's Electronic Systems Multi-role Electronically Scanned Array (MESA) radar, in November 2009 and handed over the final Wedgetail on 5 June 2012.

The Wedgetail OFT, the only Wedgetail pilot training device used by the RAAF, was originally manufactured by Thales and has been in service since 2006. Thales worked with Boeing Defence Australia on the project,

which involved replacing the simulator's obsolete calligraphic CRT projectors with Christie Matrix StIM LED DLP projectors and introducing the latest ThalesViewNG image generator.

The new visual system delivers significantly better color and brightness uniformity, sharper imagery, superior edge blending, and more realistic weather effects. Other benefits include greatly improved reliability, growth potential and lower lifecycle cost. The new visual system has been granted the highest level of accreditation, FSD-1 Level 5, in Australia.

Boeing deliver the last of four 737 AEW&C systems to the Republic of Korea (Project Peace Eye) in October and will deliver the first of four aircraft to Turkey (Project Peace Eagle) by the end of the year. In April the company began a 10 month program that is scheduled to train 81 Turkish Air Force and Turkish Airlines personnel to maintain the system in parallel with mission training for air force flight crew. These courses are being conducted at Boeing facilities in the Seattle, Washington area.

Saab Training and Simulation On Target

December 3, 2012
I/ITSEC Showdaily

Saab Training and Simulation [Booth 2139], and subsidiary company Saab Training USA, will be highlighting their cutting edge solutions in the Live, Virtual and Constructive training domains at I/ITSEC.

Lars Borgwing, President and CEO of Saab Training USA, believes that US Army soldiers will "definitely be excited" over the new Combat Vehicle Tactical Engagement Simulation System [CVTESS] which will soon begin to replace the previous generation of over 3,000 precision gunnery simulators that Saab supplied to the Army from 1995. In January 2012 the US Army Program Executive Office, Simulation, Training and Instrumentation [PEO STRI], awarded Saab an initial $17.2 million delivery order as part of a five-year indefinite delivery/indefinite quantity contract potentially worth up to $90 million. The CVTESS is designed to connect seamlessly with Home Station Instrumentation Systems [HITS] and supports every version of the M1 Abrams main battle tank and M2/3 Bradley Fighting Vehicle in service. "We will start fielding the first systems in April 2013," said Borgwing.

A framework contract awarded to the company in April 2011 by PEO STRI, potentially worth $41 million, covers the production of seven Live Training Transformation Interim Range System [LT2-IRS] radio communications systems for live training over a three year period as part of the HITS initiative. Saab has already supplied 17 communications networks to the US Marine Corps for similar instrumented training. A typical IRS system is 102 combat vehicle kits, 193 vehicle kits and 867 dismounted kits for a total of 1,162 kits per HITS site. The first systems were delivered to Fort Hood, TX, and Fort Bliss, TX this year. In August 2012 PEO STRI placed a delivery order for three additional systems for Fort Campbell, KY, Fort Drum, NY, and an Exportable Training Capability to support forward deployed units.

Saab Training USA is one of five companies selected by PEO STRI to compete for delivery orders for the Army Targetry Systems II program; the five-year IDIQ contract has a ceiling value of $475 million and will cover the modernization of more than 100 ranges. "Our new US-designed generation of targets has been created to meet the rapidly changing requirements of a digital army," said Borgwing.

"We are fielding state-of-the-art targets and ranges for forces at their home stations or when deployed." Saab is the sole source supplier for the USMC for the Range Target System program.

"We also have been supporting the US Navy SEALs for many years with instrumented training systems," noted Borgwing. "We are looking to see if we can add similar value to the training of other special operations forces."

During I/ITSEC, the company will be demonstrating its modular joint fires training, or call for fire, system at its home in Orlando's Central Florida Research Park in Orlando, Florida, to invited guests.

Although elements of the trainer were displayed at I/ITSEC 2011 Borgwing said that potential US customers and allied nations will have an opportunity to examine the system in more depth.

"Foreign Military Sales are very important for us," said Borgwing. "We have been fielding training systems for the FMS program for more than a decade." He highlighted the recent delivery of a Deployable Instrumented Training System [DITS], sufficient to equip a company with 95 infantry sets and 10 vehicle kits, following a $2.4 million contract awarded in April. DITS interfaces with the US government-developed Joint Conflict And Tactical Simulation [JCATS] system already fielded by Bulgaria. "As the CVTESS and IRS are now programs of record we expect US allies to be interested."

At I/ITSEC, Saab Training and Simulation will be unveiling its new Small Arms Virtual Indoor Trainer [SAVIT], a modular system that can be combined in several configurations depending on customer requirements and training objectives.

Main system components are the projection system, training weapons and the instructor station. The basic projection module has a projection area of 2.5x1.9m and is compatible with night vision goggles. The terrain database is generic with typical environments such as urban, desert, jungle and woodland although customer specific databases can easily be created. The virtual environment also provides changing seasonal, weather and light conditions.

The training weapons are modified originals or replicas made to the exact weight, dimensions and recoil as the real weapons.

All types of weapons - pistols, assault rifles, sniper rifles, light and heavy machine guns and others - can be replicated. Special high resolution and high speed cameras with the ability to detect laser spots from firing weapons projected on the screen enable precise evaluation of the shooter's accuracy.

Tactical training can be performed in groups with trainees equipped with different types of weapons. Subgroups have the ability to move around independently in the virtual terrain and to cooperate with other subgroups to accomplish their tasks. All events in the exercise can be recorded for after action review, including weapon handling skills such as loading, trigger pressure, weapon cant, and sight setting.

Saab with also be promoting its Crew Gunnery Training System that can be used to train the crews of various tanks, IFVs and armored vehicles armed with remote-controlled weapon stations before they progress to live firing. Realistic simulation at this stage can result in significant savings in ammunition, time and manpower.

News in Brief

December 3, 2012
I/ITSEC Showdaily

URS Trains Army Helicopter Pilots

URS Corporation [Booth 1012] has been selected by the US Army to provide rotary wing flight training at the US Army Aviation Center of Excellence (USAACE) at Fort Rucker, AL. Under previous contracts URS has trained more than 20,000 student pilots at the USAACE since 1986. The new contract has a one-year base period and two one-year option periods, with a maximum value of approximately $165 million to URS over the full three years.

Under the contract, URS will provide undergraduate helicopter training to more than 1,200 US Army, US Air Force and international military aviators annually.

Elbit Delivers Command Trainer to the RNLA

Elbit Systems [Booth 2557] has delivered a new command and staff trainer (CST) to the Royal Netherlands Army (RNLA). Following an international competition, Elbit was awarded a contract in December 2010 to develop and produce a CST which can be used to train personnel across the full spectrum of military operations.

The system has been installed at the army's Maneuver Training Centre in Amersfoort which trains tactical command post personnel for operations at the battalion and brigade level across the full spectrum of operations. It provides training for civil-military cooperation with municipal authorities, police and medical organizations such as the Red Cross. The CST also facilitates concept development and experimentation as well as mission rehearsal events. According to Elbit, the CST's advanced high level architecture makes it suitable for the specific needs of every trainee and combines full training with qualitative debriefing. The simulation integrates with command, control and communications systems using Battle Management Language protocols. With the help of a user friendly interface and advanced artificial intelligence, the trainer also enables minimal use of personnel and thus lowers training costs as well.

NGRAIN Rolls Out Latest Version of Producer

NGRAIN [Booth 1581] is debuting the latest version of its Producer product at I/ITSEC this year. The new version includes a personal learning edition, which is available free-of-charge. Producer allows anyone, with or without 3D experience, to rapidly create interactive 3D animations and real-time practice tasks.

"NGRAIN is focused on transforming the way people share knowledge, and a key part of achieving this vision is making interactive 3D simulations even more attainable. Not only is the free-ofcharge Producer personal learning edition more feature-rich than fee-based 3D authoring tools, it also offers unparalleled ease of use," stated Josie Sutcliffe, vice president, marketing, NGRAIN.

With Producer, the personal learning edition, users can create and update NGRAIN 3D Knowledge Object files, interactive 3D simulations that contain and visually communicate knowledge about the equipment system they represent. Producer allows users to:

- Work with 3D models that have been created in any Digital Content Creation or Computer-Aided Design program
- Import 3D data to the compressed, interactive NGRAIN format using industry leading tools, or the NGRAIN VRML2 Converter (which is available at no cost from the NGRAIN website).
- Create and update animations – as well as interactive practice tasks – using a visual "click and capture" storyboard.
- Add important equipment knowledge, such as part details and links to reference materials, to support training and on-the job performance for complex equipment.

A more powerful version, Producer Pro, can be purchased on its own, or as part of the NGRAIN Production Suite.

British Company Launches New Physiological Monitoring System

Equivatal, a UK based company, is set to unveil a new training system that could shape the future of armed forces training. This month the company launched its Black Ghost training system that offers a "bird's eye view" of the training field while monitoring the vital statistics of everyone taking part.

Advances in technology mean wearable under-armor personal status monitoring technologies are becoming widely adopted by the military community, and Equivital's most recent body monitoring system, the

LifeMonitor, has already been snapped up by the US Marine Corps and several unspecified special forces units. The new Black Ghost training system combines this with geo-location monitoring to heighten performance while enhancing safety on the training ground.

Black Ghost provides up-to-date real time information from each soldier on the training ground, which can then be viewed and analyzed in real time or retrospectively. In simple terms, the system gives the ability to see every soldier at any one point and to be able to designate and track multiple groups at once. Vitally, the system gives notifications of potential critical events, alerts for heat stress, and a live alert feed highlighting accidents as they may occur on the field.

Ekta Sood, from Equivital, stated, "Black Ghost feeds into the concept of improving the effectiveness of the soldier and the squad as a whole. Rather than having one person's data, or even several side-by-side, the technology allows for a collective performance feed which includes real-time information on location, performance and welfare."

Re-Lion Develops Infantry Simulator for Dutch Army

December 3, 2012
I/ITSEC Showdaily

The Netherlands Ministry of Defence signed a declaration of intent in mid-November with Re-lion Group [Booth 2063] to continue the development of a virtual reality simulator for training dismounted infantry personnel.

The effort is based on Re-lion's Small Unit Immersive Trainer (SUIT), which enables teams of up to 15 soldiers to train for close quarters battle and close protection of high value targets in urban operations. Wearing projection goggles, trainees can enter and clear buildings, aircraft, ships and other structures in scenarios ranging from one soldier clearing a single room with no occupants to complex multiple room scenarios involving other team members and both enemy forces and civilians. Each trainee wears sensors that monitor movements such as walking, running, crouching, and adopting firing positions. The weapons used in the SUIT are wireless "blueguns" that feature reload functionality. Each trainee has the ability to use his/her primary weapon and a backup weapon as well as stun grenades and hand grenades. In October, Re-lion demonstratedthe SUIT's potential as a mission rehearsal tool for special operations forces.

"The Netherlands Ministry of Defence requires a system for dismounted soldiers that can provide training and mission rehearsal capabilities everywhere, anytime," Chris Haarmeijer, Re-lion CEO, told the Show Daily. "Therefore, the system has to be mobile and units themselves have to be able to operate it without the manufacturer being present." The system will be ready for fielding early next year, he said.

According to the MoD "the great advantage of the system is that a virtually unlimited number of training scenarios can be called up in a short space of time. From widely varying environments to different cultures and opponents."

Although Haarmeijer "cannot name specific potential customers, they consist of regular army, special forces, law enforcement and close protection. This last one is interesting as scenarios are different: the first three are mostly kinetic, the last one is not kinetic and more about observation, spotting behavior, responding to that, etc."

Re-lion is a member of the consortium of more than 70 academic and industry research organizations working on the COMMIT research project to develop applications for information and communications technology.

The company is responsible for the development of new human-computer interaction technology which, among other applications, will allow natural ways of communications between users of SUIT and digital computer characters.

Integrated Training Environment is Top Army Priority

December 5, 2012
I/ITSEC Showdaily

Years of commitment are paying off for the US Army in the form of significant ongoing milestones in its Integrated Training Environment.

"The Army leadership has expressed an Army priority to revitalize home station training," explained Robert Reyenga, deputy Program Executive Officer, Simulation, Training and Instrumentation (PEO STRI). "As a result, the Army is moving in a direction to have their Combat Training Center (CTC) be a culminating training event for our Brigade Combat Teams (BCT). And, in order for the BCT to be prepared for this culminating training event at the NTC [National Training Center, Fort Irwin, CA] or JRTC [Joint Readiness Training Center, Fort Polk, LA], they need to have the ability to prepare for that at their home station."

According to Reyenga, in the past the Army focused on individual requirements for training enablers like the Close Combat Tactical Trainer (CCTT), Aviation Combined Arms Tactical Trainer (AVCATT), and the force-on-force MILES.

"The desire was to be able to integrate all of those training enablers together into a single training event at home station," he said. "Home stations are typified by having some local training areas to support maneuver-type training and ranges, but the CTCs are much larger with more space for training. The home stations don't have a training area for an entire brigade to go out and train in a live environment. In order to accommodate that, for the brigade commander and staff to face the kinds of complex environments that they have in executing mission command over the battalions in the brigade, it requires us to create this Live Virtual Constructive Integrated Training Environment."

Noting that each of the training enablers "were developed primarily as stand alone capabilities," Reyenga acknowledged, "It was after the fact that we had to come in and design what we refer to as a Live Virtual Constructive-Integrating Architecture (LVC-IA)."

The LVC-IA allows the soldiers conducting training in the individual training devices to be put together in a single training event.

"For example, for constructive training we currently use Joint Conflict and Tactical Simulation and will soon be moving to OneSAF [One Semi-Automated Forces]," Reyenga added. "So one battalion of the brigade might be exercised constructively in JCATS while another battalion of the BCT might be out in the training area 'live,' instrumented with the Home Station Instrumented Training System (HITS) – an 'instrumented MILES,' if you will. And then another battalion in the brigade might be in CCTT. But all of those battalions can come together in a single training event, allowing the brigade and the brigade staff, through their mission command systems, to look out there and see the same information that they would see if all of the BCT were executing together in a live environment."

"The Army has desired to do this for many years," he continued.

"And, as a result of that, we've been working on this for probably six to eight years. Last year, at I/ITSEC 2011, we said, 'We're getting close; we're about to do this'."

The significance of the continuing spotlight at I/ITSEC 2012 is that the Army has recently passed actual milestones in the establishment of LVC-IA capabilities.

"We went through the acceptance test out at Fort Hood, TX in the August timeframe and then in September-October we conducted what we call the First Unit Assessment (FUA)," Reyenga said. "So actually elements of the 1st Cavalry Division have used it in an exercise out at Fort Hood [the header photo shows preparations for that testing]."

"It was all of that put together," Reyenga offered. "So essentially from a user perspective and an exercise/trainer perspective, you can see interactions. So you can have Apache Longbow pilots in AVCATT 'seeing' a constructive entity – an opposing force in JCATS.

That comes up on the AVCATT screen, where it is then engaged. And you would see that engagement in JCATS."

The program is currently slated to go through a Milestone C decision later this month. Successful completion of that milestone will allow the expanded fielding of the system around the Army, including a total of 18 fieldings at locations including Fort Bliss, TX; Fort Drum, NY; Fort Campbell, KY; and Korea.

"Basically we will begin putting it around every installation in the Army that has a BCT," he noted.

Asked about his message to industry that may not yet be supporting the LVC-IA program, Reyenga responded, "We are currently working with our combat developer, the TRADOC [US Army Training and Doctrine Command] Capabilities Manager for Integrated Training Environment (TCM ITE), on the requirements for 'Version 2' of LVC-IA. So we will field the first eight sites with 'Version 1.' Then, concurrently with that, as soon as we come to closure on what the requirements are with 'Version 2,' we can begin to work on that. But even 'Version 2' is not going to be the end of this. There will be more. This is not the complete solution. This is just the start."

Shifting his message to America's Warfighters, Reyenga related a recent briefing provided by the Army's Maneuver Center of Excellence.

The briefing highlighted the operational complexities of a real world tactical environment in which a mounted patrol of HMMWVs was deployed in search of a specific high value target. Due to the nature of their mission the unit operation was supported by a diverse mix of aerial and ground support assets during the complex operation.

"That was probably a lieutenant leading that HMMWV patrol," Reyenga noted. "And no individual training capability exists to train that lieutenant to do that. But that's what we ask them to do. And the only way we can give him the opportunity to experience something like that is to bring all of this stuff together. If we don't, then we're asking him to learn how to do something like that the first time when he and his unit are faced by the bad guys."

Law Panel Explores Synergies with I/ITSEC

December 5, 2012
I/ITSEC Showdaily

One of the panels today that will hold major interest for attendees is the "Optimizing M&S for Law Enforcement Training: The Next Challenge" Special Event being held in Room W307AB from 0830 to 1000.

The panel is being moderated by Michael R. Hanneld, Assistant Director for Training Innovation and Management at the Federal Law Enforcement Training Center (FLETC) and the panelists include: Connie L. Patrick, Director FLETC; Royal Canadian Mounted Police (RCMP) Assistant Commissioner Roger L. Brown, Commanding Officer "Depot" Division; Dr Jeffery Goltz, Director, Criminal Justice Institute, Valencia College, Orlando, FL; and Sandy Peavey, Assistant Director, Chief Information Officer, FLETC.

In advance of the event, the panelists gave the Show Daily a flavor of what they would be covering in today's event. Patrick kicked off by explaining the role of FLETC. "Since our beginnings in 1970 we have trained over one million law enforcement professionals," she observed.

"We want to look at the opportunity to improve our training through the use of modeling and simulation and we have already had some success. We are looking at additional ways to modify our business and our business model so that we can use simulation and technology to overcome cost, improve efficiency and enhance performance," Patrick added, "and we need to do that in an affordable, flexible and transportable manner."

"We work a lot with FLETC," Brown continued. "At the RCMP Training Academy we've expanded our training to include a lot more than just Mounties from a police and public safety perspective."

"I think the economy, it doesn't matter whether its Europe, Canada or America, is driving all of us in the direction where we need to figure out new ways of doing business. I believe wholeheartedly that the new way of doing business for police and public safety has to involve science and has to involve technology,' he added.

Looking at the local perspective, Goltz said there was a lot of diversity in training and organizations. "From the state perspective there are 40 other training centers just like ours that service about 350 agencies," he stated. "So I think the M&S discussion we will have [today] and in the future will help us hopefully leverage resources."

"We are just scratching the surface locally. We have been maybe through a first generation of simulation and modeling and it's very archaic. And it boils down to cost: the equipment is very expensive," Goltz added. "But if we can do that it, would standardize training across the state.

"That's a worldwide problem, that's not a local problem, it's a worldwide one," interjected Patrick. "I serve as the chair of the INTERPOL training committee; their issue is standardizing training and that's the number one request that my organization gets." Patrick believes that technology has to be one of the ways to do that.

"This conference seems to be very, very military focused but I don't think that industry realizes the market out there with respect to police and public safety on a national and international level," Brown added. "I don't think that it's a huge step with the technology that's already been developed in a lot of areas I think it could be dovetailed in to what we need."

One of the things that has been developed by FLETC along these lines according to Peavey addresses the need to provide additional interview training time and methodologies. Using something originally designed for the US Army, they have developed the Avatar Based Interview Simulator (ABIS). "What I do is provide the technology that enables our training mission," she stated.

The ABIS is an interviewing simulation which permits free-flowing conversation utilizing speech recognition, a computer synthesized voice, and a virtual avatar to create a realistic interactive training experience. In the

interview prototype, the students complete the simulation in a mock condominium to simulate the actual interview location.

All the participants believed that if industry could leverage costeffective solutions from the more expensive military systems then they would be adopted. "We don't need a Cadillac, we're fine driving a Chevy, or a horse actually – we've had those for a long time," concluded Brown.

ETSA Boosts American-European Training Link

December 5, 2012
I/ITSEC Showdaily

At a Special Session on Monday afternoon, member companies of the European Training and Simulation Association (ETSA) briefed I/ITSEC attendees on the role of the organization, which represents the training, modeling and simulation community in eight European countries. The panel was chaired by Graham McIntyre, Chairman of ETSA and Director of Business Strategy, Newman and Spurr Consultancy (UK).

McIntyre said the reason for the special event, and ETSA's [Booth 3140] presence at I/ITSEC 2012 is to explore "how ETSA – the organization, member countries and companies – can foster partnerships and help open doors to promote business between US and European companies in the modeling and simulation field."

"In tough economic times, networking across industry and government is vital, and this is the most important role that ETSA plays, linking members to achieve new business," McIntyre told the Show Daily.

During the special event, numerous modeling and simulation companies from across Europe, as well as European military representatives, gave a brief overview of their capabilities and projects.

ETSA is a Community Interest Company comprising a Management Board with representation from training and simulation suppliers and users from France, Germany, The Netherlands and the UK.

The organization was originally formed to assist with the organization and running of ITEC, Europe's leading showcase for military training, education and simulation products, technologies and services. ITEC is partially owned by the National Training and Simulation Association.

Since then, ETSA's scope has blossomed. In addition to supporting ITEC, ETSA organizes seminars, publishes a quarterly newsletter and serves as an invaluable networking tool for government organizations, companies, and academic institutions interested in modeling and simulation.

At I/ITSEC 2011 then NTSA President, RADM Frederick L. Lewis USN (Ret), and Capt John Rees RN (Rtd), then Chairman of ETSA, signed a comprehensive agreement further strengthening the ties that have existed between the two organizations since ETSA was founded in 2004. ETSA is the only European training association that is recognized by NTSA.

Rees commented "this special session is an example of the NTSA/ETSA close relationship and how ETSA is linking European companies with potential US partners creating business opportunities."

The ETSA website can be found at http://www.etsa.eu/. ITEC 2013 will be held at the Fiera di Roma exhibition ground in Rome, Italy from 22-24 May.

Chileans Find Benefits and Opportunities at I/ITSEC

December 5, 2012
I/ITSEC Showdaily

Senior Chilean military leadership at FIDAE 2014 (Booth 2965) see multiple benefits and opportunities resulting from their presence at I/ITSEC 2012.

Lieutenant General Manuel Quiñones, is leading the Chilean I/ITSEC delegation in two different roles: as commander of the Logistics Command for the Chilean Air Force; and as president of the FIDAE 2014 International Air Show.

"Logistics Command runs all the projects and new developments for the Chilean Air Force," he explained. "And one of the challenges we are facing now is that we are trying to procure a complete set of training simulators for the entire fleet." Although the country already has some, the goal is to get to the point "where every type of aircraft has its own simulator."

"As president of FIDAE I am also here promoting the show," he said. "What I am seeing is that there are plenty of opportunities for companies exhibiting simulators here to go to FIDAE and exhibit there to a more dedicated aviation audience."

FIDAE will be held March 25-30, 2014, in Santiago, Chile.

"There are a number of simulators going to the show anyway," he acknowledged. "But what we are trying to do here is bring more opportunities for more companies to attend."

Although Lt Gen Quiñones said that he heard about I/ITSEC "many years ago," he expressed regret that several reasons had precluded attendance prior to 2012.

"So, for me, it was a personal challenge to be able to come here," he said. "I finally made it. And I really love it. It's a fantastic exhibition. People are willing to explain things and show everything to you. The organization is also terrific; very well done; very professional."

Lt Gen Quiñones was also impressed with the networking opportunities he has found at I/ITSEC.

"Big companies and small companies are here. Especially with the small companies you not only meet the people who are in charge of the exhibition but sometimes the CEO or the president of the company is there. And you are able to establish a more interactive personal relationship. And that's something that you normally don't find at many big shows."

Asked about the training challenges faced by the Chilean Air Force, Lt Gen Quiñones pointed to the desire to expand simulator technology to address related ground force/airfield protection requirements.

He added, "In the aviation world the challenges are distributed training; putting simulators online from one base to another base so that they can train together as they will fight in multiple aircraft scenarios."

Innovation Is the Key toUnlocking Effective Training

December 5, 2012
I/ITSEC Showdaily

One of the highlights every year at I/ITSEC is the General/Flag Officer Panel that allows attendees to get a flavor of what the main training challenges and needs are for each of the services.

This year there was a slight change in format with each of the panelists being asked to talk on the theme of this year's conference "The Power of Innovation, Enabling the Global Force", which recognizes the importance that innovation will play in sustaining current readiness while enabling future capabilities.

This year the panel was moderated by Vice Admiral W. Mark Skinner, Principal Military Deputy to the Assistant Secretary of the Navy (Research, Development and Acquisition). Joining VADM Skinner on the panel was: Dr Laura J. Junor, Deputy Assistant Secretary of Defense for Readiness; Vice Admiral David Dunway, Commander, Naval Air Systems Command; Dale A. Ormond, Director, US Army Research, Development and Engineering Command; Rear Admiral Stephen E. Mehling, Commander of the Coast Guard Force Readiness Command; Gerorge Solhan, Director of the Expeditionary Maneuver Warfare & Combining Terrorism Department, Office of Naval Research; and Jack Blackhurst, Director of the Human Effectiveness Directorate, 711 Human Performance Wing, Air Force Research Laboratory (AFRL) and Acting Executive Director, AFRL.

Opening the panel, VADM Skinner said, "innovation is one of the most crucial things we do and what we will do in the coming years to support the men and women in our armed forces. But with the fiscal constraints we face both in the Department of Defense [DoD] and the global economy, innovative ideas will be in demand and that's not a large leap for us. DoD and industry must embrace innovative thinking: it can't be a fiscal year or a fit of effort – it has to be a decade long endeavor."

Picking up the theme of the conference, Dr Junor stated, "we are all competing for resources, the services are competing with each other, there is just not enough resources to go around and projects have to show how they will improve our readiness in a tangible way."

VADM Dunaway, who is attending I/ITSEC for the first time, said there would be "tremendous pressure, budgets going down, and a lot of uncertainty." He said that he viewed his role as two fold, being both a steward of taxpayers' dollars and of warfighting capability.

In the training environment he suggested that it was the Armed Forces' job to make sure that as much value was squeezed out of each taxpayers' dollar to provide that warfighting capability and that, "ultimately it is about putting operational equipment, in an operational environment, with operational people."

For Ormond, one of the main challenges will be what happens as the Army brings forces back to CONUS and start to put more pressure on the national training centers. "It's very expensive sending units and brigades to the national training centers and the answer to that will be the live, constructive and virtual construct that Dr William Blake and PEO STRI are working on," he stated.

Speaking about thoughts that he'd been struck by, RADM Mehling said he was impressed by the comment that you have to "innovate or die, the last thing you want to be is the premier maker of buggy whips when Henry Ford comes out with the Model T."

Speaking about the unique challenges that the US Coast Guard faces RADM Mehling stated that the Coast Guard also has one of the most constrained budgets of the services with $6 billion being allocated to recapitalise and operate the force for a year. As a result, he said that "we need it cheaper or we can't get it." RADM Mehling also highlighted PROTECT, a mission modeling capability using game theory that has helped to fine tune how the Coast Guard protects some of the nation's high value port areas.

Solhan's main message focused on how innovation can be used in a collaborative way for industry, the military and academia to interact with the Office of Naval Research to provide Sailors and Marines with the tools they need to conduct their mission. "In expeditionary warfare we view Warfighters as the platform – not ships and aircraft," he stated.

"The sunk cost of ground warriors keeps increasing," he added meaning that additional value can be squeezed from modeling and simulation.

Speaking on behalf of the AFRL, Blackhurst wanted to focus on "human systems". Looking at the training element of that and "how do we get training to the user where the user is", he stated. "From an Air Force perspective there has been a tremendous change in focus," Blackhurst added. He said that in addition to aircrews there was now a training focus on special forces and cyber warriors. "We are not going to be able to materially replicate the full extent of our weapon systems and will need to apply modeling and simulation," he suggested.

Raydon Offers Rental On Demand Training

December 5, 2012
I/ITSEC Showdaily

Raydon Corporation is demonstrating an innovative new training concept, Nested Virtual Training, in its booth [1560].

Recognizing that commanders are being urged 'to do more with less' Raydon's Nested Virtual Training Content gives commanders the advantage of training individual, crew, section, platoon, company and battalion level tasks on the same simulation training platform without incurring extra costs associated with procuring separate systems to train each echelon.

Raydon provides a wide range of trainers that include the .50cal and Mk19 Individual Gunnery Trainers, Unstabilized Gunnery Trainers, tabletop trainers, Conduct of Fire Trainers for M1 Abrams tanks and M2/M3 Bradley Fighting Vehicles, the Virtual Door Gunner Trainer [VDGT], Mine Resistant Ambush Protected Vehicle Virtual Trainers, the Virtual Route Clearance Trainer, and the Virtual Convoy Operations Trainer [VCOT].

Raydon's training strategies are focused on creative, low cost solutions and efficient rental approaches aimed to help sustain and increase warfighter proficiency. The company has assembled its own training fleet ready to meet the demand for world class training, delivered on time, on budget and at the right location.

"Over the coming decade our military will have an increasing reliance on virtual training capabilities," Don Ariel, chairman, Raydon Corporation, told the Show Daily. "Our Warfighters are going to need dramatically more effective, efficient, and affordable answers to ever changing training challenges. Event based training encourages industry to work together, take risk, and unleash the power of profit based innovation on this new paradigm."

The Raydon Training Services approach allows commanders to rent a full range of virtual capabilities configured for event-based training and at a fraction of the cost to procure a system. This training paradigm decreases the time to proficiency and the cost to proficiency for the warfighter while increasing throughput.

As examples, users can rent one trailer with a military veteran instructor/operator/ maintainer for one month for $75,000 in the Continental USA or four trailers for $225,000. One VDGT configured trailer supports

simultaneous training for six UH-60 Black Hawk gunners. The MRAP-VVT is mounted in three trailers with 22 training seats.

Following the award of an approximately $46.5 million contract at the end of September, Raydon is upgrading 68 VCOTs in service with the US Army National Guard over a two year period. The VCOTs, which fielded from 2003, will be upgraded to the C3.1 configuration. The upgrades will include Unstabilized Gunnery Training at individual, crew, and collective levels for the M2 .50cal and M240B 7.62mm machine guns, and MK19 40mm automatic grenade launcher. It also includes multiple new Kandahar scenarios, improved wired M4 weapons, and nighttime light features including headlights, taillights, hazard lights, and brake lights.

QinetiQ Receives UK Training Contracts

December 5, 2012
I/ITSEC Showdaily

QinetiQ [Booth 1261] has designed and delivered a new training environment for Close Range Weapon Training (CRWT) for the UK Royal Navy.

The new CRWT facility at HMS Collingwood, home of the Maritime Warfare School, was designed, built, and accepted into service within 12 months of contract award. It is a scaleable, flexible, training simulation system that allows the delivery of individual, collective and continuation training. The facility provides a simulated training environment for weapons training including four 7.62mm General Purpose Machine Guns, four 7.62mm Mini-guns, and a 30mm and 20mm cannon. Each can be used individually or collectively within 10 customized training scenarios.

By integrating QinetiQ's software with VBS2 and current gaming technology, QinetiQ has delivered an updated 3D virtual environment along with adapted ship mounted weapons, providing an immersive and operationally current series of weapons training platforms which can be quickly configured to meet future user requirements.

"The MoD has embraced a new breed of simulation and training which combines QinetiQ's knowledge of technology, detailed military understanding from experience in operational theaters, and the creativity of the gaming industry to deliver intuitive, flexible and cost effective training solutions.

Most importantly, this is a training solution that can help save lives," said Miles Adcock, managing director, training and simulations services.

QinetiQ also announced at I/TSEC that it has been awarded an 18 month extension to its Distributed Synthetic Air Land Training (DSALT) contract by the UK Ministry of Defence. The initial £26 million contract was awarded in May 2009 for four years and allows Royal Air Force pilots to train alongside British Army forward air controllers and artillery personnel prior to deployment at a customized multi-million pound training facility at RAF Waddington. QinetiQ was the project lead and Boeing provided around 44 weeks' access to specialist synthetic training facilities every year.

Under the contract extension, QinetiQ remains responsible for ensuring the facility meets technical specification and delivers the ongoing customer requirements. Boeing is responsible for the day-to-day operation of the training systems used for planning and for delivery of the post-exercise review, while the RAF, supported by Inzpire, (acting as consultants to the UK military), provides the personnel with recent in-theater experience to take on various key roles within the exercises.

The DSALT facility is a key element of the Air Battlespace Training Centre, a partnership between RAF and industry to improve the training of UK front line forces.

SAIC to Provide More Helicopter Crew Simulators to US Army

December 5, 2012
I/ITSEC Showdaily

Science Applications International Corporation (SAIC) is demonstrating in its booth [2439] the Non-rated Crew Member Manned Module [NCM3] that it developed to train the crew chiefs and gunners who work in the "back end" of both the US Army's Boeing CH-47 Chinook and Sikorsky UH-60 Black Hawk helicopters. In mid-November the Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) awarded SAIC a follow-on single-award task order worth approximately $41 million to integrate, test, and deliver 11 NCM3 simulators over a 37-month period.

"NCM3 is viewed as providing a leap forward in training helicopter crews in the 21st century, helping to lower customer fuel costs and blade hours and enabling delivery of training 24/7", Al Funderburk, SAIC senior vice president, told the Show Daily.

PEO STRI awarded SAIC an initial delivery order, under the second STRI Omnibus Contract (STOC II), in February 2010 to develop the NCM3. The 101st Combat Aviation Brigade at Fort Campbell, KY, began training with the first simulator at the end of September 2011 and another simulator has since been delivered to the 10th Aviation Brigade, 10th Mountain Division at Fort Drum, NY. The NCM3 suite could be engineered as a solution for virtually any US made helicopter and has direct military sales potential for allies, said Funderburk. Each NCM3 suite consists of a 53ft trailer with two reconfigurable modules, each consisting of three areas that replicate rear crew stations. The UH-60 stations include left and right door gunners, and a position for either a cargo hook operator or a rescue hoist operator, while the CH-47 stations include a left and right door gunner and a position for either a cargo hook operator (shown above) or tail gunner. The system includes two instructor/operator stations, one for each helicopter "back end".

Using virtual reality glasses that snap onto the crew member's helmet in the same manner as night vision goggles (NVG), crew members can practice tasks such as gunnery, sling load, and hoist operations. The NCM3 includes task-driven scenarios, which can be adjusted by the instructor to include all weather conditions, lighting variations, including NVG modes for night operations, and other specific situations. For example, a control load box, linked to the 7.62mm M240H door guns, can be used to give trainees a sense of wind resistance on their guns.

The NCM3 simulators can be linked with the Army's Aviation Combined Arms Tactical Trainer (AVCATT) simulators to enable rear crew members to coordinate their actions with the helicopter's pilots. The first two NCM3 simulators were fielded to support units preparing for deployment to Afghanistan, and PEO STRI's objective, funding permitting, is to field one NCM3 for each AVCATT through 2015. The Army has 23 AVCATT suites, produced by L-3 Link Simulation & Training (Booth 1449), at bases across the Continental USA, Hawaii, Germany and South Korea.

Another aircrew training simulator that SAIC is demonstrating, the RC-12X Cockpit Procedural Trainer (CPT), delivers missionfocused intelligence, surveillance and reconnaissance training for aircrews of the US Army's RC-12X Guardrail aircraft. The CPT can be used for specialized mission planning and mission rehearsal. SAIC is under contract from the Army's Product Manager, Air and Command Tactical Trainers (PM ACTT), for the development and fielding of two RC-12X CPT at Fort Huachuca, AZ and for their ongoing logistical support.

SAIC is also demonstrating two asset tracking solutions for training. The new Aviation Tactical Engagement imulation System (AV-TESS), developed by SAIC, is a flexible training solution, tracking and weapons simulation system, that supports live force-on-force and force-on-target training, and the evaluation and testing of new air vehicles and weapons systems. The Soldier Monitoring System (SMS) provides personnel with a safety net during live training and is currently in operation at an Army land navigation training center.

I/ITSEC Highlights the Benefits of Medical Simulation

December 5, 2012
I/ITSEC Showdaily

Two different Special Events at I/ITSEC 2012 will place the spotlight on the rapidly expanding application of simulation technologies to the medical arena.

"Simulation for Real: Innovation in Healthcare Training and Education" will be the topic of a panel presentation on Wednesday from 1600-1730 in Room W307AB.

According to Dr Paul Phrampus, panel moderator and President- elect for the Society for Simulation in Healthcare (SSH) [Booth 3251], the event will provide an understanding "of the capabilities of simulation as it applies to healthcare education and assessment, in particular the ability to build increasing confidence in the healthcare sector."

Offering a message to I/ITSEC attendees and exhibitors who may not have thought about the medical simulation market, he observed, "they have developed technology and solutions to complicated algorithms; specifically for areas like direct combat, decision making and flight training. And the environment of taking care of patients is a complicated algorithm as well. So it seems like there would be some transferrable technologies that would move into the healthcare sector.

And with regard to speaking to them as businesses, I would remind them that, while flight simulation training and some of the Warfighter simulations have been going on for quite some time, healthcare simulation is really still in its infancy in terms of wide scale implementation and acceptance. So I think there's a huge business opportunity."

"Healthcare is the largest single industry in the country," echoed Dr Don Combs, public affairs and government relations chair for SSH. "It's about 17 percent of GDP. It's about three times the size of the defense industry. It employs about 10 million people. And we spend half of the money that's spent in the entire world on healthcare in this country to cover only about six percent of the world's population."

"So from the vantage point of the healthcare industry we look to all the companies that come to I/ITSEC," he continued. "They may be defense oriented but they have analytic capabilities to help us do a more sophisticated analysis of our processes."

"We're trying to get as many people as possible to look at a market that is three times the size of the defense market and needs help," he said. "Now, they shouldn't try to change their spots. They shouldn't try to do something they don't know how to do. But they should look to see how their knowledge and skills could work in another domain."

SSH has played a key role in fostering the dialogue between the medical user community and the simulation producer community.

The multi-disciplinary organization brings together all domains in the healthcare field. Their critical role is reflected in the attendance growth at their annual gatherings, which has increased from 250 to 3,500 over the past decade. The next annual SSH event will be here in Orlando in January 2013.

Another I/ITSEC 2012 Special Event focused on the medical simulation community will take place on Thursday 1030-1200 in Room W307CD. Titled "Continuity of Care: Supporting the Veteran of Tomorrow Through Medical M&S," the panel will outline the vision for continuity of healthcare that will extend from the time someone joins the military into their post-military care under the VA healthcare system.

According to co-moderator Beth Pettitt, branch chief for Soldier Simulation Environments at the US Army Research Lab, the Special Event will include representatives from industry, government and academia outlining their perspectives on continuity of care challenges.

"For example, one of our speakers is going to talk about womens' health issues and the fact that we have more women veterans," she said.

"That's kind of a new thing for us – having a lot of women coming through the system that we need to take care of. And female simulators historically have been really limited. So what are some of the things being done to improve those capabilities?"

"We're trying to train VA doctors to be better healthcare providers when it comes to women veterans, because they just haven't had the experience," offered Harry Robinson, SimLEARN National Program Manager at the US Department of Veterans Affairs. "But if you look at the rapid increase of women veterans it represents close to a five-fold increase over the past few years."

Specialized simulators that address these challenges include MammaCare Corporation's [Booth 3250] new breast examination simulator. "That's one we use within the VA," Robinson noted. "It's really new and they teach you how to do tactile exams looking for nodes or abnormalities."

"We're also bringing 'best in case' practices that are going on in the commercial side," added Special Event co-moderator Jennifer Arnold, principal at Booz Allen Hamilton. "We're bringing those practices from all of these areas to support each other. So everything being done from a commercial perspective can be applied within VA and for veterans leaving service."

In addition to the speakers, Pettitt said that the event will include a number of tables set up around the perimeter of the room "showcasing technologies that tie in with the speaker topics."

"Some of the things will be duplicative of the things being seen on the floor but some of them won't," she said. "The latter group includes the things that are really so new in the labs that perhaps they weren't quite ready to be on the floor this year, but we're sneaking them in for a 'sneak preview' for a couple of hours. We're looking at some things with pain mapping, for example, so that we can start to address pain management with our simulators."

General Dynamics IS&T Offers More Bang for the Buck

December 5, 2012
I/ITSEC Showdaily

"More bang for the buck" is the underlying message that General Dynamics Information Systems & Technology (IS&T) [Booth 701] is presenting at I/ITSEC 2012.

"We're here to educate potential customers about the capabilities we have within General Dynamics," offered Roger McNicholas, director of program management in the live training focus area within the IS&T group's C4 Systems. Examples of those capabilities displayed in the booth range from the Human Intelligence (HUMINT) Control Cell (HCC) to Consolidated Product-line Management (CPM).

Pointing to HCC as "an example of what we are doing with a human intelligence/interrogation training system," McNicholas explained, "There are several hundred that have been fielded. It's how HUMINT collectors are trained within the Army. That's a neat thing because it has virtual technology, artificial intelligence and avatars."

"C4 Systems to a great extent is a prime systems integrator," he added. "We would gather together the appropriate technology. In the case of the HUMINT Control Cell, actually the Army started that several years ago with the Institute for Creative Technologies and something they built called 'Sergeant Blackwell.' It was an artificial intelligence engine. Since then we've added different avatar capabilities, put a new graphics engine on it, and then built it up as a complete training solution."

Major booth emphasis is placed on CPM, which was awarded to General Dynamics in 2009. The program provides a methodology for managing software product lines and for managing complicated systems of systems.

"In the live training community under PM TRADE [US Army Project Manager, Training Devices] they have had a software product line concept for many years," McNicholas said. "There are a lot of other major program efforts that have lots of what I would call configurations 'of the same kind of thing.' But they have not taken the leap that PM TRADE has with a software product line where you have 'building blocks' from which to assemble products."

McNicholas said that the company's CPM methodology allows the building of unique software configurations very adeptly.

"We are now shipping all the different products based on the one set of components," he said. "Then when they want new features we then tailor the core component that would allow us to build the new feature or turn it on or off so that we can build whatever versions we need."

RUAG Defence Enhances Training Products

December 5, 2012
I/ITSEC Showdaily

RUAG Defence [Booth 2563] is demonstrating its recently expanded simulation and training product platform at I/ITSEC.

To meet the increased demand for low-fidelity virtual simulators, RUAG has expanded the Virtual Arena 2.0 Virtual Simulation platform to include a highly configurable Role Player Station. It consists of a generic environment with immersive projection screen for 3D sights, a seat and touch-screen monitors for the scenario interaction and communication system. The same station can be configured in very short time to serve different roles. It relies on the flexibility of the RUAG Virtual Arena platform and therefore can simulate a large set of possible land and air assets in the scenarios.

A main 2D/3D map with an intuitive touch-interface allows the realistic tactical control of associated simulated units. "The demand from our customers for expanding existing virtual simulation systems with low-fidelity, flexible and configurable simulators has been steadily growing," said Oliver Meyer, vice president, simulation & training at RUAG Defence. "RUAG Defence wants to offer its customers the possibility to expand the range of training capabilities of new and existing sytems."

RUAG is demonstrating that its Role Player Station can be used to simulate several types of platforms with minimal re-configuration.

Easily networked through a provided distributed interactive simulation and high level architecture interface, the station can be used for training command staff as well as individual operators.

At the request of international customers, the company has extended its EXCON software with new features to increase training efficiency. The EXCON software is an intelligent software platform used by operators and

instructors to plan, conduct, control, monitor, record, replay, debrief, and evaluate live forceon- force training up to brigade level in a combat training center/military operations in urban terrain environment. The key features of the new release are the embedded 3D view and the optimized tactical drawing tool.

"Switzerland has always been a leader in quality and a driver for top-notch requirements. RUAG Defence wants to leverage its decades of expertise in live simulation exercise supervision software for our current and future customers and introduce its new release of the EXCON software to the international community at I/ITSEC," said Meyer.

RUAG has made numerous improvements to make its set of mobile, flexible, small/medium size deployable training centers and single components forming its live training solutions interoperable with other systems. "This will allow us to expand our B2B business and position ourselves as a general component provider as well as system provider", said Meyer.

Rheinmetall Showcases Land, Air and Sea Training

December 5, 2012
I/ITSEC Showdaily

Rheinmetall Defence's Simulation and Training [Booth 2415] business unit is Europe's second-largest simulation and training company and the largest source of defense simulation equipment for land warfare operations.

The company is continuing to expand. At the end of October Rheinmetall Simulation Australia acquired the defense operations of Sydac, which has been supporting the Australian Defence Force since the late 1980s. At I/ITSEC, Rheinmetall announced the acquisition of Swiss Simtec of Thun, Switzerland, which focuses primarily on live and virtual simulation for ground forces applications.

Rheinmetall is demonstrating its Leopard Gunnery Skills Trainer (LGST), which will soon be entering Canadian Army service. Canada has ordered 18 LGSTs, plus optional loader stations, and two Driver Station Simulator (DSS) units. The LGSTs are indoor, self-contained, stand-alone systems for training Leopard 2A4 CAN crew commanders, gunners and loaders. The LGSTs will provide a network capability to enable tactical training at platoon level with at least six simulators and are equipped with a driver station to allow the driver to take part in tactical training. The trainers will be delivered in the second half of 2013 for use by the armored units at Canadian Forces Bases (CFB) Edmonton, Valcartier and Petawawa, and the Armour School at CFB Gagetown. The DSS, slated for delivery in the first quarter of 2013, will reflect the Leopard 2A4 CAN configuration. An instructor's console mounted behind the part task trainer allows the instructor to control the trainee's activities in the driver's station. Both simulators feature Rheinmetall's TacSi Reloaded technology.

Rheinmetall has recently been awarded contracts for driving simulators worth over s10 million. The Swiss Army will be equipped with a state-of-the-art tank driving training facility consisting of six units with 20 simulator cabins for Leopard 2, CV 9030, M109, Piranha 6x6 and Piranha 8x8 vehicles. Swiss Simtec will carry out a considerable share of the work, which is due for completion by the end of 2013.

The Royal Netherlands Army has ordered a driving training simulator for the new Boxer 8x8 multi-role armored vehicle. Expected to enter service in the first quarter of 2014, the simulator is an authentic replica of the Boxer driver's cab installed on a 6DOF motion platform.

An unspecified customer has ordered two driving simulators for the Fuchs 2 6x6 armored vehicle; included under this contract are specialized databases featuring the specifics of training areas and vehicle performance parameters.

Rheinmetall Defence Electronics is showcasing in their booth (2719) a true-to-life prototype of the Advanced Network Trainer (ANTares), its mobile tactical training system. The modular cubicle concept makes it possible to network an extensive array of weapon system simulators, including land, sea and air assets, enabling sophisticated joint training operations. The simulation cubicles can be installed in transportable containers in freely configurable order as plug and play units. Besides individual crew training, ANTares can be networked for collective training.

The Turkish Undersecretariat for Defense Industires in October signed a contract with Havelsan, the Turkish military software and systems company, and Rheinmetall to supply the Turkish Navy with a submarine diving simulator (SDS) for its PREVEZE and GÜR 209-class submarines. Rheinmetall is supplying the SDS motion system, the hydrodynamics and the support system for the 209 SDS. The simulator will include a life-size replica of a submarine control room, debriefing rooms and other training facilities. The SDS is scheduled to be delivered 30 months after contract award.

Rheinmetall is also building a Submarine Command Team Trainer for the Royal Thai Navy.

Barco Announces Strategic Asian Partnership

December 5, 2012
I/ITSEC Showdaily

Barco [Booth 1763] announced today that it has signed a Service Partnership Agreement with ST Electronics (Training & Simulation Systems) in Singapore to provide first-level support services for Barco's training and simulation products in the Southeast Asia region.

The company provides high-quality display systems for training and simulation programs in a number of markets, ranging from flight and air traffic control to ship navigation and driving instruction.

As Barco's Training & Simulation business is growing rapidly across the Southeast Asia region, the company said it had decided to work with a local service partner to provide customers with top-quality service and support more efficiently.

ST Electronics (Training & Simulation Systems) is well established as one of the largest systems integrators for simulation display systems in Southeast Asia, according to Barco. As part of the partnership, the latter will provide regular in-depth product training to ST Electronics (Training & Simulation Systems) engineers, and in turn ST Electronics (Training & Simulation Systems) will stock spare parts and consumables for Barco's products.

Aaron Koh, Deputy Air Business Division Manager, ST Electronics (Training & Simulation Systems), commented: "ST Electronics is very pleased to have Barco as a partner in our region. We will provide Barco customers with expert first-level service support during regular office hours, on-site intervention, and problem diagnosis. In the area of hardware support, we will also provide support for consumables and parts."

Thales Outlines Market Strategy

December 5, 2012
I/ITSEC Showdaily

There has been some upheaval in Thales' [Booth 1000] business since their appearance at I/ITSEC last year, with a reshaping of the business at the forefront of the changes.

"Despite the sale of the civil fixed-wing business to L-3 earlier this year, we continue leading in civil and government rotary wing and military training and simulation markets," vice president, training and simulation, Jean Jacques Guittard, told the Show Daily.

"Thales has a strong heritage in providing best-in-class training services and technologies, and we pride ourselves in developing long-term partnerships with customers to develop innovative, cost effective solutions that are designed to enhance each customer's operational effectiveness on land, at sea or in the air," he added.

At I/ITSEC 2012, the Thales booth has five key areas: land forces training; helicopter mission training; the Reality H helicopter full flight simulator; synthetic environments for mission training; and the directed-fidelity approach to designing training solutions.

"We have a presence on the whole spectrum of military training, in particular land forces training as illustrated by our Combat Training System demonstration," Guittard explained." We are showing innovation by showcasing our Reality H full flight simulator for helicopters, with its new unique 6-axis electrical motion system. This system is a cutting-edge innovation: the smoothest and most costefficient currently on the market."

"Our stand highlights our renowned expertise in delivering solutions that are targeted to meet each customer's needs to enable decision makers to master complexity in critical scenarios and make timely decisions to obtain the best outcomes."

Guittard said that Thales aims to be the partner of choice in the provision of targeted training services and simulation equipment, to introduce innovative new solutions in all our fields of operation and to ensure our customers benefit from the most appropriate solutions to meet their needs.

While Thales is renowned for its expertise in the air domain, its capabilities and reputation extend to land, maritime, joint and combined training requirements. "Thales has a worldwide presence, with competence centers in the US, France, UK, Germany, and Australia.

Thales is also a leader in our domestic markets, which gives us a strong base from which to conduct our operations internationally. At present our main target markets are located towards Central Asia and South America," Guittard stated.

Turning to how Thales differentiates itself in the market, Guittard highlighted four things. "With a proven expertise of more than 50 years, Thales is a major player in all training markets, with a wide range of targeted training solutions. As part of the Thales Group, we pride ourselves in offering solutions that meet each of our customers' individual needs. As a global technology leader for the defense, security, transportation, aerospace and space markets, we bring a deep understanding of these sectors and have access to innovative operational experience and expertise."

"Thales offers high quality training solutions that are simply smarter by design. We provide optimized training solutions to deliver trained forces at the required levels of readiness for whatever is demanded of them, from major complex operations to individual skills training. We live and breathe high technology, and understand and deal with complexity but we fundamentally recognise that technology is only a part of an overall training solution. We can optimize the whole training solution across the enterprise as well as a single item of training equipment."

With the pressure of reduced defense budgets, the need to operate more collectively on operations and the challenge of increasing regulations, Guittard said he saw customers looking for longer-term partnerships to deliver training solutions that address their cultural, financial and operational needs. “We work very hard to get the right mix of COTS and proprietary products into our training equipment in order to deliver the most cost-effective training solutions,” he added.

“The use of COTS elements will continue to increase as customer budgets tighten. While this will bring some challenges it will also enhance the reusability and portability of products and move us more quickly to universal architectures.”

News in Brief

December 5, 2012
I/ITSEC Showdaily

Kratos Defense & Security Solutions [Booth 1720] announced yesterday that it has entered into an exclusive partnership with BSC Partners to produce aircrew training products and advanced aircrew training technology through mutual company commitments in product development and internal research and development.

“We are excited about joining forces with BSC to develop advanced aircrew training solutions,” said Jose Diaz, senior vice president for Kratos Training Solutions. “We have had a long working relationship with BSC, and this partnership provides a foundation for developing and producing the most technologically advanced products to support the Warfighter.”

“We are very pleased to be partnered with Kratos. This partnership combines the state of the art production facility of Kratos with BSC’s 20 years of experience in helicopter aircrew training systems, enabling our team to offer customers a comprehensive, high quality solution for their aircrew training requirements,” said Greg Stanton, chief operating officer at BSC Partners.

Christie Announces StIM WQ for Coast Guard Application

Christie {Booth 2549] announced yesterday that FlightSafety International [Booth 1701], with Aero Simulation Inc (ASI) [Booth 1415], has awarded Christie the contract to supply a projection system consisting of nine Christie Matrix StIM WQ 1-chip DLP solid state, LED-based projectors, to the US Coast Guard’s HC-144A Ocean

Sentry program at the Aviation Training Center (ATC) in Mobile, AL. ASI is the program’s prime contractor responsible for delivering the Operational Flight Trainer and supporting subsystems.

The Christie Matrix StIM WQ is an integrated scalable environment projection system with the capability to display independent RGB and IR channels through Christie’s InfraScene technology at WQXGA (2560 x 1600) resolution. It features 800 ANSI lumens, 4.1 megapixels of resolution, fully ruggedized chassis, Christie proprietary technology such as ArrayLOC, which allows a seamless and uniform performance across a projection array. It also includes MotoBlend to maximize system contrast and optimize dark scenes, robust and easy to use AutoCal to maintain the alignment to precisely match and blend arrays, and the latest fully adjustable Christie AccuFrame smear-reduction technology for the most true-to-life image quality in the industry.

Air Force Embraces Wider LVC Future

December 6, 2012
I/ITSEC Showdaily

Although the US Air Force has long been associated with cutting edge modeling and simulation tools in flight training, these tools are now being applied more broadly across every aspect of Air Force training, tailored to meet the needs of Warfighters such as combat air controllers and intelligence analysts. Jack Blackhurst, Director of the Human Effectiveness Directorate, 711 Human Performance Wing, Air Force Research Laboratory (AFRL) and Acting Executive Director, AFRL, discussed these developments with the Show Daily.

AFRL, at Wright-Patterson Air Force Base, is the Air Force's only organization wholly dedicated to leading the discovery, development, and integration of warfighting technologies for air, space and cyberspace forces. "My vantage point is essentially from the science and technology aspects of training, modeling and simulation. We in the AFRL have a cadre of folks that specialize in training as their forte in terms of developing what we call now the live, virtual, constructive concept of training, which really came from distributed mission operations," said Blackhurst.

"We have just done some analysis on the needs of the Air Force from the major commands and live, virtual, constructive is a dominant theme across the major commands in terms of what they need more of in the future. The rationale is that we will probably not be able to materially replicate everything that we want to do in our flying regimes. We will have to rely more on simulators and virtual reality to have our aircrews fly missions because of various limitations such as the pressure on training ranges and the cost."

"Clearly in other areas such as combat controllers, ISR analysts, intelligence, RPA [remotely piloted aircraft] operators, we are finding that the ability to train these individuals in day to day missions is very difficult. For intelligence analysts, for example, much of their training is on the job training during operations. What we would like to do is speed up that process by allowing them to use the virtual environment – the modeling and simulation capability – to accelerate the training that is required to bring them up to speed. This is going to take some effort on our part to understand the various tasks that an operator performs. Once we know what those tasks are we can figure out what is the best mechanism to train them."

"Combat controllers is a very small, specialized career field," noted Blackhurst. "We want to give them as realistic training as possible. Now we have integrated this with RPA training and we can have the JTAC training with simulated RPAs and fighters. The controller gets to experience the mission as though it were real. You don't necessarily need aircraft flying."

"We have discovered that modeling and simulation reduces the number of assets needed to run an exercise. The opportunity to reduce assets and still accomplish training objectives is important in an era of reduced budgets. The key is at the end of the day for the operators to say they got the benefit out of training and for the trainers, or the exercise planners, to have the data – whether the operators hit their targets and those sorts of things – to prove it."

"Modeling and simulation has often been used just to train basic skills. Now the demand coming from Warfighters is to train much more complicated skill sets than we have trained in the past. Operating in congested airspace or against more sophisticated threats add different aspects to modeling and simulation than just 'stick and rudder' flying. The services are going to want more complex scenarios, which require more complex modeling and simulation capability."

"How do you give this kind of training capability to everybody at their home unit? How can they play these scenarios on a daily basis versus having to go to a particular exercise or event? So packaging, mobility, interconnectivity – those sorts of things – are important. It is our job to figure out how to do this in a cost

effective and realistic way. It is a real challenge for us. We are not there yet, but we are moving in that direction. That is Nirvana for us."

The USAF, like the other services, is now consolidating its existing training assets after more than a decade of combat operations and preparing for the future. "We have begun to develop roadmaps for live, virtual and constructive technologies across the services. This will force us as single services to look at where we are investing our dollars, to look at joint opportunities and to be more efficient in our research programs." Blackhurst believes this will provide a great opportunity for collaboration across the services. "The ultimate goal is that we plan and execute these roadmaps in a joint fashion. Although that has been somewhat difficult in the past, circumstances – budget constraints – mean that we have to follow a joint path."

Blackhurst also highlighted the need to train young engineers. "Within the research community it is obviously very important to encourage young people to get started in the science, technology, engineering and mathematics [STEM] disciplines. We have a variety of programs within the Laboratory to do that. Specifically in the modeling and simulation area, we have started projects at Wright- Patterson AFB that allow undergraduate and graduate students as well as school teachers and industry to learn about modeling and simulation. The idea is to implant early in a person's career the fundamentals of what modeling and simulation is all about."

In the summer of 2011 the AFRL and the Dayton Regional STEM Center began a collaboration to develop modeling and simulation courses for Dayton regional schools. The fruits of these efforts have been apparent at I/ITSEC in recent years. Kim Puckett, from Ohio's Tri-Village Local School District in New Madison, OH, was recognized by NTSA at I/ITSEC 2010 with an America's Teachers award and the following year accompanied a group of area students to I/ITSEC where they displayed their project at the USAF booth.

"At Dayton we have been successful at getting teachers trained in modeling and simulation techniques", explained Blackhurst. "So we actually have schools in the Dayton area teaching modeling and simulation courses at the undergraduate level and beginning to hold competitions in the modeling and simulation arena. These efforts show our interest in encouraging the country's youth in the STEM disciplines and how they might be able to use modeling and simulation in their future careers."

USAF and NTSA Announce Theme for I/ITSEC 2013

December 6, 2012
I/ITSEC Showdaily

The modeling and simulation industry's heritage runs deep, with innovative examples for how new learning and human performance technologies and techniques have positively impacted the Warfighter in recent deployments. As America draws down its force structure overseas, the military is faced with new challenges, evolving adversaries, and budgetary uncertainty. Never has the need for agile and responsive training been greater. The modeling and simulation industry faces similar challenges. Fiscal constraints will lead to smarter use of available funds. Demands for increased training efficiency require investment in new technologies and the implementation of new training concepts that improve upon existing methods.

The US Air Force (USAF) and National Training and Simulation Association (NTSA) team has selected "Concepts and Technologies: Empowering an Agile Force" as the 2013 theme to emphasize their commitment to exploring these common challenges to develop innovative learning solutions that will move the modeling and simulation industry forward. I/ITSEC 2013 will continue the traditions set by earlier conferences by providing both a professional symposium offering world-class presentations as well as an exhibit hall that showcases the latest technology in modeling, simulation, training and education tools, technologies and services. The resulting

technical interchange presents an opportunity to discover how leaders from around the globe leverage their investments in training to improve workplace performance and increase operational efficiency.

Cyndi Turner, the 2013 Conference Chair, and Brent Smith, the 2013 Program Chair, invite you to visit www.I/ITSEC .org to review the Call for Papers and submit relevant abstracts for papers that discuss the core research our industry will put forth to improve the next generation of learning.

New President Sets Out Vision for I/ITSEC and NTSA

December 6, 2012
I/ITSEC Showdaily

As I/ITSEC 2012 began to draw to a close, the new president of the National Training and Simulation Association (NTSA), RADM James A. Robb USN (ret), took a few moments from his busy schedule to speak to the Show Daily and give his views on the future direction of the event and the NTSA.

"What we are trying to do on the floor is expand the base of I/ITSEC. We're building on our core defense emphasis to reach out to other domains to promote modeling and simulation and training in other areas," he explained.

"So as you walk around the floor you will see a Healthcare Pavilion, serious gaming – educational groupings that are designed to translate defense capabilities into these other domains. In the long term we have an ambition to bring in other agencies and areas, such as transport, and emphasize training across the entire continuum," Robb added.

The other area that RADM Robb is keen to develop is the international outreach of I/ITSEC. "We have the desire to connect with other like-minded organizations around the world that support modeling, simulation and training and to build a framework where we can cooperate. The aim is to facilitate our industry partners to engage their markets as well as bring foreign companies here to I/ITSEC. So you see Brazil here for the first time and we continue to work on those links we have in Europe, Asia and South America."

Looking at the goals of NTSA more broadly, Robb said he had a number of priorities. "We're focused on policy issues in Washington and ensuring Congressional support for modeling and simulation efforts. We are also trying to raise the efficacy of modeling and simulation within the industrial base and trying to get it more recognized as a core competency," Robb stated.

"The other thing we have a strategy for is to develop the modeling and simulation community of practice. Our industrial partners frequently say they are having a difficult time identifying qualified modeling and simulation professionals. So we are working across, what I call, a continuum of education where we have identified and support curriculum development at the graduate level, the undergraduate level and within the primary school system," he continued.

Robb said that the objective is to increase the pool of professionals qualified to go into the modeling and simulation community. NTSA is currently in the process of building the second iteration of its Certified Modeling and Simulation Professional program to this end.

In addition to recent school graduates, Robb said that NTSA is also looking at how it could potentially encourage returning Warfighters into modeling and simulation, recognizing the skills and capabilities that they could bring to the profession. "While there is an economy out there that is rather weak, in terms of jobs in the modeling and simulation industry there are jobs that can't be filled because there aren't enough qualified individuals," he concluded.

Meggitt Demonstrates Next Generation Weapons Trainer

December 6, 2012
I/ITSEC Showdaily

Meggitt Training Systems [Booth 1032] is demonstrating the FATS M100, the next generation of its popular weapons simulation and training system.

MTS is a leading supplier of integrated live fire and virtual weapons training systems, unmanned land and sea vehicles, aerial targets and electronic scoring systems. "This is an interesting time for the training and simulation industry," said Ron Vadas, MTS president. "Our defense organizations are facing unprecedented budget challenges. By providing a virtual firearms training system developed with accuracy and realism at the forefront of our design, Meggitt provides today's soldiers with a training tool to sustain their live fire knowledge while expanding their training capabilities."

The FATS M100 system is designed to support multiple, simultaneous simulation and training modes using a flexible architecture that allows the easy integration of internally developed and third party simulation, training, and gaming products. The system supports training using the industry's largest simulation weapons selection. The FATS M100 Advanced Reality training mode is built upon a highly advanced development solution that is used for the creation of blockbuster games, movies, high-quality simulations and interactive applications.

Also attracting interest is Meggitt's Virtual Kinetic Immersion Platform (VKIP) Immersion Lab, a company-funded research project, based at its Suwanee, GA facility.

VKIP explores how immersion training can be used to prepare deploying Warfighters for the mental/emotional challenges faced during deployment in an effort to prevent and treat post traumatic stress disorder. The project is rooted in research which Meggitt conducted to explore the stress on law enforcement officers involved in shooting incidents.

The VKIP Lab combines tactile, auditory, olfactory and visual stimuli in conjunction with a library of high fidelity combat environment scenarios built upon the company's FATS technology. "When you immerse trainees in traditional simulators you 'hit' them with visuals.

Now we are integrating touch, sound and smell to induce stress," explained Tom Shirey, director of business development to the Show Daily. MTS is considering what would be the most effective product or platform for this technology to meet military needs.

MODSIM World 2013

December 6, 2012
I/ITSEC Showdaily

Attendees at I/ITSEC should mark their calendars to attend MODSIM World 2013. The multi-disciplinary international modeling and simulation conference and exposition will be held April 30 – May 2, 2013 at the Hampton Roads Convention Center in Hampton Roads, Virginia.

Although the conference has been running for several years, NTSA took over event sponsorship and held a "bridging event" in 2012.

The expansion of the event coincides with the rapidly growing use of modeling and simulation in solving real world problems. It provides a unique opportunity across multiple domains, with networking opportunities with leading modeling and simulation professionals from industry, government and academia.

According to Steve Husak, NTSA regional representative for the Hampton Roads area, MODSIM World incorporates greater topic diversification than one might find at the annual I/ITSEC event.

"Compared with I/ITSEC's primary focus on defense and growing focus on healthcare, there are essentially eight different tracks at MODSIM World 2013," he said.

The MODSIM World tracks include: Defense; Healthcare and Medicine; Engineering and Applied Sciences; Information Assurance and Cyber Warfare; Cross-cutting Applications in Modeling and Simulation (using M&S tools across various disciplines); Education and Workforce Development; Transportation; and Manufacturing.

"In each case we will have a session chair who will be responsible for monitoring that track and putting together the content," Husak explained. "That particular individual will be a person known and respected in that discipline. They will then assemble a team for each particular session. Those 90 minute sessions will include a series of panels or papers. And, as we have here at I/ITSEC, there will be tutorial sessions held on the day prior to the conference."

The subject diversity is also reflected in this year's Conference Chair, Melvin Ferebee, manager of the Space Technology Projects Office at the NASA Langley Research Center. Reflective of that role, Husak said that one of this year's Special Events will be a NASA tour.

This year's Program Chair is Jeanine McDonnell. Husak said that McDonnell and her team are in the process of assembling the MODSIM World 2013 program. NTSA has released a request for abstracts for papers. Abstracts must be submitted by January 11, 2013 and the abstract application form can be found at: http://application.ndia.org/abstracts/31M0/

"They should fill that out with a brief description as to what the paper will cover. We will do an evaluation and come back to them to work with the authors on their presentations," Husak added.

There will also be a range of tutorials on various subjects yet to be announced. A significant addition to MODSIM World 2013 will be an exhibit area coordinated by Debbie Dyson: ddyson@ndia.org

"We are looking for sponsorships for some of the events as well," Husak noted.

"The people who attend MODSIM World 2013 are the people who have an interest in modeling and simulation," he concluded.

"That's the focus of the whole event: The uses of modeling and simulation across the various disciplines and the associated advantages."

Future Leaders Pavilion is Showcase for Student Talent

December 6, 2012
I/ITSEC Showdaily

Visitors to I/ITSEC 2012 can gain an impressive insight into the talent that America's high school students will bring to tomorrow's modeling and simulation community at the Future Leaders Pavilion [Booth 3171] in the STEM Pavilion.

At 1030 today the students will present their projects during their Special Session entitled "The Future is Now!"

It is the 11th year that the NTSA has hosted the FLP and Paper Session that spotlights the work of students from across the USA.

The students who participate in the FLP are committed to excellence and most are enrolled in engineering, computer sciences, mathematics, or modeling and simulation tracks. With more than 30% of current Department of Defense science and technology professionals expected to retire by 2020, it is vital to America's national security and economic wellbeing that more students are encouraged to pursue studies and careers in the STEM field.

Congratulations to them all!

The students, teachers and high schools represented this year are:

- Kaley Suero, Alexandra Coto and teacher Sharon Dearman from Bishop Moore Catholic High School, Orlando, FL, exhibiting 'checkUps'.
- Kelli Little, Dori Bradford and teacher Jane Jones from New Century High School, Huntsville, AL, presenting 'Environmental Effects on Student Life.
- Nicholas Oliver, Nancy Bolton and teacher Nora Blasko from Great Mills High School, Great Mills, MD, exhibiting 'Riskonomy'.
- Gregory Hickey, Sara Berg-Love and teacher Kevin Smith from Shaker High School, Latham, NY presenting 'Ugandan Household Rainwater Harvesting System with First Flush Diversion'.
- Macy Fraylick, Craig Harrison, Seth Thomas, and teacher Kim Puckett from Tri-Village High School, New Madison, OH, will discuss 'Fire Drill Modeling and Simulation'.
- Andre Carter, Randy Ratliff, Robert Richards and teacher Reginald Griffin from William Spencer High School, Columbus, GA, will present 'VirtuScript: the High School Edition'.

Panel Highlights Service Acquisition Initiatives

December 6, 2012
I/ITSEC Showdaily

One of the Special Events at I/ITSEC 2012 examined the Department of Defense Better Buying Power (BBP) initiative from service acquisition executive perspectives.

The Tuesday event featured live participation by Vice Admiral Mark Skinner, Principal Military Deputy to the Assistant Secretary of the Navy (Research Development and Acquisition), The Honorable Heidi Shyu, Assistant Secretary of the Army (Acquisition, Logistics and Technology) and Lieutenant General Charles Davis, Military Deputy to the Office of Assistant Secretary of the Air Force (Acquisition). The service perspectives were followed by a question and answer session with the audience and the event was capped by a video presentation by The Honorable Frank Kendall, Under Secretary of Defense for Acquisition, Technology and Logistics.

The BBP initiative involves the implementation of "best practices" to strengthen the Department of Defense's buying power, improve industry productivity and provide an affordable, value-added military capability to the Warfighter. The initiative is designed to ensure that essential Warfighter capabilities are delivered within the constraints of a declining defense budget by better managing the costs of acquisition. Initially launched in 2010, the initiative was recently reinforced by the release of BBP 2.0.

BBP 2.0 initiatives are organized into seven focus areas: achieving affordable programs; controlling costs throughout the product lifecycle; incentivizing productivity and innovation in industry and government; eliminating unproductive processes and bureaucracy; promoting effective competition; improving tradecraft in acquisition of services; and improving the professionalism of the total acquisition workforce.

Recognition of the critical acquisition workforce is a new focus area introduced in BBP 2.0.

VADM Skinner outlined the Navy's efforts in three categories: affordability; competition; and "should cost."

Under affordability, he offered the example of the Ohio Class submarine replacement, where initial estimates of $7 billion per submarine were not supportable under ship building budget projections.

The realization caused the service to identify the key cost drivers and re-examine requirements against that knowledge. He noted that adjustments in some requirements translated into a new design estimated at $5 billion per submarine, adding, "so we were able to cut $2 billion per boat over the life of those systems."

Cubic Responds to Customer Focus On Efficiencies

December 6, 2012
I/ITSEC Showdaily

Cubic Defense Applications is presenting its newest immersive training technologies in its booth (2448).

"Cubic is listening and responding to customer requirements for effective and efficient training products," said Brad Feldmann, President of Cubic Defense Applications. "We are dedicated to reducing size, weight and power [SWAP] requirements and exploring new ways to save operations and maintenance costs as well as transportation costs during deployment. Also, for the first time, Cubic is proposing cyber solutions that offer secure transfer of classified data and video during both training and real-world missions."

Cubic is demonstrating a real-time scenario on board the USS Freedom, the first of the US Navy's new Littoral Combat Ships (LCS).

Using the high-fidelity graphics capability of CryEngine3, the user will be able to walk in an Engagement Skills Trainer-type virtual environment and experience the LCS-1 as it deploys a Rigid Hull Inflatable Boat under mission conditions into the open ocean. Dynamic lighting, surface textures, water, and physics are all accurately represented.

The demo represents a snapshot of the immersive training simulations possible throughout the ship for both the Freedom class and the Independence class of LCS.

As examples of effective and efficient products with low SWAP, Cubic will highlight its latest live engagement simulation systems: the MILES Individual Weapon System and Instrumentable MILES Tactical Vehicle System for the US Army along with the Instrumented- Tactical Engagement Simulation System (I-TESS II) for the US Marine Corps. I-TESS II is also being evaluated for use in US Navy training.

Cubic is also highlighting its recently developed Immersive Training Environment [ITE], which provides a 360 degree training experience within a virtual dome, which has attracted considerable interest from potential users among the US services as well as select allied nations. It is a highly versatile system which can be configured for many training applications. The ITE has recently been configured for Joint Tactical Air Controller (JTAC) training with injects of virtual F-16 and A-10 aircraft. It is a joint effort of Cubic, SDS International and Nova Technologies that incorporates products that are certified or in use by the US Air Force, US Army and US Marine Corps.

In the scenario displayed at I/ITSEC, which replicates actual locations in Kandahar Province, Afghanistan, a vehicle patrol strikes an IED and is then enaged by insurgents with small arms fire. A JTAC calls in an airstrike from A-10s and reinforcements arrive by CH-47 Chinook helicopter. Remotely piloted aircraft are also integrated into the scenario. A particularly valuable aspect of the after action review is that the JTAC can be placed in the cockpit to 'refly' the mission and judge the effectiveness of his earlier communications with the

pilot. Robert Hoppenfeld, principle software engineer in Cubic's Simulation Systems Division, told the Show Daily that Cubic is stiving to make "the ITE experience as realistic as possible for the user". The scenario images can be instantly changed to reflect changes in the environmental conditions such as wind speed and direction, differenct light levels around the clock, fog and snow. Should the customer require, the temperature inside the dome can be controlled

and rainfall 'simulated' by water from an overhead pipe. The horizon will be lifted from 65 to 85 degrees to further enhance realism. Hoppenfeld stressed that the modular design concept allows easy upgrade as subsystems such as better projectors become available.

The dome displayed at I/ITSEC can be assembled from pallet to ready-to-train status by two men in less than 2.5 hours with no speciality tools.

However, the ITE can be built to meet customer requirements for larger domes, which can still be easily transported to different training locations or installed in a permanent structure.

Cubic is also demonstrating the Mission Rehearsal Planning System (MPRS), a virtual sandtable system featuring "touch screen" immersive technologies and highly detailed 3D terrain. MRPS is driven by a low overhead constructive simulation that can make "on the fly" changes to missions for the most up to date training possible.

Cubic is showing two configurations of this technology: MRPS Lite, designed for use in Tactical Operations Centers, and MRPS Tactical, for use in forward locations.

Brazilian Sub Program Presents Training Challenges

December 6, 2012
I/ITSEC Showdaily

In parallel with the modeling and simulation efforts underway within the Brazilian Army [Show Daily, December 4], the Brazilian Navy has come to I/ITSEC 2012 with its own unique set of simulation training challenges. Their inaugural presence is supported by a strong contingent from Brazil's defense industry.

According to Rear Admiral Almir Garnier Santos, director of Brazil's Center for Naval Analysis, the biggest simulation challenge faced by the Brazilian Navy stems from that country's nuclear submarine program, which plans to launch its first operational nuclear submarine around 2021.

"We have conquered the phases of uranium producing and all the fuel needs that we will have, but we still have major challenges in the construction area and on the training of the crew," he said. "That's because a nuclear power plant is very serious business and you can't train people on the real thing. So we really need to develop good simulators for something we have not been able to experience before."

"On a parallel track with developing the submarine we need to develop the tools that will train the sailors that will handle the ship he said. "So that's the greatest challenge we have today."

Other simulation applications are being envisioned to help the Brazilian Navy in its myriad riverine and ocean mission scenarios, as well as operations related to protecting the country's coast and conducting search and rescue operations and coordinating oil spill response operations over large areas.

Santos said that a second key reason for Brazil's presence at I/ITSEC 2012 stems from the recent release of Brazil's Defense National Strategy, which outlines the future of the armed forces.

"One of the key points in that strategy involves the association with and competition within the defense industry," he explained. "That's important, because we have this big challenge that we are not able to tackle on our own. And the Brazilian Government doesn't want to just go abroad and buy the full equipment. They want it developed with Brazilian industry in partnership with other companies."

The desire for industry partnerships is further reflected in the I/ITSEC attendance by Colonel Armando Lemos, director of the Brazilian Defense and Security Industries Association. Lemos said that he is following I/ITSEC with a presentation in Washington, DC at the US Chamber of Commerce. He will be joined by a representative from the Brazilian Ministry of Defense and Brazilian Ambassador to the US in emphasizing the desire to improve international industry relationships.

Santos concluded, "Simulation is a key tool for us to pick up skills, to reduce costs, and save lives; lives of civilians on our costs and lives of people working on the oil drilling platforms off our coast."

Lockheed Martin Highlights New Mobile Training Applications

December 6, 2012
I/ITSEC Showdaily

One of the highlights in the Lockheed Martin exhibit [Booth 1749] emphasizes the company's recent successful efforts in delivering enhanced training capabilities for mobile applications.

"At Lockheed Martin we're very aware of the constraints customers are under when they come to us," said Scott Bawden, an engineer working advanced systems at Lockheed Martin. "We've also been very close partners with our customers for many years so we know the level of realism they need and the elements that the training has to offer."

Responding to an internal leadership challenge to leverage affordable technologies in order to provide the same levels of quality on devices readily available to Warfighters, the company conducted an internal research and development effort to explore 3D maintenance training capabilities on a tablet platform.

"Using mobile devices to provide training solutions is very efficient," Bawden said. "We don't develop the tablet hardware but as the hardware does advance we write software that makes the hardware awesome."

The booth display provides the example of a Lockheed Martin digital engine controller for a turbine engine. Describing it as "the gold standard of engine controllers," Bawden noted that the system is in service with the US Navy and a number of foreign navies as well.

"We wanted to show ways to use mobile applications to make Sailors effective in the operation of that equipment," he said. The tablet app was unveiled earlier this year and has already been purchased by the US Navy.

News in Brief

December 6, 2012
I/ITSEC Showdaily

Laser Shot to Outfit Colombian Marines

Laser Shot [Booth 1213] has announced that it has been awarded a $944,000 contract for the delivery and installation of Tactical Weapons Simulators (TWS) to provide firearms training for the Colombian Marines. The contract was won in collaboration with the Program Executive Office for Simulation, Training and Instrumentation Foreign Military Sales Division.

The contract will provide the Colombian Marines TWS systems with 40 inch and 20 inch wide screens for tactical and marksmanship training using virtual imagery walls that provide visual immersion into a combat or marksmanship environment. The system includes an array of Laser Shot's marksmanship and judgmental training courseware as well as VBS2 for tactical training.

The training courseware allows multiple options, including: training data for record, adapting to training skill level, building custom training scenarios, and instructor ability to control tactical environments. For use with the TWS systems, Laser Shot will be fabricating and fitting custom Galil rifle laser recoil kits enabling Marines to train with their primary service rifle. Additional training weapons include inert (non-recoil), simulated recoil weapons and recoil kits for the M9 pistal and the M4 carbine.

The tactical weapon simulators will be installed at a naval training base in Colombia and will be operational by March 2013.

FreeWave Spartan Receives NIST Certification

FreeWave Technologies [Booth 729] used the I/ITSEC 2012 venue to announce that the encryption technology within its Spartan Series of wireless radios for government and defense markets is now certified by the National Institute of Standards and Technology (NIST). Company representatives stated that, as a FIPS 140-2 Level 2 validated solution, the Spartan Series' encryption technology has passed extensive testing required by NIST. They added that the certification process ensures that the encryption technology can provide the level of security necessary for the mission critical applications it may serve. FreeWave is showcasing the Spartan Series in its booth at I/ITSEC. The Spartan Series offers a secure communications link for a variety of government and defense applications, such as soldier training exercises, command and control of UAVs and critical asset tracking. The Spartan solution enables data links to pass secure encrypted data both reliably and on a real-time basis. With a small and lightweight footprint, it is an attractive option for systems where space is limited. Additionally, the Spartan solution is future-proof, offering an upgrade path to NSA Secret and Below (SaB).

SEA Delivers DECKsim to the Royal Norwegian Navy

SEA, part of UK company Cohort, has delivered the latest, third generation Flight Deck Officer Training System (DECKsim) to the Royal Norwegian Naval Training Establishment (RNoNTE). This particular DECKsim now includes the latest gesture recognition technology and updated scenario builder.

DECKsim allows rapid development of training scenarios within a high fidelity synthetic environment. It has been developed using SEA's immersive procedure training infrastructure. The deployed system provides a wide range of training scenarios, from basic aircraft marshalling to complex vertical replenishment and high line in-flight refuelling. It delivers significant reductions to the cost of training by reducing the number of 'live' flight hours, environmental impact and man hours.

The DECKsim infrastructure provides a high fidelity training solution for all maritime and land based flight deck operations and has the advantage of being able to be configured and deployed within short development timescales.

The key additions to the third generation DECKsim system, in use by the RNoNTE, include: full integration of gesture recognition using Microsoft's Kinect hardware for the marshalling of aircraft; a fully dynamic Ship Helicopter Operating Limits computer simulation system; an updated Scenario Builder with improved Graphical User Interface; and further emergency training scenarios and enhancements to the visual effects in the simulation engine.

Moog Showcases Latest Motion Control Technology

Moog Industrial Group [Booth 2511] is displaying its next generation motion control technology in motion bases used for flight simulation training at I/ITSEC 2012.

This includes motion bases, g-seats and control loading systems used in full flight simulation systems. Moog Electric Motion Bases were the first to attain the highest level certification, Level D, by the US Federal Aviation Administration. Level D is based on the evaluation of the performance of a simulator in relation to an actual aircraft and it enables pilots to do all of their training on a full flight simulator and accumulate the requisite hours needed to qualify for a flight license.

During the last year, Moog engineers and customers have worked together to boost the capabilities of the software and actuators in Moog Motion Base Systems. "The result is easier commissioning, maximized up-time, streamlined troubleshooting and higher reliability," said Tobe Ehmann, product application manager for simulation at Moog.

New features in Moog electric motion bases for full flight simulation include: improved diagnostic capabilities through updated system architecture; ether CAT; re-designed Graphical User Interface; and 100% digital encoder interface. Bi-directional nitrogen-free, snubber design in the actuator provides higher safety, quieter operation and requires less maintenance.

The Moog Electric Six Degrees of Freedom (6DOF) Motion Base features six sealed actuators with brushless servo motors and new nitrogen-free snubber technology that provides longer life, reduced vibration and less acoustic noise. "Even though we've improved and fine-tuned our technology, we've retained the same form factor as previous designs, including the motion base's mechanical interface, in order to provide for easier installation," said Pete Zakrzewski, Chief Engineer, Simulation for Moog. "A customer can now select a Moog motion system model with a slightly higher payload while staying within the mechanical footprint of the older version, enabling higher performance while requiring no additional space."

NSC Provides Synthetic Environment to UK Defense Lab

Newman and Spurr Consultancy (NSC) [Booth 3140] has provided the UK's Defence Science and Technology Laboratory (DSTL) with a synthetic environment in which to explore means of improving maritime marksmanship.

Employing next-generation game-based technology, NSC has been awarded a contract to develop a crew served small to medium caliber weapons simulator for use in trials to establish the effectiveness of virtual tools in the training of Royal Navy and Royal Fleet Auxiliary personnel.

The cutting-edge system, the first in the UK to utilize the latest version of VBS2, puts users' fingers on the trigger of ship mounted weapons in a high fidelity simulator. With compressed air providing realistic haptic feedback and hidden electronics tracking the weapon's every move, operators are exposed to engagements in an immersive surround sound, high-definition environment.

ECS Awarded US Navy Contract

Engineering & Computer Simulations (ECS) has announced their recent award from the US Navy for an eight-year, indefinite delivery, indefinite quantity agreement to support the Training Data Products (TDP) contract.

ECS is one of only seven companies that won an award in the Full & Open Lot, in addition to winning an award in the Small Business Lot. Under the contract, ECS will design and develop an array of training products from curriculum development to full training systems.

The scope of the TDP contract encompasses all phases of the Instructional Systems Design process, including analysis, design, development, implementation, evaluation, sustainment, and delivery of the training product. The multiple award contract vehicle will support the Naval Air Systems Command and is being administered by the Naval Air Warfare Center Training Systems Division (NAWCTSD). The ceiling value of the eight-year program is $780 million.

2012 Governor's Award Goes to Air Force MedSim Training Program

December 6, 2012
I/ITSEC Showdaily

The 2012 Governor's Award for Outstanding Achievement in Modeling & Simulation was presented Tuesday night to The Center for Sustainment of Trauma and Readiness Skills (CSTARS) in Cincinnati, OK.

Lieutenant Colonel Shae Peters, USAF (ret), Deputy Chief of Air Force Medical Modeling and Simulation Training at HQ Air Education & Training Command, accepted the award on behalf of CSTARS.

CSTARS, along with the Division of Trauma and Critical Care Medicine at University Hospital in Cincinnati, were recognized for their simulation training program for Critical Care Air Transport (CCAT) teams. The CSTARS training program encompasses exposure to civilian trauma patients, in addition to extensive use of high-fidelity human patient simulation (HPS). HPS training exercises are conducted in both simulated environments and also in actual aircraft. CSTARS has validated over 1,000 CCAT team members, who have transported over 6,700 wounded warriors.

Prior to the presentation of the Governor's Award, NTSA President RADM James Robb, USN (ret), presented the 2012 NTSA Modeling & Simulation Awards – a total of six awards this year.

The winners of the six 2012 NTSA Modeling & Simulation Awards for Outstanding Achievement in Modeling & Simulation are:

Analysis

California Maritime Academy, Port of Oakland Project

Cross-Function

US Special Operations, Command J24-0, SOFPREP

Individual

Kim Puckett, Tri-Village High School

Lifetime Achievement

Dr Stephen Goldberg, US Army Research Institute

Training

Michael Raymond, Air Force Special Operations Command, CSTARS Cincinnati

InformationWeek

Future Power Grids Will Need Big Data Analysis

Ellis Booker
December 11, 2012
InformationWeek

For the world's next-generation electrical networks, analysis and standardization will be just as important as power inverters and switches.

For more than a century, electrical power the world over has relied on the same, tested, hub-and-spoke architecture: A centralized power plant for production, a distribution grid and, finally, passive consumers.

But that architecture is changing.

For one thing, alternative energy solutions such as wind and solar dramatically increase the points of production, sometimes pushing it all the way to the consumer's rooftop. For another, these forms of power generation are variable, making their measurement and management much more complicated.

Meanwhile, the electrical grid is gaining intelligence. So-called smart grid initiatives not only seek to better handle demand spikes and more efficiently use electrical power, they assume a bidirectional world in which electricity can flow back onto the grid, if a local subnetwork generates more power than it consumes.

To make all this work requires modeling, forecasting and simulation software, as well as enterprise systems that can handle large amounts of real-time data.

"IT will become the critical supporting backbone for distributed generation, both in developed and developing countries," Nagendra Cherukupalli, the chief technology officer of global solar energy company SunEdison, told InformationWeek. "To my mind, IT is fundamental and foundational in any kind of distributed [energy] regime."

SunEdison manages 900 solar energy installations around the globe. Its three control centers are based in Chennai, India; Madrid, Spain; and Belmont, Calif. The IP-enabled equipment in the field communicates status and performance, sending this data across the Internet to the centers, which can optimize the gear remotely or send out a technician to fix a problem.

An ongoing problem, said Cherukupalli, is the lack of industry-standard protocols, which requires companies like SunEdison to develop core enterprise systems to translate and normalize the data coming from all the systems, whether these are solar panels, wind farms or batteries.

"There are initiatives going on to standardize these protocols," he said, adding this would free companies like his from low-level work and let them focus on interpreting the data and making it useful to consumers and others. In the U.S., one center for this work is the Department of Energy's Office of Electricity Delivery and Energy Reliability (OE). Among the office's four priorities, listed on its Web page, is the pursuit of smart grid research and development to "adapt and integrate the use of advanced digital technology to modernize the nation's electric delivery network for enhanced operational intelligence and connectivity."

Along with monitoring electrical production and consumption, SunEdison monitors environmental factors such as sun intensity, temperature, cloud cover and wind velocity in order to maximize the output of its systems in the field. Indeed, the volume of data created in distributed energy networks is substantial, leading companies like SunEdison into big data modeling and analytics.

In its white paper "Managing big data for smart grids and smart meters," IBM succinctly outlines the data-volume problem this way: "Going from one meter reading a month to smart meter readings every 15 minutes works out to 96 million reads per day for every million meters. The result is a 3,000-fold increase in data that can be overwhelming if not properly managed."

But IBM goes on to address the potential upside of all this new data, which it says will not only make the electrical grid more efficient but enable new services and products for customers.

Using predictive analytics on their data, IBM writes, utility companies can make a wide range of forecasts, such as:

- How much excess energy will be available, when to sell it and whether the grid can transmit it.
- When and where equipment downtime and power failures are most likely to occur.
- Which customers are most likely to feed energy back to the grid, and under what circumstances.
- Which customers are most likely to respond to energy conservation and demand reduction incentives.
- How to manage the commitment of larger, traditional plants in a scenario where peaks from distributed generation are becoming relevant.

Modeling, forecasting and simulation know-how is where much of energy-optimization company Stem's intellectual property resides, company founder and CEO Salim Kahn told InformationWeek recently. Stem's turnkey system, which analyzes large amounts of data, including historical weather information and industry usage patterns, uses predictive algorithms to help companies determine the best times to pull power from the grid.

Big data sets are also a fact of life at 3Tier, which provides renewable energy risk analysis, assessment and forecasting for alternative energy projects in wind, solar and hydro. Among other things, the company looks at 40 years of global climate data in its model.

"The data really piles up," IT director Paul English says in a video for EMC Corp. The company's supercomputer cluster outputs about a terabyte of data per day, which are held in EMC storage systems.

Bringing "Victorian-esque" electrical systems into the computer age is a mission of Glynne Townsend, CEO at Spider9, which manufacturers advanced control systems for energy storage and solar fields.

A field with thousands of solar panels, batteries and inverters -- all constantly changing in response to environmental conditions -- is dramatically more complicated and produces one thousand times more data than a traditional electrical network, Townsend said in a phone interview.

Mobile App Teaches Clinicians to Monitor Patients

Michelle McNickle
November 13, 2012
InformationWeek

Castle + Anderson's new SimMon app links two tablets to simulate a remote-controlled patient monitoring system, offering medical training in the trenches.

App developer Castle + Anderson recently released SimMon, a tool that simulates a remotely controlled patient monitor. The app runs on an iPhone or iPad and can help train clinicians as they learn to track changes in blood pressure, oxygen saturation and heart rate.

In an email to InformationWeek Healthcare, Niels Castle of Castle + Anderson said the app stemmed from his twin background in nursing and computer science. "SimMon is a great way of giving back to the medical simulation community," he said. "There's no substitute for hands-on experience." AdTech Ad

SimMon allows users to connect a pair of iOS devices via Wi-Fi and remotely control vital signs on a monitor simulator. One device controls the other, allowing students to adjust any of the parameters from one iPad, for example, which in turn appear on the second iPad. Additionally, the app can connect equally well via BlueTooth, and its standalone mode is great for use with mirroring via an AppleTV to a typical television screen or projector. For doctors, Castle added, the app holds value particularly with the release of the iPad mini.

Castle said the idea for SimMon stemmed from his time studying critically ill patients in a simulation lab, when, due to budget constraints, there was only one simulation station available for students. "That meant a lot of waiting around," he said. "Luckily, I had brought my MacBook and before the course was over, the first version of SimMon was running on a pair of iPhones. It's crazy that access to simulation hardware was keeping us from engaging in simulation back then, but the same is true on a much larger scale."

The traditional simulation setup, Castle continued, is complex, expensive, and tucked away in simulation centers. "That's all right if you can find time to travel to the simulation center with your entire team and have a complex technical scenario lined up." SimMon, he said, isn't aiming to take the place of these simulation centers, but is instead aiming to take medical simulation to the world outside them. "SimMon takes simulation to where healthcare is actually provided: the ward, ambulance or helicopter..." Castle said.

Looking ahead, Castle said the SimMon app is still evolving, and new features are in the pipeline. "I have been blown away with the constructive feedback I've received. It's fantastic to hear that the SimMon users can see how they can benefit from [it] and are taking time out to suggest additional features."

Castle added, "I [want] to keep SimMon reasonably priced, simple to set up and operate -- key factors in taking simulation to a wider audience."

The app is available in the Apple App Store for $13.99.

Humanoid Robot Challenge Kicks off at DARPA

J. Nicholas Hoover
October 30, 2012
InformationWeek

Inventors compete to build DARPA robot that can use human hand tools, drive vehicles, and climb ladders in a disaster scenario.

For the next two years, researchers and scientists from the nation's top robotics shops in government, academia, and the private sector will compete for a $2 million prize to see who can build a robot that can use human hand tools, drive vehicles, and climb ladders in a disaster scenario.

The Defense Advanced Research Projects Agency's Robotics Challenge, announced in April and launched Wednesday, will bring together some of the nation's top robotics engineers in a bid to develop some of the most advanced robotics yet built.

The challenge requires teams to build robots and robotics software that can navigate through the scene of a disaster. In addition to using tools, driving, and climbing ladders, the robots will have to traverse rubble and move debris.

The challenge is divided into several different tracks, including one that calls for new robots, one that's looking for new software for existing robots, one that wants software for a simulated robot, and one that doesn't use DARPA funding and can have international entrants.

Among the participants is a who's who in science, computing, engineering, and robotics. Teams come from, among other places, Carnegie Mellon University, NASA's Jet Propulsion Laboratory, Raytheon, Lockheed Martin, the Massachusetts Institute of Technology, and the University of Washington.

The first track, Track A, requires the most hardware work, because teams will have to build their own robots. DARPA already has released concept art and details on the teams' proposed robots. Most of these, such as Carnegie Mellon's proposed CMU Highly Intelligent Mobile Platform (CHIMP), and Drexel University's Hubo, will be humanoid, but they need not be. For example, NASA's Jet Propulsion Laboratory is building RoboSimian, which looks something like a four-legged crab.

Among the humanoid robots, some look like they have hands, others claws, and others with at least one hand made to support tools. A few have eyes. All have four limbs.

Track B will receive a modified version of DARPA's Atlas robot, a predecessor of which, Pet-Proto, can be seen navigating obstacles in a new YouTube video. Atlas was built by Boston Dynamics.

Track C will make use of simulation software called DRC Simulator, and the challenge itself will take place in June 2013, with a qualifying round in May 2013. The DRC Simulator is open source and already has been released in beta form. DARPA says that it plans to add a number of features to the software, including robot models, sensors, and advanced physics models.

Healthcare Data Modeling Gets Hadoop Boost

Jeff Bertolucci
October 30, 2012
InformationWeek

Healthcare firm Archimedes uses Hadoop and Univa software to streamline modeling operation.

San Francisco-based Archimedes has been modeling healthcare data for two decades. The company's Archimedes Model runs on a distributed network and calculates the effects of interventions -- screening and diagnostic tests, drugs, prevention programs and so on -- on patient health, quality of life, financial costs and other potential outcomes. Its simulations are designed to answer complex yet practical medical questions for healthcare providers, researchers, pharmaceutical companies and other organizations in the U.S. and Europe.

Archimedes recently implemented Hadoop and Univa's Grid Engine software to speed up its healthcare modeling system, and to cut its hardware and software costs by up to 50%. Here's how it did it:

The Archimedes Model began as in-house project at Kaiser Permanente, where it ran on Univa's Grid MP distributed computing software. The project ran in "cycle-stealing mode" on thousands of Kaiser PCs during idle periods. The approach was similar to (but far smaller than) volunteer computing projects popular at the time, such as SETI@home and Folding@home.

"We used the same technology where you install it on everybody's machine, and when the machine was idle we used those spare cycles," said Katrina Montinola, Archimedes VP of engineering, in an interview with InformationWeek.

[What is the next big data challenge? Marketers Flooded With Big Data From Mobile.]

Archimedes' scientists ran simulations as consulting projects for healthcare and life science clients, who received the results as an Excel spreadsheet. Each project typically lasted several weeks.

The Archimedes Model later received its own dedicated cluster of about 50, multi-core, rack-mounted servers, which saved a lot of time compared to the cycle-stealing mode.

In 2006, Kaiser spun off Archimedes as a separate company. "This allowed us to use the model to help other healthcare providers and pharmaceutical companies, and to apply our model to many different applications," Montinola said.

Around the same time, Montinola set to work on improving the Archimedes Model, which was showing signs of age. "Being a research project, the simulator wasn't designed very well," she said. "So I hired a team to totally rewrite the whole thing in Java, and to re-architect and redesign it."

The company also developed ARCHeS, a Web interface for the Archimedes Model that enabled clients to run their own simulations and view the results without assistance from Archimedes' experts.

ARCHeS simulation results contain a lot of data, around 1 GB, and may include hundreds of data points for thousands of patients per year over a multi-year period.

"The process of aggregating, preparing, processing and loading the data was taking a long, long time because it was a large data set," said Montinola. "Now that our simulator was fast, it was ironic that the aggregation of the data was the bottleneck."

To solve this dilemma, Archimedes implemented Hadoop and built Aggregator, a software program that aggregates simulator data and performs calculations faster than the company's previous systems. It also enlisted Univa Grid Engine, a distributed resource management (DRM) system, which uses a single cluster to run Archimedes' simulator and Aggregator tools.

The company's Hadoop system went live in September. Archimedes estimates that Grid Engine has cut its migration-related hardware and software costs up to 50% thus far.

Montinola is pleased with the new system, but believes a little tinkering will make it even more efficient. "I'm looking forward to that," she said.

Data analytics can help the notoriously inefficient U.S. healthcare industry become more cost-effective, Montinola believes. "That's what's been lacking in healthcare all these years: a focus on improving outcomes while keeping costs in check," she said.

Big data solutions can help healthcare providers determine "the most cost-effective treatments that will improve the outcomes of the population they serve," Montinola added.

Hurricane Sandy: Big Data Predicted Big Power Outages

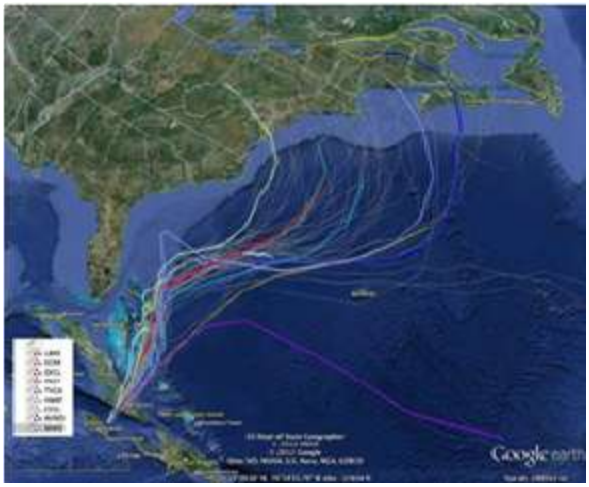
Mark E. Johnson
November 12, 2012
InformationWeek

What can be learned for future weather events? For starters, simulations must happen quickly and no single forecasting model will do.

Hurricane Sandy followed by the November nor'easter delivered a one-two punch that rival the Kathryn Hepburn hurricane of 1938 and the 1821 Norfolk-Long Island storm that temporarily created North and South

Manhattan Islands. These back-to-backs provide a silver lining: a chance to showcase Big Data Analytics (coupled with catastrophe models) in forecasting events, assessing their impacts and mitigating future events.

Before getting into the Big Data Analytics technical side, I must first start by noting that the current level of pain experienced by the folks without power on Long Island is worse than it should have been. My research collaborator Chuck Watson of Kinetic Analysis Corporation did a pilot study back in 2006 for the Long Island Power Authority (LIPA) consisting of some simulations using a hypothetical storm quite similar to Hurricane Sandy. His results showed the vulnerability of their grid and indicated a prolonged recovery period. LIPA's response was dismissive as they claimed that both the outages were overestimated and the restoration of power capability was underestimated. LIPA claimed that it would take no more than 10 days to restore power! Here we are six years later and 150,000 LIPA customers are without power two weeks after landfall. Chuck notes that some customers may not even have power before Thanksgiving.



We would hope that decision makers could learn the lessons from previous disasters and take advantage of analytics that point the way to mitigation. Hurricane Hugo (1989) power outages dragged on for weeks, so it was not like there were no historical precedents. Validation is an essential aspect of hurricane modeling and the professionals in the hazard business do not make forecasts to feed the hype-machine. We are happy to discuss the assumptions of the models and their implementation; we are very disappointed when recommendations are dismissed merely because the deciders do not like the results -- let them ignore at their own peril.

Getting back to the analytics, a prerequisite for doing hurricane modeling is having the capability to deal with massive data bases integrated with geographic information systems. The databases include atmospheric conditions (current and recent wind speeds, pressures, temperatures), ocean temperatures, terrain elevation and land coverage for the hazard simulation and for the exposures (building types, heights, value, and so forth). The atmospheric databases require continual updating as new data arrives (from the hurricane hunters or satellite reconnaissance).

Another requirement is to have the computer firepower to perform numerical simulations in a timely fashion. The National Hurricane Center and the media are accustomed to a six-hour schedule of position updates and revised forecasts. This dictates that the track forecast given updated conditions needs to be accomplished prior to the next forecast announcement. There is also something to be said for simple, quick forecasting models that could perform updates at faster than six hour intervals. The six-hour window is awkward for fast moving storms (Sandy was clipping along at around 30 mph at times).

How did track forecasting play out for Hurricane Sandy? Sandy was identified by National Hurricane Center as a tropical depression on October 22. Sandy subsequently walloped the Caribbean as a hurricane causing at least 50 deaths and considerable pain to the already devastated Haiti. The storm weakened over the mountains of eastern Cuba and then strengthened again while straddling the Gulf Stream. The U.S. media began to get excited when the European model ECMWF (European Center for Medium-Range Weather Forecasting) showed a track that could make landfall in the mid-Atlantic states. Such a track is unusual since historically these hurricanes tend to re-curve to the northeast, becoming fish storms. The ECMWF predicted landfall near New York city was 5 days out, which is well beyond the reliable forecast window (five day error of at least 500 miles). If the ECMWF track turned out correct (nailed the landfall location), luck would be partly responsible. Moreover, when the collection of forecast track models are in disagreement, as they were at this point in time, it

is ludicrous to bet on one specific track model. Of course, one must be vigilant and pay attention to subsequent track updates, but the evacuation decision for coastal/low-lying regions of the mid-Atlantic and New England states could wait. There is a tendency by some news media folks to pay extra attention to the scariest scenarios.

There are a slew of forecasting models for tracks. Also of interest but a lot harder to forecast is the intensity of storms (the sudden strengthening, weakening, eye wall collapse and reformation aspects of hurricanes is less well understood than tracks). The baseline -- no skill track forecast model -- is known as CLIPER (CLImatology and PERsistence) and is a statistical track forecast model based on the historical record with minimal inputs for prediction (date, position, intensity). Other track models that show up on forecast maps include GFS, GFDL, UKMET, BAMM, LBAR, etc. Having the various forecast tracks available from multiple media sources (Weather Channel, NHC news bulletins, weather websites) helps to educate the general public and demonstrates the difficulty in forecasting.

How did the track models perform for Hurricane Sandy? The statistical forecast model CLP5 (similar to CLIPER) was awful, reflecting the fact that most storms like Sandy re-curve to the northeast and spare the northeast U.S. ECMWF did fairly well for both Sandy and the nor'easter but then GFDL was not bad either. The attached figure (kindly provided by C. Watson) shows the track map for October 25. Several viable track models have forecast tracks all over the place!

There has been some silly media coverage that the good performance of ECMWF (for a few specific time points) is a reflection of the downtrodden state of U.S. forecasting efforts. Searching for the Holy Grail single best model is misguided. Complex phenomena require multi-pronged research attacks. A track model that does well for part of the lifetime of a storm could really tank for another part of it. Evaluating the model predictions following an event is a necessity in order to learn from the event. We cannot tell in advance which track models are going to work best -- hence, a research effort is required. We are also heavily involved in damage assessment and utility restoration. I hope to comment on these areas of applications from an analytics perspective in future columns.

Dr. Mark E. Johnson is Professor of Statistics at the University of Central Florida in Orlando. He is a Fellow of the American Statistical Association, an elected member of the International Statistical Institute, and a Chartered Statistician with the Royal Statistical Society. Mark does extensive consulting in the area of catastrophic risks (especially hurricanes) and regularly is retained as an expert witness in legal cases.

I/ITSEC 2012: Thales Advances Simulation Offerings

Beth Stevenson - Rotorhub
December 4, 2012
Shepherd Media

Speaking to Shephard at the I/ITSEC conference in Orlando, Florida, David Silvestre, marketing manager for Thales Training and Simulation SAS, said that the original system is on contract for two systems in France, and one in Singapore, and has been available for some 12 months.

'What we're presenting is the evolution [on the Reality H] of a new motion system,' he explained.

'We have added a six degree of freedom linear motion to the system. We have completely rethought the system. This is completely new, reduces the cost and produces smoothness. This is the smoothest on the market.'

Meanwhile, the company also focused on land and combination force training at the show, demonstrating its Combat Training System concept.

It is based around one 'necessary software core', and 'you can then plug into this core any number of gunners and pilot for training', Silvestre explained.

'The idea is to plug in all of the different system types. This is configurable so that you can have as many plugged in as you like. We've also coupled a real C2 battlefield management system to it. We can show that we can do embedded training; they are training on the real systems.'

It can also be interfaced with third party systems, including VBS2.

'It is scalable by its very nature so it can adhere to many budgets. We are now showing them together in one system.'

Silvestre said that Thales has simulation systems on contract with its domestic markets, and it is looking to expand these markets further.

Simulation and training contracts for Thales include: the A400M; Voyager tankers; and jet training including the Eurofighter, Hawk, Mirage, Rafale and Tornado.

He also added that the land market is one that the company wants to expand into more based on its legacy of providing some 300 training systems for armoured vehicles worldwide.

'The gaming industry has made the market dynamic and rapid,' he continued. 'There is not that much of a difference between [COTS product] VBS2 and what we're offering. We've made an effort to turn our systems into products.'

Silvestre predicted that the future will see the boundaries between COTS and primes become more blurred as larger companies look to productise their military offerings.

Selex Galileo Announces New Simulation Contracts

November 26, 2012
Shepherd Media

Selex Galileo provides training systems for programmes such as the Eurofighter Typhoon, Tornado and M-346 to its customer base. For the Eurofighter Typhoon programme the company plays an important role in providing the Aircrew Synthetic Training Aids (ASTA) system and, for the M346, Selex Galileo is responsible for the construction and logistical support of parts of the Full Mission Simulator (FMS) including the Instructor Operating Station (IOS).

Gianfranco Terrando, SVP of Air Systems, UAS and Simulation, said: ‘We are confident that this experience will allow us to continue to develop our business relating to Typhoon training and will put us in good stead to play a leading role in new programmes and with new platforms.

‘The simulation business is dominated by big players, but we believe that our expertise in sensors and mission systems, high level of technological innovation and closeness with our customers will allow us to compete strongly in the market by delivering highly customised solutions that meet customer requirements in terms of capability, performance and cost

Military Simulation and Training Handbook

November 2012
Shepherd Media

Now in its 8th year the Military Simulation and Training Handbook concise guide to the industry provides an invaluable reference to the simulators and their associated training systems. The products listed cover the full spectrum of live, virtual and contsructive training systems.

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- Product Guide - Easy reference to identify suppliers listed under the products/services they supply.
- Suppliers Guide - A contact directory of military simulation and training system manufacturers and service providers, worldwide.

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I/ITSEC 2012: Rockwell Simulation Systems Chosen by Pilatus Aircraft

Beth Stevenson in Orlando - Digital Battlespace
December 5, 2012
Shepherd Media

Announced during the I/ITSEC conference in Orlando, Florida, the first activities under the agreement will include Rockwell Collins providing its EP-8000 and EP-80 image generators and SpectraView displays.

LeAnn Ridgeway, VP and GM of Simulation & Training Solutions for Rockwell Collins, told Shephard that the company is seeing 'great success' with the fast jet market.

'Historically Rockwell has so much experience in this,' Ridgeway explained. 'We are looking at the higher end of technology for customers that want to be able to do full training.'

She explained that the company's experience as a system integrator gives it an advantage in this domain because military customers want to be able to train across a whole spectrum of platforms.

With regards to small companies offering niche technology, Ridgeway questioned their longevity in the market, although added that 'they do bring in some great technology'.

'They are offering point solutions but not fully integrated solutions. I think we have the ability... we are the avionics OEM and can bring to bear that birth to grave solution.'

Ridgeway explained that the EP-8000 image generator system is an example of a system for high-end training applications.

'With it you can see a blade of grass... it's phenomenal. But then we took that technology and created the EP-80. We were able to bring two solutions to the market.'

The EP-80 employs 'breakthrough' second-generation EP2 (environment processor) real-time software to provide full functionality within a high-resolution, round-earth environment, but at a lower cost.

It is compatible across the complete line of EP image generators, and enables customers to combine COTS PC training devices with high performance systems, 'yielding a wide array of training capabilities that share common real-time software, databases and host interfaces'.

SpectraView displays are ideal for fast-jet, wide-body and rotary-wing flight simulation applications, and are a lower cost full dome for the lower end of the market.

'The differentiator [between Rockwell and other low end solutions] is that our low end systems will integrate into our higher end ones,' Ridgeway continued. 'This contract was important for us from a strategic position, and demonstrates a full range of systems.'

Meanwhile, at the show Rockwell Collins exhibited with the US Navy following a contract award from the Office of Naval Research in April this year.

The $2.9 million contract will see the company work with industry and academic partners to research the effects of inserting virtual and constructive entities into live aircraft for training.

It is evidence of the navy moving towards live virtual constructive (LVC) training, and during I/ITSEC the EP-8000 and EP-80 were used to demonstrate this.

'The navy stay out of the tactical and work in the strategic,' Ridgeway explained. 'They are the proving ground for all of the forces.'

I/ITSEC 2012: Development of Severe Trauma Simulation Kits Complete

Beth Stevenson in Orlando - Defence Notes
December 3, 2012
Shepherd Media

Severe trauma prosthetics manufacturer Simetri has completed production of simulation kits ready to be delivered to the US Army.

A total of 91 kits are on order and have been developed at a rate of some 12 kits per week.

Moulage Sciences and Training is the prime contractor and seller of the kits while Simetri is the developer and manufacturer.

'Each kit consists of a full simulation for each limb… and also partial amputation,' Angela Salva, president and CEO of Simetri, told Shephard at a pre-I/ITSEC briefing. 'It helps show how to treat, stabilise, save lives and prepare for transport.

'The goal is to develop some highly realistic and useable solutions. They are identical in structure, but the painting is random and haphazard.'

The systems developed for the army also contain some 100 wounds, both for use on mannequins and humans for training and the prosthetics are also able to bleed.

They come in different skin colours so that when they are on humans they blend into the skin, and the company also provides make up for additional realism, although the army did not choose to add it.

Kits include entrance wounds, exit wounds and burns, as well as bleeding wounds that show bones, muscles and tendons. They also include chemical and thermal burns and lacerations, and shrapnel including mock nails and glass.

Each army simulation and training centre will have some six kits, and on top of the 91 on order, there are also options for 21 more for NATO customers, including Korea, Germany and Brussels.

'We're in anticipation of some additional research work,' Salva explained, noting that this will include work on different simulation devices, from mannequins to video games.

Simetri is also looking to market the prosthetics internationally, for which the NATO work extending from the army contract will help.

Salva said there was an effort towards standardisation because at the moment different brigades train differently, and standardisation would lead to easier cross-brigade, cross-service and cross-nation training.

While the film industry was the original pioneer of the prosthetic industry, the company has carried out its on research.

'We studied all of the different materials and commercial products,' Salva explained. 'You want to make it as easy to reproduce.'

Simulated odours are also optional, because the grotesque and real nature of the kits make soldiers 'react quickly and save lives'.

'To get something that realistic is expensive. At the moment the army is willing to pay for that. It's not cheap but it's very realistic.'

Salva said that she saw different variations of this being required beyond current theatres, although the army is currently focused on front line injuries.

'We offer the army the option to refine or change things very quickly. There are things that we're continuing to look at to make it more realistic.'

Boeing Advances F/A-18E, F-15E Training Simulation

Defence Notes
November 15, 2012
Shepherd Media

Boeing is developing the simulation capabilities under a $6.3 million contract for both the US Air Force (USAF) F-15E and the US Navy F/A-18E/F. Under the current contract, the pilot project will culminate with a capstone demonstration at Nellis Air Force Base in Nevada in late 2013.

Boeing is working on a three-year contract with the US Air Force Research Laboratory to adapt innovative training technologies for the F-15E Eagle and the F/A-18E Super Hornet aircraft. The company has produced two aircraft now equipped to participate in live, virtual and constructive training simulations that combine real and simulated fighters.

According to Boeing, the technology enables the aircraft to train in an environment that puts them at odds against real aircraft and computer-generated enemy threats at the same time. It can provide aircrews with a complex virtual strike environment in which to train, while potentially decreasing the number of real aircraft and other assets to practice against. Generally, an actual combat aircraft (live) is networked with ground-based simulation computers (virtual) that provide computer-generated threats (constructive).

Before this new capability, pilots could practice using flight simulators on the ground, but when they trained in the actual aircraft, other people were needed to play the role of an opponent, commonly referred to as a 'red' or adversary team. Having a virtual combat simulation while actually flying is

expected to reduce the number of real aircraft or other live assets needed to form a red team, providing cost-savings and a safer training environment.

Boeing began developing this modelling and simulation technology independently in 2007, and a series of demonstrations with an F-15E through November 2009 verified key components. A Super Hornet recently completed its first flight tests to evaluate these new technologies. During the most recent flight tests, two F/A-18Es and two F-15Es simulated air combat between two live F-16s and 12 virtual aircraft, as well as multiple ground threats. A 40/45 Airborne Early Warning and Control System (AWACS) surrogate provided command and control for the exercise.

John Schwering, Boeing business development leader for integrated Live, Virtual and Constructive training, said: 'The integrated training environment can generate warfighter readiness and make aviation flight training much more effective. Training can be significantly enhanced by increasing the overall threat density with the use of more sophisticated constructive adversary aircraft and ground-based electronic warfare threats.'

US Army Places New I-MILES TVS Order

LandWarfareIntl
December 28, 2012
Shepherd Media

I-MILES TVS uses Cubic's wireless vehicle Multiple Integrated Laser Engagement System (MILES) technology to provide the real-time casualty assessment necessary for MILES tactical engagement training in direct-fire, force-on-force instrumented training scenarios.

Cubic Defense Applications has announced that it has received a new order from the US Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) for its Instrumentable MILES Tactical Vehicle Systems (I-MILES TVS). The $12.5 million order was announced on 18 December.

According to Cubic, the system offers advanced performance because of its weapon simulation and casualty assessment accuracy for vehicles and fixed structures. It is adaptable to any wheeled or tracked tactical vehicle and is also configurable for buildings, fixed equipment and other structures. The system also includes new features that significantly improve ease of use for soldiers, including touch-screen displays with highly intuitive graphic interfaces.

The company recently completed shipment of more than 1,000 I-MILES TVS kits to the US Army. The first six tactical vehicle systems went to Fort Carson, Colorado, where they will be used to train end users.

Cubic is to deliver over 3,000 systems under the first option of its 2010 contract with the US Army's PEO STRI. Cubic will conclude deliveries under the first option in May 2013, then commence work on a second option, which includes the $12.5 million order.

KMW to Deliver Egress Trainer to Sweden

LandWarfareIntl
November 19, 2012
Shepherd Media

Krauss-Maffei Wegmann (KMW) will deliver an Egress Trainer for various types of military wheeled and tracked vehicles to the Swedish Armed Forces in 2013. The company made the announcement in a 19 November statement.

The Egress Trainer allows operators to simulate vehicle rollovers in order for vehicle crews to be trained to egress a vehicle lying on its side or upside down. KMW Training & Simulation will deliver the Egress Training System together with its partner MSE Weibull AB from Sweden in 2013.

The Egress Trainer contains the rollover simulator, the instructor station and the vehicle cabin, which can be exchanged within short time due the universal mounting bracket design. A digital audio/video surveillance system with record and replay function serves as the tool for training analysis and debriefing but is also the key component to provide maximum safety during all training operations. The vehicle mock-ups can be as large as the Swedish CV90 IFV including a rotatable turret.

Dr Dirk Schmidt, senior vice president training & simulation, said: 'This strong training need is the result of a rigorous analysis of incidents which happened during recent out of area missions under real combat conditions. At a very early stage we have developed our own ideas for a modular Egress Trainer.'

Electric Deepworks ROV Simulator Unveiled

November 27, 2012
Shepherd Media

DeepWorks software is designed for subsea engineering simulation and visualisation. It allows users to design, rehearse and monitor the most complex offshore engineering missions, subsea interventions and marine operations in real time. For pilot training, the most important feature is replication of the Seaeye overlay which tells the pilot where the ROV is, its depth, pitch and roll and camera tilt angle. Replicating the actual user interface means that when pilots go offshore the console feels immediately familiar and missions can be performed as practised. Other built-in features to improve pilot skills and responses include independent viewpoint control, sonar interpretation and fault simulation at any point in the mission.

According to Fugro, DeepWorks now allows rapid building and evaluation of new electrical ROV configurations, helping operators find the best arrangement and mountings for cameras, sonars and tooling while ensuring the vehicle remains dynamically stable. As the range of missions electric ROVs undertake grows, Fugro believes DeepWorks offers a cost effective way of building and testing multi-mission capability.

Dr Jason Tisdall, Fugro's Robotic Technologies business line manager, said: 'Our investment in designing DeepWorks as a versatile simulation platform capable of providing simulation of any type of ROV is now paying off. In just a few months we have integrated DeepWorks with the Saab Seaeye surface and hand control units, and delivered an ROV pilot trainer with true electric thruster response, accurate navigation overlay and realistic training scenarios for five of the most popular models of Saab Seaeye ROV.'

Accurate electric thruster modelling gives the vehicle true behavioural responses to pilot demands. This creates high levels of realism when training and rehearsing key mission tasks such as docking, navigation by camera

and by sonar, close inspection or tool deployment. Thrusters have initially been tuned for the Seaeye Tiger ROV, with other models to follow.

I/ITSEC 2012: Zeltech Develops Battlefield Effects System

Beth Stevenson in Orlando - Digital Battlespace
December 3, 2012
Shepherd Media

The contract, awarded in August by the PEO for Simulation, Training and Instrumentation (STRI), will see the company deliver the 'next generation of battlefield effects' for force-on-target tactical training.

The BES contract has a potential value of some $35 million over three years for a possible 3,000 systems, and the first 12 for testing will be delivered by February.

Smoke, explosions and auditory simulations are produced by the BES II to enhance training, and will replicate the effects of a variety of weapons used in theatre.

'Our focus primarily has been that over the last 10-15 years the army has bought a lot of articles to train with and therefore maintenance is needed,' Jack Collins, director of training devices, training and simulation group, ZelTech, told Shephard during a pre-I/ITSEC briefing.

'Our focus has been sustainment to upgrade and extend the service life. We've taken targets and refurbished them with new electronics to give new capability at a fraction of the price. We've also upgraded other laser-based devices. In some ways we're helping to overcome obsolescence.'

The company is working on some smaller contracts at the moment, as well as working with larger primes such as Raytheon. ZelTech is also working with an undisclosed prime on a project for the next army Network Integration Evaluation (NIE) exercise due to be held next year.

'It's an opportunity to show proofs of concept and to show what we're developing,' Collins explained.

'Our strategy is to work with PEO STRI through FMS,' he continued. 'They have a few FMS cases they're working on and we're working with them on that.

'It's an exciting atmosphere that we're working in – a storm of declining budgets and threats that are out there. We're looking at what we can do to shape the next programme.'

I/ITSEC 2012: CAE Develops New Synthetic Environment

Beth Stevenson in Orlando - Defence Notes
December 6, 2012
Shepherd Media

CAE used the I/ITSEC conference in Orlando, Florida, to launch its new Dynamic Synthetic Environment (DSE).

The 'seamless and integrated' DSE is designed to create a virtual synthetic environment that simulates the world more accurately, realistically and to make it more up to date.

The DSE combines an architecture based on the shared, public common database (CDB) architecture specification, content creation software tools from both Presagis and CAE, core DSE simulation software, and DSE-enabled products such as image generators and computer-generated forces software.

Speaking to Shephard on 4 December, David Graham, director of technology application at CAE Integrated Enterprise Solutions, said a US Special Operations Command (SOCOM) requirement from some ten years ago led to the company being contracted to develop its CDB architecture.

'We worked with them [US SOCOM] to make the synthetic environment more realistic and rapid,' Graham explained. 'In the process of doing that we changed the way to approach the synthetic environment.'

The development of DSE then began some two years ago as part of an internal R&D programme, which had to meet several objectives, including being dynamic, persistent, scalable and open.

Graham said that synthetic training tends to be essentially a read-only entity, but 'we worked on making the synthetic environment changeable over time without having to stop the simulation'.

'We are now demonstrating some of those effects.'

SAIC Wins US Army Helicopter Simulator Contract

Rotorhub
November 12, 2012
Shepherd Media

The contract calls for SAIC to integrate, test, and deliver the 11 integrated crew member simulators as part of the Non-rated Crew Member Manned Module (NCM3) programme.

PEO STRI's NCM3 programme provides a collective training system to meet aviation crew member training requirements. The NCM3 is a transportable, multi-station, virtual simulation device designed to support individual, crew and collective training. The NCM3 simulators integrate with the US Army's Aviation Combined Arms Tactical Trainer (AVCATT) simulators. SAIC will integrate, test, deliver and maintain 11 mobile variants equipped with helicopter crew member simulator modules to support gunnery and crew coordination training. According to the company, two units are already operational at Fort Campbell, and Fort Drum.

John Gully, SAIC senior vice president and business unit general manager, said of the award: 'We're excited by the opportunity to continue providing this proven technology to the US Army, which enables non-rated crew members to train on critical, coordinated tasks like gunnery, sling load and hoist operations with pilots. This task order allows us to deliver the second generation of crew-member training capability and enables us to help PEO STRI ensure that America's warfighters receive the best training possible.'

RAAF Wedgetail E-7A Simulator Receives Update

Digital Battlespace
November 22, 2012
Shepherd Media

Thales said the new visual system delivers significantly better colour and brightness uniformity, sharper imagery, superior edge blending, and more realistic weather effects. Other benefits include greatly improved reliability, growth potential and lower lifecycle cost.

The company worked closely with Boeing Defence Australia on the project. Work involved replacing the simulator's obsolete calligraphic CRT projectors with Christie Matrix StIM LED DLP projectors and introducing the latest ThalesViewNG image generator.

The accreditation of the new visual system to FSD-1 Level 5 standard means the system is set to support RAAF 2 Squadron for many years to come.

The Wedgetail E-7A Operational Flight Trainer located at RAAF Base Williamtown, New South Wales. The system is a key component of the RAAF's Wedgetail AEW&C pilot training programme. It is the sole Wedgetail pilot training device used by the RAAF, and delivers realistic and high-quality simulated flight crew operations. The simulator has been in use with the RAAF since 2006.

I/ITSEC 2012: Israeli Flight Training Centre Nears Opening

Beth Stevenson in Orlando - Defence Notes
December 6, 2012
Shepherd Media

Elbit is currently undergoing the final integration and testing of its Mission Training Centre (MTC) for the Israeli Air Force (IAF), which is due to open in February.

The centre will contain eight full flight simulators for the IAF's F-15 or F-16 fast jets, of which it has some 300, and is designed to cut the amount of flight hours pilots have to carry out.

'We are responsible for building the facility, and the maintenance and training for 15 years on all F-15 and F-16s for the Israeli Air Force,' Alon Afik, VP of the training and simulation business line for Elbit's aerospace business, told Shephard during the I/ITSEC conference in Orlando, Florida.

'The plan of the air force is to do 2,000 flight hours per year there. Everybody is looking to cut down flight hours because of the cost of fuel and maintenance.'

The company was contracted by the IAF three years ago at a cost of £100 million over the 15 year period. However, the expected cut in flight hours will be 3% and the saved money will be spent on energy to power the simulators.

'The payment we're getting will cut down flight hour costs,' Afik explained. 'The purpose is to bring squadrons of pilots to train in tactical flights.

'In each dome it will have one cockpit for F-15s or F-16s,' he continued. 'They are then all connected through a high speed network. We are using what we believe is the best display system in the world right now.'

The display system and projectors were developed by Belgian company Barco, while Elbit developed the computer systems. Each display contains 13 projectors, which Afik said was the equivalent of having four HD projectors per system. The facility is to be centred at an undisclosed AFB in central Israel.

'We've created a very large database of Israel and the surrounding areas,' Afik concluded. 'It's going to change the entire way training is conducted in the air force.'

The first squadron is expected to begin training in February.

Thales Delivers Talisman Training System

LandWarfareIntl
December 11, 2012
Shepherd Media

Talisman is a counter-improvised explosive device (C-IED) system consisting of the Mastiff 2 protected patrol vehicle with a mast-mounted camera and a remotely-operated weapon station; the Buffalo mine protected vehicle, with a rummaging arm; the JCB high mobility engineer excavator; the T-Hawk micro air vehicle, with TV camera; and the Talon tracked remote control vehicle with TV camera. The vehicles operate together to investigate threats such as mines and IEDs on military supply routes in theatre. Thales is the Mission Systems Design Authority for Talisman.

The TS3 training solution was developed using Thales's Directed-Fidelity concept, in which an end-to-end customised training solution is developed together with the customer. T3S was designed specifically to improve crew interaction and to practice tactics, techniques and procedures – ensuring enhanced operational readiness. T3S can incorporate operational experiences gained in theatre to continually evolve. Introducing new threats and testing responses enables the entire troop to rehearse complex missions in synthetic environments and to familiarise themselves with real scenarios, bridging the gap between individual equipment-oriented training and live collective training.

T3S comprises over 180 PCs and 70 displays operated using gaming controls. It runs a simulation based on the VBS2 gaming engine within a synthetic wrap derived from Thales's open Generic Vehicle Architecture (GVA) and Vetronics Infrastructure for Video over Ethernet (VIVOE) developments. T3S simulates scenarios that would not be possible in live training, such as incoming fire, combined arms actions, extreme weather, day/night operations, joint Afghan National Army operations and local population movements. Thus, the system significantly enhances readiness for final pre-deployment field training.

Within four months of contract award, the first training course using T3S was delivered to the Royal Engineers, the operators of Talisman. In that period, Thales designed, procured, built, tested, de-commissioned, transported and re-commissioned an entire Talisman troop training facility, including six representative vehicle bays complete with 'out-of-the-window' views and control systems, 30 operator workstations, communications systems and after-action review facilities. To date, Thales has delivered three further training exercises at locations in the UK and Germany.

The training courses are delivered by the MOD's Talisman Training Advisory Team (TTAT). For each pre-deployment course, Thales supplies all the hardware and software, installs the system and then provides technical oversight and support to the training. This involves maintaining the T3S equipment and supporting exercise control (EXCON) during exercises and after-action reviews.

Major Chris Eyre, Officer Commanding TTAT, said: 'Using the new training system, 'what if' situations can be played out and later analysed to help improve operational effectiveness and develop new tactics. By simulating

different scenarios, introducing new threats and testing responses, the crew members rapidly become familiar with operating as a team, while the Command Team acquires a better understanding of the behaviours that affect the interaction between the platforms and the strengths of individual team members. The result is a much higher state of readiness for operations, prior to deployment.

‘Another welcome benefit of the system is that it can be deployed easily; it is designed for use in barracks, so we have seen far less disruption to the domestic lives of the troops prior to deployment on operations.’

Alex Cresswell, vice president of Thales UK's land defence business, said: ‘Complementary to training using real equipment, T3S provides the Royal Engineers with the ability to exercise tactics, techniques and procedures in a classroom environment that is low risk, low cost, and highly controllable.'

US Army Receives First Digital Range Training System

LandWarfareIntl
December 3, 2012
Shepherd Media

The Digital Range Training System provides a realistic combat environment for Abrams, Bradley and Stryker crews. Lockheed Martin was awarded the five year contract in 2011 to modernise training ranges with digital instrumentation, including cameras, targetry systems with audiovisual effects, scenario development technology and range control centres. During individual and crew qualification exercises and platoon-level collective training, the system integrates live fire with threat, neutral and friendly simulations.

According to the company, the initial range is now operational at Fort Bliss, Texas, and a second range is due for delivery to the Pohakuloa Training Area, Hawaii, in early 2013. The US Army awarded Lockheed Martin a contract for a third range in September 2012 for delivery to Fort Bliss by the end of 2013.

Jim Weitzel, vice president of training solutions for Lockheed Martin's Global Training and Logistics business, said: ‘The quality of feedback a soldier and platoon receive about their decisions can make the difference for survivability and mission success in the field. The Digital Range Training System is designed to capture imagery and audio inside and outside vehicles from multiple angles, providing commanders and soldiers with actionable data.’

I/ITSEC 2012: USAF Recasts Training Priorities

Beth Stevenson in Orlando - Digital Battlespace
December 5, 2012
Shepherd Media

A US Air Force Research Laboratory (AFRL) representative has outlined a shift in focus for the service towards less aircrew training and more consideration of C4ISR operations.

Speaking at a briefing at the I/ITSEC conference in Orlando, Florida, Jack Blackhurst, director of Human Effectiveness Directorate, 711th Human Performance Wing, AFRL, explained that there is now more focus on ISR, cyber and special operations training.

‘The air force perspective is that there's a significant change in focus,’ Blackhurst said. ‘We’re not buying many new weapon systems today and this is going to require more simulation and training.’

He said that there is a push towards automation in training, and ‘this generation growing up is trusting unmanned systems’.

‘Trust and anomalies come to mind and they have to be included in the training. The air force will go from multiple operators flying UAVs, to one operator flying multiple UAVs. This will require more advanced training.

‘At the moment we do not have the capability for the system to do it all for us. We need to let the human do what he does best based in lots of information available to him.’

Blackhurst explained that automation also leads onto autonomy, be it fully or semi-autonomous, and ‘the air force is going to move towards autonomy and then so is the training’.

He identified a need to package an affordable and effective training system, and it is the air force's strategy to package a capability and send it over to the personnel that need it in theatre.

With regards to training for cyber threats, Blackhurst identified that these operators face the same challenges as ISR analysts in terms of knowing where the threat is coming from ‘and therefore more manned/unmanned teaming is required’.

The AFRL is working on incorporating all of its space-orientated training systems into one package.

It is also working on an integrated ISR analyst training tool: ‘We're now in the process of developing that,’ Blackhurst explained. ‘We've put the hardware in and are in the process of integrating the software. That should be up and running next year.’

I/ITSEC 2012: Organic Motion Unveils Role-Playing Training System

Beth Stevenson in Orlando - Digital Battlespace
December 3, 2012
Shepherd Media

Organic Motion has used the I/ITSEC conference in Orlando, Florida, to launch its new Live Interactive Virtual Environment (LIVE).

LIVE provides 'highly interactive, realistic and cost-effective role-player training', according to the company, and is deigned to be suitable for low budgets.

'With the most powerful and immersive role-play training capabilities, LIVE is squarely aimed at maintaining the highest level of training in a budget-constrained environment,' a company statement explained.

'Because LIVE allows role-players to drive realistic digital characters from anywhere, fewer role-players can deliver more training scenarios, all without the need to travel.'

The system works by using advanced motion capture technology to transform the user's performance into a 'live projected digital character animation' within a training environment.

These characters can then be customised or swapped and placed in training facilities anywhere in the world, so 'a single role-player can easily drive complex scenarios that would require multiple role-players today'.

LIVE is coupled with a two-way audio and video link back to the role-play actor, and in turn offers 'immersive trainee-character interaction, providing the best aspects of both human role-players and virtual digital characters'.

Unlike artificial intelligence avatars, which have limited, pre-defined scripts, LIVE digital characters are as dynamic and unpredictable as the real human role-players that drive them, the company added.

Immersion Trainer Redo Shows Asia-Pacific Focus

Gina Harkins
November 26, 2012
Marine Corps Times

Infantrymen who prepared for deployments at Marine Corps Training Area Bellows in recent years experienced a setup resembling an Afghan village. But after a $280,000 makeover, to be completed by the middle of 2014, the immersion trainer will more closely resemble a village found in the Far East.

Because the trainer's permanent structures — which include 19 two-story buildings and 62 one-story buildings — are representative of many developing nations, there's no plan to do a major facelift on them, said 1st Lt. Diann Olson, deputy public affairs officer at Marine Corps Base Hawaii. But some of the more cosmetic features will change.

"Marines who train at MCTAB will notice changes in the languages on signs, a shift from Southwest-Asia style furniture to a more generic Asia-Pacific style of furniture, carpets, throw rugs, curtains and market dressings," Olson said.

The 2014 timeframe aligns with the normal cycle of replacing rugs, signs and other items due to wear and tear, she said. Since MCTAB is used approximately 340 days per year for training, it gets a lot of use. In addition to Hawaii-based Marines, the Hawaii Army National Guard and state and local agencies all train at MCTAB, she said.

The décor won't be the only change Marines see. In the past, the majority of role players they encountered were probably Afghans or Iraqis who live in Hawaii. But those changes depend on leaders' requests. Olson said members of 3rd Battalion, 3rd Marines, who will be participating in Island Viper, a battalion-level exercise, will encounter Korean role players.

While the physical aspects of the immersion trainer help prepare Marines for the environment in which they'll be operating, the simulation screens prepare them for a wide range of possible occurrences. The trainer is equipped with 342 cameras, and Marines are observed as they run through various scenarios. There are then after-action reviews, Olson said.

Maj. Gen. Tom Murray, commanding general of Training and Education Command at Marine Corps Base Quantico, Va., said the combination of simulation and live training teaches Marines a great deal.

Murray pointed out that as people get ready for work in the morning, they do a variety of mindless tasks, such as walking to their car, throwing stuff in the back seat and driving away, without really thinking about it. Putting Marines through the repetition of the immersion trainers allows them to eventually get to the point where they do some things automatically, without thinking, he said.

"Then, when the other things come up, it allows more of your brain to focus and function on that, while still continuing to do those other things that have to happen," Murray said.

The experience Marines have at MCTAB even uses their sense of smell. The facility is equipped with 20 odor generators that emit different scents. For Afghanistan pre-deployment training, Marines might become accustomed to the smells of livestock or meat markets.

Hawaii's immersion trainer is one of three facilities established for each of the Marine Expeditionary Forces. Similar infantry immersion trainers are set up at Camp Pendleton, Calif., and Camp Lejeune, N.C.

Marine Corps News

Marines With Combat Logistics Battalion 6 Put it in Gear

Lance Cpl. Devin Nichol - 2nd Marine Logistics Group
December 21, 2012
Marines.mil

CAMP LEJEUNE, N.C. -- The windows fogged up, rain fell down, and their bodies fought to stay warm, but the Marines pushed through these conditions and watched the road ahead – prepared for any situation.

Approximately 50 Marines with Combat Logistics Battalion 6, Combat Logistics Regiment 27, 2nd Marine Logistics Group conducted deployment situations during a field exercise here, from Dec. 11 to 13.

"You can learn all of this in the classroom and teach them all you want, but the Marines don't get the same experience as they do in the field," said 2nd Lt. Adam C. Miller, a platoon commander with Transportation Support Company.

During the three-day field exercise, the servicemembers executed convoys with Logistics Vehicle System Replacements and Mine Resistant Ambush Protected All-Terrain Vehicles to experience transporting equipment and supplies as well as vehicle recovery.

"It is important to get them through the basic steps and learn the proper procedures," said Capt. Kyle L. Schull, the commander of TS Co.

During the convoys, the Marines were challenged to respond to situations such as a disabled vehicle, improvised explosive devices and small-arms fire. After a simulated event, the servicemembers reviewed a video recording of how they reacted to see how they can improve.

"A lot of the Marines are new and have never been in the field before," said Schull. "It's great to get them out in the field and get used to convoys."

Troops with the battalion, mostly noncommissioned officers, participated as role players, which meant they dressed up, ambushed the convoys and set off IEDs to give the Marines a realistic feeling of being attacked.

"It felt pretty intense and the explosion made me jump," said Lance Cpl. Trevor P. Reilly, a radio operator with the battalion. "When the explosion happened all of the sudden, the pressure hit me from the simulation."

In addition to field training, servicemembers learned about vehicle check points, loading and unloading trailers, maneuvering trailers and crew-served weapon assembly and disassembly – all things they will do during their upcoming deployment.

"I think the reality of what they are going to do is sinking in," said Schull. "I've been pleased with the Marines and with the weather not being ideal, they have been engaged the entire time."

Step by step, the Marines are dedicating their efforts to deployment readiness, and this field exercise is just one small step toward mission success.

JSDF, Marines Perfect Command Control During Yama Sakura

By 1st Lt. Jeremy A. Croft - 3D Marine Expeditionary Brigade
December 14, 2012
Marines.mil

KIN BLUE BEACH, OKINAWA, Japan -- Marines and sailors with the 3rd Marine Expeditionary Brigade partnered with U.S. Army soldiers and members of the Japan Self-Defense Force Dec. 7-14 to conduct exercise Yama Sakura 63.

Led by U.S. Army Forces Pacific, Yama Sakura is an annual command post exercise designed to strengthen military operations and ties between U.S. forces and the JSDF and exercise mutual capabilities for the defense of Japan.

This year's iteration of Yama Sakura was significant because it was the first time 3rd MEB, a part of III Marine Expeditionary Force, has participated in the exercise since the unit's activation last December.

"At the 3rd MEB level, we're showing that we can integrate seamlessly with our Japanese allies to accomplish mission objectives," said Col. John A. Ostrowski, chief of staff for 3rd MEB. "At the strategic level, we're demonstrating that we, the United States, are a reliable partner and a committed ally."

The exercise provides a vital opportunity to increase the abilities of the Marines and sailors of 3rd MEB and to work together with their counterparts in the JSDF, according to Lt. Col. Rodney Legowski, the operations officer for 3rd MEB.

"It contributes greatly to our alliance," said Legowski. "It's a major exercise that is truly bilateral in nature and strengthens our relationships with the JSDF."

In command post exercises such as Yama Sakura, service members practice staff coordination and military decision making by reacting to a computer-based scenario rather than using actual combat units. But even though the units controlled by 3rd MEB are notional, the concepts rehearsed are very real.

"To train at a MEB level with all live forces would be very expensive, time-consuming, and it would perhaps come at the expense of other training objectives throughout the year," said Ostrowski. "So we set up response cells, which are groups of people in the simulation center that can initiate actions within the simulation according to the decisions we make and the guidance we give them from the staff.

"Essentially, it's a way to simulate all that while still replicating the staff and decision-making processes and orders that we would be doing in real life," said Ostrowski. According to Legowski, this process closely approximates real-world combat reporting and increases training value.

"The response cells are replicating our subordinate elements," said Legowski. "They are providing real-time updates on unit locations, current operations and anticipated future operations."

Once the data reaches the combat operations center, it is projected on a screen that enables 3rd MEB Marines and sailors to make decisions and respond to events as if they were engaged in actual combat operations.

Gunnery Sgt. Timothy Judd, the senior watch chief for 3rd MEB, acknowledged that command post exercises increase a unit's ability to operate as a fully-integrated Marine Air-Ground Task Force.

"We have to be able to fight the battle with not only that element that's in the fight, but everybody else who's in the MEB's sphere of influence," said Judd. "The MEB takes care of a threat or contingency by using their main subordinate commands, ensuring that information is coming up, and the answers are getting sent back down. That's what a command post exercise is all about."

This year's iteration of Yama Sakura is the 31st since the Japan-based exercise series began in 1982. The weeklong exercise is the culmination of several months of planning and bilateral coordination between U.S. and Japanese forces.

Code White: Naval Health Clinic Quantico Conducted Active Shooter Drill Monday

Lance Cpl. Antwaun L. Jefferson - Marine Corps Base Quantico
December 10, 2012
Marines.mil

MARINE CORPS BASE QUANTICO, Va. --

The staff at the Naval Health Clinic Quantico exercised a Code White active shooter drill Monday afternoon.

The primary purpose of the drill was to observe and train staff to respond to pressure and to assist patients in this emergency setting.

"I think this drill went pretty well," said Orvel Ronk, anti-terrorism program manager. "I think that the speed is what we have to enforce to the clinic's staff. The shooter will be moving quicker than what happened today. This means the ordeal will start and end quickly, so they will have to react to the situation just as quickly, if not quicker."

Time, effort and research went into the planning process to make the drill run smoothly.

There were more than 10 training briefs with staff at main side, Officer Candidates School and The Basic School clinics in the fall to prepare for this drill. The drill required coordination with many different sections on base such as, the Provost Marshal's Office and Mission Assurance Branch.

The clinic's leadership stated that part of the planning included what to do in case of an actual emergency during the drill. The scenario would have been immediately shut down and the proper procedures for the actual emergency would have been put into place.

Even though it was a drill, the patients and staff took it very seriously and, within seconds of the scenario starting, the halls, lobbies and waiting rooms were empty. Some of the staff and patients actually barricaded the doors in the rooms they were in with file cabinets, as Ronk recommended during the preparation for the drill.

The drill lasted 4 minutes and 27 seconds. There were more than 50 staff personnel and patients in the building. There were eight simulated deaths, half being in the lobby of the clinic and the others on the second floor inside the dental spaces.

Subject matter experts on active shooter scenarios and select clinic staff observed the scenario as it played out. Afterward, they convened for an after-action brief.

"Receiving feedback from subject matter experts is always beneficial," said Capt. Kathy Becker, NHCQ commanding officer. "You will always have your own impressions of what you think is important, but other individuals, with a fresh set of eyes, who actually do this for a living, are going to come up with important points and advice you wouldn't even think of."

Becker said one of the drawbacks of the drill was staff knowing that the drill was going to happen that day. With just a couple of hours left before the clinic's closing, it was easy to infer that the drill was going to happen soon.

Armed with this knowledge, much of the staff was on guard, anxious even, to get things started, as they already mapped out in their heads their plan of attack to get themselves and the patients to safety.

"Overall, I'm very pleased with the exercise for what we got," Becker said. "I think it is a great starting point and we learned a lot in what to look for in our other clinics as well."

The drill gave the staff and leadership aboard the base deeper insight into the risks that may have been overlooked before. Additional after-action briefs will be held at the clinic, and further safety protocols will be put into place to ensure the safety of the clinic's staff and patients in the future.

Simulators Bring Drunk Driving to Life

Lance Cpl. Antwaun Jefferson
November 28, 2012
Marines.mil

STAFFORD, Va. -- Residents aboard Marine Corps Base Quantico had a chance to experience the dangers of drunk driving with help from the Save a Life Tour presentation at Little Hall on Nov. 28.

Now gone are the days when a tall police officer with a shiny badge tries to scare people into listening. The Save a Life Tour is a high-impact alcohol awareness program. The program brings an up close and personal approach to drinking and driving awareness, with tragic videos, personal stories of the loss of loved ones by peers and a sobering drunk driving simulation experience.

"Our main goal is to provide awareness to our Marines," said Nicole Kirven, Substance Abuse Prevention Program manager, Headquarters Marine Corps. "Drunk driving is high risk and if people are going to drink, they need to think of their low risk options. They need to ask themselves, 'why am I drinking in the first place?'"

Many community support programs and services, such as Families OverComing Under Stress and the Consolidated Substance Abuse Counseling Center, were in the lobby of Little Hall welcoming everyone attending the presentation. They provided education and information on the causes and effects of the misuse and abuse of alcohol and drugs, as well as places to go for further education or help.

A 24-minute long video presented a graphic look at the dangers of drunk driving. They warned the audience that the video would have a lot of blood and gore. Anyone who didn't think they could handle the images, was allowed to step out until it was over. After the video, the presenters spoke about their personal experiences with alcohol and the aftermath of alcohol-related incidents.

"You don't get a bronze star or purple heart for drinking and driving," said Andrew Tipton, Save a Life Tour manager. "If you're lucky, you'll get jail time and a huge fine. But realistically, it's not about what you get. It's about what a family has to go through because you killed their child when you crashed into them while driving drunk."

What this program is mainly known for is its simulator. According to Tipton, their drinking and driving simulators are the only ones in the nation that give participants a completely realistic, clear-headed perspective on the effects of driving while intoxicated.

"It was really fun driving in the simulator," said Cpl. Kirk Syros, customer service clerk, Finance, Headquarters and Service Battalion. "It definitely helps people understand that, when you add to the dangers on the road with alcohol, it equals a bad night. Overall, this was what we needed as Marines. A true, interactive, in-your-face, no-holding-back presentation to get the Marines out from behind a wheel and into a bed after drinking."

The simulator included a driver's seat, three screens that provide a 180-degree field of vision and images in the rear-view mirrors. The simulation started off easy with small turns and barely any traffic on the road. Then the difficulty level was raised by including more traffic, harsh weather, aggressive drivers and simulated raising the driver's point alcohol level from 0.5 to 1.2.

It was clear to see that the drivers were unable to stay in their lanes, brake properly or assess an area accurately before pulling out into it. This resulted in the police pulling them over or them crashing into an object or another vehicle.

"If we can reach the military members on base and save at least one life, then all of this work here today was well worth it," said Milton Young, Alcohol Substance Abuse Prevention specialist, CSACC.

Multilateral Field Training Exercise Concludes

Cpl. Erik S. Brooks Jr. - Marine Corps Installations Pacific
November 01, 2012
Marines.mil

KUMAC, New Caledonia -- More than 1,300 personnel from eight nations conducted a multilateral field training exercise as the final phase of Exercise Croix du Sud at Kumac, New Caledonia, Oct. 21-25.

Croix du Sud is a multilateral exercise hosted by the French Armed Forces in New Caledonia involving two U.S. Marine Corps platoons and elements of the armed forces of Australia, the United Kingdom, New Zealand, Vanuatu, Papua New Guinea and the Kingdom of Tonga.

The U.S. Marines who participated are with 1st platoon, Company G, 2nd Battalion, 3rd Marine Regiment, which is currently assigned to 4th Marine Regiment, 3rd Marine Division, III Marine Expeditionary Force.

"We conducted simulated humanitarian aid and disaster relief operations, noncombatant evacuation operations and an assault during the five days," said Sgt. Guillermo L. Fargas, the platoon sergeant for 1st platoon. "We worked in conjunction with all the participating nations to respond to a simulated tsunami hitting New Caledonia."

The exercise was designed to strengthen interoperability between the different militaries through the exchange of procedures and sharing of past experiences, according to French Gen. Jean-Francois Parlanti, the supreme commander of French forces in New Caledonia.

The exercise consisted of multiple training events focused on supporting a displaced populace following the simulated natural disaster.

After landing in the simulated disaster zone, the French and U.S. Marines worked together to establish control bases in the area.

"When we landed, we were tasked to patrol down to a nearby soccer field and set up security," said U.S. Marine Lance Cpl. Cory R. Pirtle, a rifleman with 1st platoon.

The Marines secured the field for the French to follow up and establish a battalion headquarters. The following day, the Marines were tasked with sending a quick reaction force to calm a simulated civilian riot at the battalion headquarters.

"We sent the Marines out with the British soldiers to be a presence and make sure the riot did not get out of hand while the Vanuatu soldiers controlled the crowd," said Fargas.

When the riot was settled, the Marines headed back to base to get ready for their next task, which was to conduct a resupply mission with the French Marines, according to Fargas.

"Our mission was to secure a landing zone in a field and wait for the French to drop humanitarian aid supplies from their planes," said Fargas. "Once they were dropped, we recovered and delivered the supplies back to base."

Militaries would use this resupply technique in an HADR situation because most of the roads would be damaged in a natural disaster, according to Fargas.

The Marines' final mission was a helicopter assault operation on a simulated enemy compound.

"We took a squad and coordinated with the French to take out the enemy on a remote island north of our position," said 1st Lt. Forrest L. Martin, platoon commander for 1st platoon. "We landed on the island, linked up with the French, and maneuvered and took the enemy out together."

The training exercise was the closest simulation to a three-block war a military can get, according to Fargas. A three-block war is a scenario when, taking a platoon as an example, one squad is conducting combat operations, another is conducting humanitarian aid operations, and another is conducting peacekeeping operations all in the same area of operation. The training scenario was beneficial to each country's participants.

"We train in these situations to be able to intervene when circumstances are so damaged that only militaries can do something with their specific abilities, especially for HADR and NEO scenarios," said Parlanti. "This exercise allowed for the militaries to return to their countries with a better understanding of these missions, making them more effective and efficient."

Marine's Bloody Art Provides Navy Corpsman Realistic Training

Cpl. Fenton Reese
October 28, 2012
Marines.mil

Middle East -- Many would agree the more realistic training, the better, especially when those being trained couldn't tell the difference between simulation and reality.

Thanks to the magic of makeup and talent of Cpl. Elizabeth Deanes, a motor transportation operator with Marine Aircraft Group 40, a group of corpsman and medical personnel assigned to U.S. Marine Corps Forces Central Command in the Middle East received a taste of what they thought was the real thing, during an impromptu trauma drill.

"Initially, none of the personnel knew it was a drill," said Petty Officer 1st Class Edward Palakie, a hospital corpsman with MAG 40. "She did a phenomenal job. Some of the paramedics that arrived on scene thought the wounds were real and this was a real situation."

According to Palakie, the make –up combined with the element of surprise provided better training as opposed to other reaction drills in which the participants are given scenarios and have to imagine the situation.

"It was definitely better training. They arrived on the scene and could physically look and determine the wound as opposed to being given a card and having to act it out," said Palakie. "It was a benefit to actually see that stuff as well."

With her make-up kit, Deanes created wounds ranging from head and body trauma and lacerations to compound fractures and gunshot wounds that the medical staff had to treat.

"This was actually the first time I've done it for training," said Deanes. "I was so proud because the Corpsmen here thought the situation was genuinely real until they actually got up close and saw who the "victim" was."

Deanes said she has never had any formal training; however she learned some tricks of the trade through a friend and honed the craft through experience.

"I've been doing make up for quite some time. My friend went to Tom Savini's Makeup School and taught me things here and there. Ever since she taught me, every time I get an opportunity to do it, I jump on it. The idea of being able to transform people's physical appearance to something extreme is awesome," she said.

And, according to Palakie, she truly transformed the "victims," and said he will be hoping to use her skills for the next training event.

"She is very talented and luckily she's our Motor-T operator," he said. "This may have been her first, but it won't be her last."

Palakie said that this capability allows his corpsman to put their abilities to the test with the physical appearance of real injuries. And, this is an excellent asset that should be incorporated in all medical training.

"We train how we fight," said the 12-year veteran.

One Marine's unique skill turned out to be more than just an interesting hobby, but served as an asset to improve training.

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Vibrant Reponse 2013

Major General Jeff W. Mathis III
BCD 2012 Volume: 1 Issue: 3 (December)
Border &CBRNE Defense
KMI Media Group

With domestic disaster response, we must do everything possible to plan and prepare for every potential contingency, from natural disasters to terrorist attacks and everything in between. The key to an effective response is to focus all efforts on saving lives and mitigating suffering. Those efforts become significantly more challenging during a chemical, biological, radiological or nuclear complex catastrophic event.

The Department of Defense expects Joint Task Force Civil Support to provide timely, effective and efficient support of civil authorities during a catastrophic CBRN event. Subordinate to U.S. Northern Command and U.S. Army North, JTF-CS is the only standing CBRN task force in the U.S. When called to provide Defense Support of Civil Authorities CBRN response operations, JTF-CS provides command and control of approximately 5,200 federal military forces across the continental U.S., called the Defense CBRN Response Force (DCRF).

Postured for Success

The DCRF is comprised of military units on call to support lead federal agency support to federal, state, tribal and local (FSTL) governments and agencies. When requested by the Secretary of Defense, JTF-CS and the DCRF provide five primary life-saving capabilities: CBRN reconnaissance; technical and non-technical search and extraction; mass casualty decontamination; medical triage and stabilization; and air and ground medical evacuation. The combined multi-service, multi-organizational DCRF is divided into force packages to ensure life-saving skills arrive first. Life-saving skills are the most critical capability we can provide the FSTL authorities within the first 96 hours of an incident. Within 24 hours of activation, Force Package One (front-loaded with various life-saving military assets, such as search and rescue and emergency medical support) is either at the incident site or on its way. Follow-on forces in Force Package Two will provide more long-term logistical, engineer and medical support.

JTF-CS and the DCRF respond to CBRN events in six separate operational phases. Deliberate planning in phase 0 maximizes mission readiness and assures the command is capable of deploying force packages within 24-48 hours of an incident to meet lead federal agency requirements. Phases 1 and 2 deploy the DCRF to the incident region (called Joint Operational Area or JOA). Phase 3 employs the DCRF throughout the JOA using the five core capabilities. Phase 4 shifts DCRF mission from lifesaving to broader missions related to recovery and restoration of resiliency in support of the lead federal agency. Phase 5 redeploys JTF-CS and the DCRF from the JOA to home station to prepare for the next employment.

Of the five phases, deliberative planning is the most critical. The speed at which the DCRF is capable of integrating into an incident response directly relates to saving lives. Communication, collaboration and coordination with FSTL agencies ensure smooth operational integration during an actual event. Similarly, collaboration between the various response agencies can be crucial to develop a pre-incident understanding of capabilities, limitations and expectations of all responders. In turn, that increased awareness and relationship building ultimately helps save time and lives during an actual event.

Exercise, Exercise, Exercise

Though planning and prior coordination are perhaps the most critical component to successful employment, training and validation are almost as critical. To reassure our nation we can perform our core capabilities when called upon, JTF-CS conducts exercises throughout the year. At 9 a.m. Eastern Standard Time on July 26, two weeks after I accepted command of JTF-CS, we responded to a simulated nuclear attack on a major metropolitan city within the United States. This response to a simulated attack was the start of Vibrant Response 2013 (VR13), a validation exercise for JTF-CS and the DCRF.

In VR13, we simulated a response to a 10-kiloton nuclear detonation in a major U.S. city. In this scenario, initial casualty estimates were tens of thousands dead with more than 300,000 missing. With a blast site encompassing a 1.5 mile area, we knew we had significant damage to infrastructure, buildings, roads and hospitals. In addition to physical damage, we had to immediately plan for the suffering caused by prolonged nuclear exposure, separation from family and a sense of hopelessness.

More than 3,500 military personnel and 1,000-plus civilian responders participated in VR13. By the second day of the exercise, a significant portion of the DCRF had arrived at Camp Atterbury, Ind., and began receiving mission assignments. During this 19-day major incident response exercise, we validated DCRF capabilities from home-station deployment phase, to the JOA employment phase, to the redeployment to home-station phase. We trained everything from extracting injured civilians from a rubble pile to coordination with local, state and federal agencies, to interviews with the press. This annual exercise helps leaders confirm the training and readiness of the DCRF enterprise, and is designed to demonstrate to American citizens and our agency

partners that the DoD CBRN force is ready and able to respond to help local civil authorities when called upon to do so.

VR13 produced important results: First, we validated our deliberate planning processes and developed lessons learned to add clarity to the six response phases. Second, we certified the military units that will assume the DCRF mission on October 1. Finally, we developed a depth of experience and expertise across all phases of a response.

Preserving the Nation's Trust

We are fortunate to live in a resilient nation. Helping Americans survive and recover from catastrophe is the most important mission any organization can be given. I take that mission very seriously. JTF-CS will be there whenever needed to employ military support of federal disaster response to save lives, mitigate suffering, prevent further injury and provide critical temporary support to enable community recovery. ♦

Major General Jeff W. Mathis III took command of the Fort Eustis, Va.-based Joint Task Force Civil Support in July. He was previously assigned as the deputy director for Antiterrorism and Homeland Defense at the Pentagon where he served as a primary advisor to the chairman, Joint Chiefs of Staff.

Training for the Worst

Steve Hirsch
CGF 2012 Volume: 4 Issue: 4 (December)
Coast Guard Forum
KMI Media Group

Winds roared at 70 knots. The blackness of night was punctuated only by repeated bolts of lightning. And the Coast Guard search and rescue helicopter was poised for a ditching.. . .

Oil was spilling out of the partially submerged tanker. The currents were moving the contaminants slowly south. But what if the rapidly developing wind and waves shifted north toward a popular and crowded beach?. .

The caller threatened to detonate a dirty bomb in a shipping container onboard a freighter in or near the port. The Coast Guard, port police, city fire and other local, state and federal agencies were all scrambling to respond. And they all needed to be working the same game plan.. . .

Three very different incidents. All Coast Guard missions. And all, luckily, are simulations.. . .

Those 70-knot winds were not part of Superstorm Sandy. The wind and lightning flashes, as well as thick fog, swelling waves and the sounds of helos and firefights are among the simulated special effects that select Coast Guard crews will encounter at the underwater modular egress training (UMET) pool in Elizabeth City, N.C. Dedication ceremonies for the $27 million center and the adjoining Rescue Swimmer Training Facility were held in October.

"We looked at Navy aquatic training facilities, we looked at Army, Air Force, and determined that we would use the best features in all of them to make a state-of-the-art world-class training facility for ASTs [aviation survival technicians]," said Rating Training Master Chief Lewis Hart.

But the E-City center goes a step further. It also features the first boat dunker module for any military service training center, anywhere. "As far as everybody knows, we've got the only one in the world," Hart said. "Our boat forces people have never had any kind of requirement for dunker training. But the Coast Guard recognized that they need real-life training as well as the aviators. After all, we turn boats over occasionally, too."

The dunker modules were built for the Coast Guard by Rhode Islandbased Survival Systems, which also designs, builds and/or operates its modular egress training simulator (METS) models for the Navy, Marines, Air Force, Army and the combined Special Forces Command. The boat unit holds up to four people at a time. The helo dunker can be configured to simulate the interior of any Coast Guard helicopter in current use, holding up to six people. Between the two modules, the new Aviation Technical Training Center (ATTC) will train up to 4,000 rescuers per year. Coast Guard training and safety leaders must first determine protocols and training frequencies for water forces. That, according to Hart, is expected by March or April.

"For the boat dunker, there is no training module," Hart said. "We're pioneering it. We have to write all the policies and establish the procedures for evacuating people and safe operation of this boat module."

The goal of the new E-City dunker is to ensure the survivability of Coast Guard crewmembers in emergency situations. Survival rate from actual ditching or roll-overs improves by 70 percent for someone who's recently undergone training, Hart noted.

Other Coast Guard simulation tools protect both the responders and the public.

"Seconds matter when responding to emergencies—a split second can mean the difference between life and death," observed Patrick Allen, business development lead for maritime training at Lockheed Martin Global Training and Logistics. "Simulation provides a vehicle to prepare Coast Guard personnel for decisive action in high-pressure situations. Realistic simulations can help them understand the variables that occur during crises and allow them to experience the effects of their decisions in a safe environment. In fact, simulation provides more realistic training scenarios than live training in many cases, since replicating disasters can be difficult or impossible in the real world."

Lockheed Martin designed RediEX simulation programs to train Homeland Security and Defense Department personnel to plan for, prevent, respond and recover from terrorist-related activities and natural disasters, Allen said. RediEX improves interagency and intra-agency coordination during a crisis event by allowing multiple agencies to work simultaneously within a secure online or local area network environment to create, operate, facilitate and review all data generated throughout training exercises. Since its first deployment in 2008, RediEX technology has supported more than 30 exercises through a joint TSA-Coast Guard program called PortSTEP and several other exercises for the National Guard.

Indeed, the act of Congress which created the Department of Homeland Security in 2002 also charged DHS with promoting "revolutionary changes in technologies" to advance training, testing and deployment to address national vulnerabilities. Lockheed Martin and ABS Consulting are each identifying new protocols, systems and technologies to increase the nation's preparedness and response to natural and man-made disasters through an improved real-time analysis communications environment. The research, at a combined cost of nearly $10 million, is designed to enhance simulation systems to protect critical infrastructure and key national resources.

For large-scale national communications and infrastructure, just as with small-scale emergency plans and training, experts note that new generations of responders learn especially well from simulation in a format they know from everyday gaming and entertainment: 3-D. And as Gabe Batstone, chief executive officer of the simulation software and solutions company Ngrain, noted, new 3-D technology also looks good for an agency's bottom line.

"The use of 3-D simulation is faster, cheaper and more effective than traditional methods," Batstone said. "It's also about demographics. It's about who is it that you're trying to transfer this information to, and how can you give it to them in the way that's going to best help them to get the job done."

On-scene responders, for instance, can use a laptop to model wind conditions and see for themselves what changing winds and currents will likely do to oil spilled at sea. The technology can let an on-scene Coast Guard commander recommend and set an efficient response plan faster and more accurately than before.

The same technology that lets responders look into the future also can be used to improve current and aging gear and procedures. Ngrain, for instance, provided the U.S. Coast Guard with interactive 3-D equipment simulations to support maintenance training for the workhorse Honda 225 outboard engine.

"The engines are out of warranty, so they're no longer able to get the OEM to maintain those engines," Batstone said. "That task is going to go over to bluesuiters. A virtual task trainer is the best, most efficient way to show these guys how to do the maintenance and also to provide job-aides in the field.

"There's going to be a lot of life extensions of equipment in austere times," he added. "With 3-D simulations, they're able to shorten the amount of time it takes to communicate that knowledge, usually by at least 30 percent. So if a course used to take five days, now they can do it in three. If it used to take three, now it takes one."

Three-dimensional training can be done easily and efficiently at a distance, over the Internet. And, Batstone said, not only do students learn faster with interactive 3-D simulations, they also test better. "The warfighters, the students and the Coast Guard cadets score higher. So if they used to get an 85 grade, now they get a 95. We just received a case study back from the U.S. Army in Fort Benning. On a particular master gunner course, they've gotten down to zero failures. No one has to go back through the course a second time. It's not that they changed the standard or made it easier; all they did was blend in interactive 3-D."

Whether through on-site and command software, high-tech interagency modeling, improved training courses and manuals or new boat and helicopter dunker trainers, simulation is increasingly the wave of the future—and the present.

"We see an immediate need to apply technologies and simulations that enhance the level of preparedness and emergency response at local, state and federal levels," said Lockheed's Allen. "Casualty projections, hospital bedcount reports and data communications among geographically dispersed responders are increasingly important features required during exercise planning."

With advanced technologies for modeling and tracking events such as transportation, radiation spread and flooding, Allen said, simulation is helping the Coast Guard prepare for hazards from hurricanes and earthquakes to chemical and oil spills and even nuclear safety.

And as Ngrain's Batstone noted, "At the end of the day, this is about doing the job better at a lower cost. And technology tools, when used correctly, are the way to do that."

Back in Elizabeth City, where leading- edge military training systems are cranking up the wind and waves as a boat crew is tossed safely into the drink, simulation is clearly part of the Coast Guard's current and long-range plan. "We plan on this facility being our centerpiece of training for the next 50 years," said Hart.

Mission Guardian: Balancing Technology and Budget to Ensure Mission Readiness

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Coast Guard Forum
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As the Assistant Commandant for Capability (CG-7), Rear Admiral Mark E. Butt is responsible for identifying and providing service-wide capabilities, competencies and capacity; and for developing standards for staffing, training, equipping, sustaining, maintaining and employing Coast Guard forces to meet mission requirements. Butt previously served as director of the Mission Support Integration Office (DCMS-5), where he was

responsible for strategic planning, integration, business transformation and continuous process improvement across the 17,000 member Coast Guard Deputy Commandant for Mission Support organization.

Prior to reporting to Coast Guard headquarters, he transformed fleet logistics in the largest reorganization in Coast Guard history for all U.S. Coast Guard surface forces, including over 200 cutters and over 1,800 boats, as commanding officer of the Surface Forces Logistics Center. On his watch, maintenance costs decreased 20 percent and small boat downtime waiting for parts to arrive decreased 57 percent. Under his leadership, the new product line organization delivered unprecedented support for the Haiti earthquake response and Deepwater Horizon oil spill. He also ensured the center passed a comprehensive check of its $72 million parts inventory, enabling a clean audit of operating materials and supplies for the first time in recent history.

Rear Admiral Mark E. Butt
Assistant Commandant
for Capability
U.S. Coast Guard

In January 2009 Butt became the first commanding officer of the asset project office in Baltimore, Md., with responsibility for delivering new capability to field operating units that meet operational requirements with the proper equipment, training and field-level support infrastructure for sustainment over the asset's life cycle at a desirable cost.

As chief of the Office of Aeronautical Engineering at Coast Guard headquarters, he managed all aspects of the support program for the Coast Guard's aviation fleet of over 200 aircraft. In this role, he developed and deployed the upgraded HH-65C helicopter and supported all Coast Guard aviation units affecting air rescues day-to-day and more than 12,500 during Hurricane Katrina.

Butt's operational tours include the dual role of commander of Group Humboldt Bay and commanding officer of Air Station Humboldt Bay, where he was responsible for all Coast Guard missions on 250 miles of remote, rugged Northern California coastline stretching south from Oregon. He also served as commanding officer Air Station Detroit, Mich., executive officer, HH65 product line division chief, and HH-65B project engineer at the USCG Aviation Repair and Supply Center in Elizabeth City, N.C.

Upon graduating from the U.S. Coast Guard Academy in May 1982, Butt served as operations officer aboard USCGC Sundew in Duluth, Minn. He reported for flight training at Naval Air Station Pensacola in 1984 and was designated Coast Guard Aviator No. 2397. He had operational tours flying the HH-65A at Air Stations Borinquen, Puerto Rico, Astoria, Ore., and Port Angeles, Wash.

A native of Hartley, Iowa, Butt holds a Master of Science in aeronautical structures from Purdue University. His military awards include the Legion of Merit (two awards), Meritorious Service Medals (three awards), the Air Medal, Coast Guard Commendation Medal (two awards), Coast Guard Achievement Medal (two awards), and the Humanitarian Service Medal.

Q: Focusing on the homeland security aspects of Coast Guard duties, what are the challenges you face with port security as more cargo comes from more destinations, and what tools would make that task more efficient?

A: What's going on right now is that we're working really well with the international community. Trying to stop stuff coming in at the ports with all the traffic we have is like playing soccer with just a goalie; that's not the way you play. We're working in the international community, with the standards being used in those ports for their security, before the shipments leave for the United States.

We're moving to a standard convention on what the security standards for everything should be. We have a very good working relationship with the European Union ports and we've sent people over to look at their security standards.

We have verified that their security processes are effective, so cargo coming in from those ports doesn't need to have the attention of something coming in from areas of the world that do not have this same level of security.

Everyone has virtually the same problem and the key is to focus on developing a single standard to the point where we can trust everybody's work. If we don't move in this direction then we're just building more port security. We need to do partnerships with other countries and focus on where the threat is.

Q: Looking at the budget you have now for fiscal year 2013, what do you see as the funding levels you're going to get and what capabilities is that going to allow you to continue with? What is your focus going to be on, with probably increasing areas of responsibility but keeping your traditional capabilities ready?

A: Over the last few years, our near shore and coastal assets have been pretty well funded. We have the response boat-medium, we've completed the 87-foot coastal patrol boat acquisition, and we've started the recapitalization of the response boat-small. So the inshore fleet is pretty well set, with improved capabilities and a greater number of boats than what we had a decade ago.

The offshore mission right now is where we're hurting. To do the offshore mission people have to understand that what we're really talking about is battling transnational crime organizations [TCOs]. To fight that type of threat on the high seas takes three legs, like a stool. You need to have intel. Since 9/11 with the intel agencies working together, our intel has improved. Then, once you have intel, you have to be able to send aircraft out to be able to go find the bad guys, and that needs to be in balance.

The third is that you need the end game, which is the offshore cutters with small boat and helicopter interdiction capability. Right now, we have an unbalanced stool in that with the old offshore cutters, I don't have enough end game to go do what my other capabilities give us the ability to do. That's why we're focusing so much on the national security cutter [NSC], and then the follow-on with the offshore patrol cutter to replace the medium endurance cutters.

I have an aircraft gap over where we need to do our job, but that leg right now is much larger than being able to do end game type efforts. So we're trying to balance getting the cutters into play and retiring some of the older ones so that we can do the job offshore.

The challenge is most of the American public doesn't see the offshore part, and so they like to see the boats running through New York harbor, running in front of the Statue of Liberty, but the actual going out and doing the drug fighting, the migrant interdiction and similar work, doesn't get as good of a view, and so fighting for the resources to replace our 50- and 60-year-old cutters is the challenge right now with this budget environment.

Q: Despite the high sustainment and maintenance costs on the older cutters, has there been any real consideration of keeping some of them on to fill capability gaps?

A: Our high endurance cutters [HECs]—the 378s—were built in the mid-60s. The turbines on those cutters are the same type of turbines that were in the Boeing 707 of the early '60s, late '50s. So ask yourself when's the last time you've seen the Boeing 707 flying with the original engines. It shows you some of the support issues we have with that type of gear.

Then you have the 210s, which were also built around that time. The Fairbanks Morse engines on the medium endurance cutters are the same engines that were in World War II submarines. All of the ships went through a service life extension project [SLEP] in the 1990s. To go and try and do another one [SLEP] just doesn't make economic sense. They're going to be way too expensive to run. Plus, the technology doesn't match up.

What we're finding with the 378s, if you go into the standard references like Jane's Fighting Ships and you look at the numbers, it gives you about a 10-12,000 mile range on them. That's if they go out and burn all the fuel. Compare that to the NSC and you won't see that much of a difference between the two in the range, but here's the difference: The HEC was designed without ballasting tanks, so as they run out of fuel, if you start getting into any sea state, you have to put seawater into the fuel tanks that are empty to ballast the ship down and keep

it stable. When that cutter returns to port you have to go and pump out that ballast water and scrub those tanks. That's a cost. What happens when operating the high endurance cutters is as soon as they get down to around 70 percent fuel, they're starting to think about refueling those ships, because they don't want to do the ballasting. That means an HEC never comes back into port with less than half its fuel, unless it's an extreme SAR [search and rescue] case.

The national security cutter, on the other hand, was built with dedicated ballast tanks. So when they go out, they're ballasting to offset the fuel burn all the time. Those ships are coming back with low fuel levels, and the CO [commanding officer] has been comfortable doing it. There's also a cost avoidance in that when we buy fuel down in places like Panama it's expensive, we're able to do the whole cruise, come back home and refuel using DoD contracts. There are just so many things that come into play when you're talking about the new ships that with the old ones you'll never be able to build in by the way of the original design. It makes life better all the way across for the people involved with supporting those ships and the people operating the ships. There's just no comparison. We tend to look at the NSC as just being a replacement for the HEC, but it's a three generation jump.

Q: How much more elasticity does the Coast Guard have in its current mission with its current equipment and when the new equipment comes online? Can the Coast Guard do much more with what it has right now, or is it really restricted by what its capabilities are?

A: What we have to do right now, because everything is used multimission across our 11 mission sets, is we have to balance risk. So we're able to push to whatever the top national priorities are and on down, it's just that we can do less of it now.

A good example was during Deepwater Horizon, when we were moving all the buoy tenders down to the Gulf to skim oil: We were doing less aids to navigation work in Alaska, less of the nav aids were maintained.

Right now, with the push to recover the aids to navigation [ATON] that were damaged as part of Hurricane Sandy, some of the ATON work down in the 7th district isn't getting done.

We can balance risk still, and we have enough flexibility to balance to the higher priorities, but some of the important, but lower priority mission activities aren't getting done at the same time.

Q: Are ships assigned to districts, or are they always assigned to headquarters and pushed out to districts based mission need?

A: The way our force is done on the ship side is anything larger than a patrol boat with a "white hull" they're assigned to the areas. The areas do the scheduling and then send them out to either a district for a district mission or we send them to JIATF [Joint Interagency Task Force] South and they'll work there, or we'll give them to a COCOM [combatant command] for an out of hemisphere deployment to support DoD. So the area commanders do the distribution of the ships and set the schedule for the bigger ones. Buoy tenders and other "black hulls" work for the district commander, but they can be tasked out to another district to manage the highest risk.

Patrol boats normally, with some exceptions, work for the sector commanders. In a couple of the districts they actually work for the districts—in both D-11 and D-7, where we do the counter drug missions, they tend to work for the district commander because you would overwhelm any one sector with the bigger burden. Again, we try to stay flexible to respond to the highest risk.

All of the small boats work for the sector.

Q: Can you lend me your insights into the priorities and major initiatives for the next 12-24 months?

A: We have three ongoing programs with the major cutters right now. We have the National Security Cutter program; we have three delivered, two being built and one with long-lead time materials ordered, for six so far.

The program of record for that is that we need eight, so we're in ongoing discussions right now about finishing out that program of record. It's my highest priority.

Another ongoing program is our fast response cutter. That's our Sentinel class, 154-foot patrol boat. The fourth one was just preliminarily accepted, so we've received three. The fourth along with the first three will be heading to Miami. The FRC program is 58 total. We'll be getting between four and six per year; these ships will be replacing the 110s.

Then the other major program that's coming up that dovetails in to the NSC program is the off-shore patrol cutter, which is designed to replace the 50-year-old 210-foot cutters as well as the 30-year-old 270-foot cutters over time. We just put the RFP on the street for that. The key part for that one is we're going to select three designs and then evaluate those designs against each other, then go down to one builder. We'll start seeing those ships in the 2020 timeframe; that will be when that first cutter gets launched.

That's the programs for the surface fleet recapitalization. We get that, that would go and give us the surface fleet tools we need offshore, especially as the Navy rebalances to the Pacific.

Q: With the announced pivot to the Pacific, is the Coast Guard part of that shift?

A: We would shift that way if requested by the COCOM. We had early engagement with the planners but at this point, we are not involved with any of the actual rebalancing. If you consider the DoD and their forward-deployed responsibilities as one of two intersecting circles with the Coast Guard and its missions as the other circle, you want to have some overlap between those two circles. This is especially true when it comes to the mission and whether it calls for the hard power of the Navy or the soft power of the Coast Guard.

As DoD rebalances to the Western Pacific, they're going to have fewer ships available for down off of South America in the Eastern Pacific and Caribbean for dealing with drugs and such, so think of those circles kind of pulling apart a little bit. There will be a lot less overlap. The key is not to produce a seam, but there will be less overlap as they push and forward deploy, which means we're going to have to schedule more cutters to backfill.

Q: Going back to the fast response cutters, you mentioned 58; is the contract for one builder to do all 58 or at some point will they be re-bid?

A: There's a re-bid in the plan. We bought the data rights for it so we can specifically do that and offer it up at a later time.

Q: Let's talk about training for the aviation fleet services. How would you characterize the Coast Guard's use of simulators and distance learning to keep training skills up and at an efficient level?

A: The aviation side of the house has used simulators for a long time, since I've been in and well before that. In fact, with part of the H-65 program, we just added a second simulator down at our training center in Mobile so that we can push more people through the training cycle. For all of the aircraft types, we have at least one simulator either ordered or in place down at Mobile. That's been a key piece of our training program on the aviation side for a long time.

Surface, we're not quite there when it comes to simulation. Where we're having a tough time is with the way the budgets are, getting the ships and getting the training devices all at the same time. Because we have higher and other competing priorities, the training devices aren't happening right now as we try to get new assets out there doing Coast Guard missions. So that's one of the things where from the capability side, I would love to have the simulators and I think it would give our crews much more proficiency, especially in the area of responding to emergencies aboard ship. When you're out doing the mission, you don't get a chance to practice that a whole lot, but it's something that when you need it, you need it. That's exactly what simulators are great for.

Q: Let's talk about the Coast Guard capabilities for a disaster such as Deepwater Horizon—what are the lessons learned? What's changed as far as the response and capabilities the Coast Guard has for that?

A: Remember, going into Deepwater Horizon, the really big marine pollution event prior to that was the spill up in Prince William Sound. The Oil Pollution Act of 1990, OPA 90, was the framework for spill response that the nation used up to Deepwater Horizon. The one key difference between what happened in Alaska in 1990 and Deepwater Horizon was with all the spills we've had, we've always known how much oil there was. Deepwater Horizon comes on, and you have a spill of an unknown amount—a really big spill of an unknown amount—continuing to flow. The key in the OPA 90 response was that the responsible party was tasked with doing the initial response, and the Coast Guard would monitor them to make sure they had everything in place to respond. What we found with Deepwater Horizon was we had a spill that quickly overwhelmed any one responsible party's ability to respond to the spill. That hadn't been envisioned before. So we're taking the lessons learned from that to go to more of a national response type framework.

We'd always envisioned one captain of the port overseeing the responsible party. The Deepwater Horizon spill was so large that there was no single ability for a captain of the port to oversee the response.

A tangible example was with booms. We needed booms to try to keep the oil off the beaches. So here's the conundrum: Since in each area, the captains of the port are responsible if there's oil operations going, whether its transfers or drilling or whatever, in their area, do you take boom from Puget Sound down to the Gulf and now take the risk up in Puget Sound too? Or do you wait for more boom to be manufactured for down in the Gulf and keep the reserve up in Puget Sound? That's a dialogue we have yet to have as a nation on the outcome. That's just one of several, because the whole thing envisioned by OPA 90 was more contained than what we had with Deepwater Horizon. Hopefully, we won't have another Deepwater Horizon, because that is an extremely complicated response.

Q: You talk about the port captains. Can they say no if they thought the risk was too great?

A: That's the conundrum on this, as the law clearly says they can say no.

Q: Let's turn to unmanned systems, both maritime and aviation. Does the Coast Guard have a road map that outlines its goals for both the mission and size of its unmanned fleet?

A: In the original Deepwater recapitalization plan, we did. But since then, when the Coast Guard took over, we're reevaluating the unmanned systems. What we're finding is there are a couple of things that come into play: While DoD has used them very effectively, our problem is we have to fly in the national airspace. The DoD has a lot of restricted airspace that they can do their training in. Coast Guard has none of that. We have to coordinate that with DoD, so we're going on a much smaller scale. Right now, we have a joint program with Customs and Border Protection where we're flying Predator-type aircraft— they're actually Guardians, the difference is the surface-search radar on them—down in Florida and Texas on a scheduled basis and evaluating the results.

We also are testing small UASs. I'm talking about a 44-pound size, where we're flying them off the NSCs. They don't currently carry radar, but they do have other capabilities that can transmit a picture back. We're working with them right now to see how they can contribute to the picture as we work through it.

Right now, the technology challenge for us is the airspace. The technology basically outpaces the airspace rules. How do you see and avoid manned aircraft in national airspace with an unmanned aircraft? This is the basic conundrum. Congress has told the FAA to move out smartly on it; we don't want to get out ahead of that effort. That may be way too expensive for what we can support.

The other interesting thing when it comes to unmanned aircraft systems technology right now is they don't do well in bad weather. That can be a problem for our mission set. But that's today—aviation in the 1920s didn't

do well in bad weather, so this will eventually be solved. That's why we need to keep in touch, but we don't want to get ahead of the state of the industry. We just don't have the budget to do that.

We're staying observant right now, testing, trying to put our concept of operations together and then going from there. What's interesting is in the original layout we were looking at having a Fire Scout-type vertical takeoff capability off the national security cutters. With the small UASs that are coming out, and what capability that the national security cutter has from its own sensors, we may not need that big of a UAS with the radar for it to be able to help the NSC do its job. Even if I had a program of record and a plan for the UASs two years ago, I can tell you it would have looked different today, because the technology is changing so fast.

Q: The Coast Guard for years has held an innovation expo, where it brings industry together for an opportunity to see collectively in a big room a lot of big things they could possibly use. The event was canceled this year; who knows what will happen in the future. How do you stay in touch with industry to see what capabilities they have when you lose a venue like that? And do you see venues like that as having a purpose or a value to the Coast Guard?

A: We have a bigger innovation program and the expo is just one component of a big program. We keep a database of ideas that people bring in and take a look at it. There's a whole process for bringing in innovation and actually operationalizing it. That's all in play through the innovation program; the expo is just one piece of that. I can tell you, in today's budget environment, with the way industry needs to get out and market to keep money flowing, we don't have any issues with industry getting good ideas in front of us. My whole day could be filled with folks coming in and showing me what all the new stuff can do for us. They're also showing our operational folks. I don't think there's any drop-off just because we didn't have the expo this year. The expo's just a point of time. Perhaps we may have them on either a biennial or triennial basis. It's balancing the budget, cost versus potential gains. But folks are coming with all the ideas—and the technology is changing so fast in a lot of areas, that having that one innovation show is one snapshot in time of a whole lot of good stuff going on.

Q: Is there anything you'd like to add about the people within your organization, or where the capabilities of the Coast Guard can go in the future?

A: The key part right now is in this budget environment, we're trying to balance current ops, keeping the level of service to the country—to the taxpayer—as well as trying to recapitalize and get some of this newer capability into place. That's a balancing act and it's in tension. There's a top line of money, and when you have a top line of money, you have to balance it too. The challenge is everyone will have an opinion on what that balance should be, and everyone is right, and everyone is wrong, and that's the tension. There's going to be a lot of folks saying it should be one way and others saying it should be the other way. That's our challenge: determining what that tension should be.

We've got good folks working it here at headquarters. One of the things we're doing that I'm really proud of is we stood up a modeling section that's been in place for three or four years. We're doing some analysis of what the fleet state should be. Even right now, regarding Hurricane Sandy damage, we're doing modeling and simulation to understand what the SAR response state of the Coast Guard is with that damage as compared to pre-Sandy so we have an understanding going into the winter of what the risk is for our forces lay down and how that will go. We've never had that level of capability before.

Being able to understand the laydown will inform the mission support side of the CG how to set repair priorities based on where our vulnerabilities are. So we're doing that kind of stuff when it comes to building a future fleet. That's why I have very strong opinions on why we need to get that future fleet, because I've seen what the modeling shows are able to do—and that's what this nation needs. That's one of the exciting things that keeps me coming to work every morning. It used to be going out and actually rescuing people—now I get to plan for that, and give the folks who aren't even in the Coast Guard yet the tools they need to do the job five and 10 years from now.

New Online Information about TADSS

Mike Casey, Combined Arms Center - Training
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Military Training Technology
KMI Media Group

The Army Training Network (ATN) recently added a web page to bring soldiers the most current information about Training Aids, Devices, Simulators and Simulations (TADSS).

ATN is the one-stop shop for Army training tools and resources. Its TADSS resources page offers information about the location, purpose and best practices for using TADSS. The effort is the work of the Army Training Support Center and the Training Management Directorate. Both are subordinate organizations of the Combined Arms Center -- Training.

"The new TADSS page on ATN provides leaders and trainers an easy way to know what TADSS are available, what they can do and how to get them," said William Brosnan, training analyst on the ATN Team.

"In addition, the page's content makes the leader and training manager's job much easier, and in the end, makes unit training more challenging and realistic," he said. "The page also follows a principle of training from ADRP 7-0—Train As You Will Fight."

When live training, equipment or live ammunition are not available, TADSS provide training opportunities. Even during live training, TADSS are an important component to make training realistic and challenging, Brosnan said.

Training aids are items that assist in the conduct of training and the process of learning. These can be:

- Graphic training aids such as models.
- Displays of opposing forces (OPFOR) small arms.
- Books with documentation on training aids.
- Pictures to support briefings and presentations.
- Media products such as training films.

Training devices are three-dimensional objects that improve training. Generally, devices substitute for actual equipment as the following examples show:

- OPFOR weapons and clothing.
- Antipersonnel practice mines.
- Accoutrements kit (threat).
- Training grenades.

Most training devices are maintained at the servicing Training Support Center. DA Pamphlet 350-9 identifies training devices that support specific soldier and collective tasks.

Simulators are a special category of training devices that replicate all or most of a system's functions. Examples include:

- Conduct-of-fire trainer such as for the M2 Bradley Fighting Vehicle and M1 Abrams.
- Flight simulators.
- Simulations networking.

Simulators are normally issued to units or to the installation for use by units. Simulations provide leaders effective training alternatives when maneuver and gunnery training opportunities are limited, Brosnan said.

When used properly, simulations can create the environment and stress of battle needed for effective command and battle staff training. Proper use of simulations ensures that quality training can compensate for the following constraints to field training:

- Limited opportunities for field maneuver.
- Lack of a trained OPFOR.
- Inability to replicate a full logistics battle.

Simulations do not replace traditional field training, but can provide an alternative, realistic training environment. Simulations can help do the following:

- Validate internal staff training and SOPs.
- Expose battle staffs to a lethal, complex, modern battlefield.
- Build battle staff and leader flexibility and responsiveness.

The new ATN TADSS page offers information about the TADSS to support training the unit's key collective tasks and how to obtain TADSS. In planning training, it is important to decide early on what TADSS may be needed and how to obtain them to ensure they are available when training begins, Brosnan said.

Orlando: Where the Gaming Never Stops Growing

Terri Bernhardt
MT2 2012 Volume: 17 Issue: 8 (December)
Military Training Technology
KMI Media Group

In the simulation training capital of the world, there are myriad products and technology solutions that involve intense research while delivering time saving innovation—and collaboration is found on every corner. One such technology solution that experiences consistent growth is the use of serious games for training. In a world where technology is essential, it is known that humans learn faster and more efficiently while training through gaming.

“Team Orlando is in full support of serious gaming,” stated Kent Gritton, Director, JTIEC. “In fact, we assist with three distinct serious gaming events every year. One of them, a home grown conference that started in a small office at PEO STRI that has evolved into one of the best ideas we’ve ever had.” The event hosts over 500 registrants, volunteers and media drawing international attention as the conference to attend for advanced technology education in gaming training. With 61 tracks, there is no doubt this conference is needed in this growing industry.

The GameTech Conference promotes the exchange of knowledge, research and ideas about the use of gaming and other emerging facts for education and training across industry, academia and government. This conference draws a wide range of learners from teachers, students, designers and developers across all disciplines who are interested in the creation and dissemination of knowledge about the use of gaming.

“Each year the committee carefully examines the imperative things that are happening in the gaming world, those hot buttons, so to speak, and selects a theme to go along with it,” stated Scott Hooper, (Havok) Program Chair. “While these pieces fall into place, the program committee implements an impressive line-up inviting keynote speakers and panelists to help carry the message to our conference attendees.” This year’s theme

emphasizes serious games, virtual worlds and mobile apps in benefit of the military and civilians who train, educate and improve workforce performance through the use of gaming technology.

Active leadership from Team Orlando is an essential piece of the success of GameTech. The event enters its second year being hosted by the National Center for Simulation and this year's service lead is the Navy. This partnership, along with a strong commitment from academia and industry, makes the conference one of the training industry leading events.

The 2013 GameTech conference has an impressive array of speakers. Confirmation from the following high profile figures in the GameTech sector has recently been named: Nolan Bushnell, Atari Founder; Game Track Keynote Victor Kislyi, CEO of Wargaming.net; Virtual Worlds Keynote Bruce Joy, CEO of VastparkMobile; Gaming Keynote: Dan O'Leary, President of n-Space. In addition to Bruce Joy providing the "State of Virtual Worlds 2013," the agenda will be packed with panels, tutorials and sessions on next generation learners, beyond training, programming, critical thinking and communications pertaining to serious games, mobile and virtual worlds. New this year will be a forum for industry to get a glimpse of what emerging technologies the Services are considering for future training applications.

"The networking that takes place here is exceptional," stated Mike Macedonia, former GameTech program chair. "GameTech is an atmosphere where you interact and learn from thought leaders about the technology and concepts needed to advance education and training. There is a lot of thought given to the people who need these networking opportunities and it provides superb value to everyone."

Another exciting piece of the GameTech puzzle is the announcement of the winner of the prestigious Federal Virtual Worlds Challenge. The annual event is led by the U.S. Army Research Laboratory's Simulation and Training Technology Center. Entry criteria are intentionally unbound to encourage creative results. This year marks their fourth iteration and offers two categories with two grand prizes: The Holodeck – Making it so; and Engaging Learning. Challenge winners will receive cash prizes, potential follow-on work for the government, and travel accommodations to the GameTech Conference.

"What it all comes down to is how can we learn and train in the most effective, efficient manner," stated Tom Baptiste, director, NCS. "We believe that serious games are the best opportunity for our current workforce and our future learners who have been born into virtual worlds and realistic environments. We also believe that GameTech helps bring key people together to share information, tap into unknown resources and enlarge the need for this type of training."

The 6th Annual Defense GameTech Users' Conference takes place April 17-19 at the Caribe Royale in Orlando, Fla. For more information: www.gametechconference.com.

Medical Simulation Training

Peter Buxbaum
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Military Medical & Veterans Affairs Forum
KMI Media Group

Surgical training has long involved the use of simulators. Practicing procedures on human cadavers is a time-honored part of medical training and represents a simulation of sorts. Surgeons have also trained on live animals such as goats and pigs.

The advancement in military medical training in recent years has resulted in the saving of thousands of lives on the battlefields of Iraq and Afghanistan. The skills and success of military medics and surgeons are attributable

to their training and that training has increasingly revolved around the advanced simulators that have been developed in recent years.

Today's simulators feature a realistic look, feel and function to skin, organs and blood. Some are actually designed to be worn by live human actors who can simulate the totality of the patient treatment process.

"The IEDs, poly-trauma, the multiple traumatic amputations that you would encounter in theater can't be replicated for training unless you use simulation," stated Paul Bernal, director of global government business development for CAE Healthcare.

However, the needs of military and veterans medicine are by no means limited to combat casualty care: They run the gamut of medical problems and surgical procedures. The military and veterans medical communities therefore make use of general training simulation as well, such as those designed to train for minimally invasive procedures.

Traditional classroom methods for medical training revolve around textbooks and PowerPoint presentations, noted Dr. Haru Okuda, national medical director for the Department of Veterans Affairs SimLEARN program. "Then the students go to the ward for hands-on training," he said. "Simulations allow a more proactive approach to training. Trainees can then apply what learn the learned on the simulation."

"Training represents a precursor to actions on the battlefield," said Mark Owens, a military strategic account manager at Laerdal Medical, a developer of medical training simulators. "Medics can be presented with realistic training simulations and that this results in better combat care for U.S. warfighters on the battlefield."

"There is a revolution in surgical education that is now underway and that this is being led by the U.S. armed forces," said Dr. Robert Buckman, chief executive officer of Operative Experience Inc. "It's going to have an impact on worldwide health. Simulations allow training midwives to do a C-section in four months or even four weeks instead of four years. This is going to have an impact around the world in areas underserved by health care infrastructures. Simulations rapidly train civilian surgeons to be prepared for combat situations that they rarely if ever encounter in civilian practice."

The use of medical training simulators could reduce or eliminate the need for training on live animals. "A research team at the University of Minnesota is evaluating this situation," said Kit Lavell, executive vice president of Strategic Operations Inc. There is also legislation pending before the U.S. Congress which would eliminate live tissue training by 2017.

"An animal is a simulator of sort because their tissues are great to work with," said Buckman, "but they don't have the same anatomical architecture as humans. Simulators represent as closely as possible the anatomy, tissues and pathologies represented by combat trauma."

But combat trauma is not the only training requirement for the military medicine. "Military and veterans military hospitals and organizations have a wide range of needs and requirements for training," noted Dror Paz, vice president of North American sales at Simbionix USA Corp. "It is not limited to combat and disaster relief." Simbionix specializes in developing and marketing simulators for training practitioners for minimally invasive procedures.

The same logic applies to the VA. "The number of female veterans has doubled over the last 10 years," said Okuda. "Some of our practitioners needed additional training on procedures involving women's health." To that end, the VA has invested in simulations that train practitioners to perform proper pelvic and breast examinations.

Operative Experience Inc. (OEI) recently participated in Operation Bushmasters, an annual training exercise of the Uniform Services University Medical School. "They used our simulators for almost every aspect of training from point of injury to Level 2 care," said Buckman. "We trained in excess of 150 students."

OEI developed its simulators with a Small Business Innovation Research grant from the U.S. Army. “What the Army wanted was a simulator that could provide rapid combat trauma skills training,” said Buckman. “In response, OEI created training courses using high fidelity and anatomically correct simulators with pathology and wound patterns representative of combat injuries. The simulators consist of artificial tissues, including skin, bone, muscle, fascia, blood vessels and nerves that can be operated on with standard combat surgical instruments.”

OEI point-of-injury simulators emphasize training in damage-control and operative management of high velocity gunshot wounds. They enable instruction in, among other things, the vascular control of blood vessels, damage-control shunting of arteries and veins, and amputations. OEI’s head and neck simulator series enables instruction in procedures associated with high-occurrence traumatic brain injuries such as evacuation of subdural hematoma, evacuation of epidural hematoma, and management of fragment penetration of brain.

CAE’s Caesar patient simulator also provides point-of-injury trauma care experience. According to Bernal, “Caesar can withstand harsh environmental conditions, extreme temperatures and body impact.” Moreover, “he is also a dramatic bleeder.” Caesar is also appropriate for placement in areas where a human actor would be at risk. Bernal gives several situational examples: “high-angle rescue, a confined space inside a tank or truck or under a collapsed building.”

Currently, the Department of Homeland Security’s Center for Domestic Preparedness uses Caesar for decontamination training exercises. “We are always working on improving our products,” stated Bernal. “With Caesar, we are adding injuries and writing new scenarios based on the latest health care threats, injuries and mechanisms of injury.”

Laerdal Medical develops simulators that run the gamut of combat procedures applicable both to first responders and to clinicians delivering services at higher levels of care. “Military medical organizations are emphasizing training for the platinum 10 minutes,” said Owens. “Immediate treatment on the battlefield increases survivability. That is where much of our efforts are concentrated.”

Laerdal’s manikins exhibit realistic reactions, such as variations in pulse and eye dilation, to the procedures performed on them. The chest rises and falls appropriately and the manikin emits a hissing sound which shows that a chest needle has been applied correctly in the case of a tension pneumothorax (a sucking chest wound) procedure.

“If the procedure is not performed well the manikin will expire,” said Owens. “The negative result is important because data is captured throughout the procedure. After the session, the instructor can debrief the learner individually or in a classroom environment. If the procedure is performed correctly the mannequin will respond accordingly.”

Embedded in the manikin is a wireless connection that transmits the training session to the instructor’s tablet computer. “Instructors can increase the complexity of the situation remotely from the tablet,” Owens explained. “The training scenarios can be modified and customized based on the needs of the customer.”

Strategic Operations’ Cut Suit is a simulator that is worn by a live human actor. “The product is designed to enable training for care under fire as well as the transition up the echelon of care with battlefield effects,” said Lavell. “The actors and trainees can be put into realistic situations where trainees can learn procedures for combat casualty care for the three most preventable causes of death on the battlefield: hemorrhage, tension pneumothorax and airway blockage.”

The Cut Suit simulates realistic bleeding of the arms and legs and can be supplied with Strategic Operations’ blood pumping system, which can be used to train on the application of tourniquets. “The simulator allows the trainee to stop bleeding without injuring the actor because there is a protective shield between the person and the tourniquet,” said Lavell. “If the tourniquet is not applied properly, the bleeding won’t stop and the patient will bleed out.”

The point of working on a human patient rather than a manikin is to simulate realistic interactions between patient and provider. “You can look into the patient’s eyes, they can cry, scream, act hysterically and even give misleading information, all the things that casualties do on the battlefield,” said Lavell.

Strategic Operations recently introduced a new device called blast pants, which can be used with a live human patent to train on treating groin injuries. The company’s IV and suture sleeve is also used with a live patient. The blood pumping system simulates blood flow with a reservoir and electrical pump and can be used with other Strategic Operations products. The company recently introduced a six-in-one trainer that provides learning experiences for all of the tactical combat casualty care procedures for a variety of head, neck and nasal injuries on a single device.

Simbionix specializes in simulators that train on minimally invasive procedures such as laparoscopies, endoscopies, bronchoscopies, gynecological and endovascular surgeries that are not used on the battlefield. These minimally invasive procedures involve inserting cameras and small tools inside a patient through as small incision rather than performing an operation by cutting the patient open.

“Our simulators are for the operating room environment,” said Paz. “These are used by institutions training physicians and surgeons and by doctors seeking to increase their skill levels increase comfort level, and all together contribute to better procedures outcomes and patients’ safety. The simulators we sell to military medical organizations and VA hospitals are the same we sell to our commercial customers, such as teaching and university hospitals, and are typically incorporated into residency/fellowship and other training programs.”

In this case, computers are integrated into the simulator to offer virtual reality simulation to improve students’ hand-eye coordination, in-depth perception and overall procedural performance. “The trainee will have an experience as close as it gets to real life,” said Paz. “We incorporate haptic feedback technology, which uses the sense of touch to apply vibrations and motions to the training experience.” Simbionix recently added ultrasound and arthroscopy simulators to its repertoire of products.

In 2009, the VA inaugurated its Sim- LEARN program, an effort to standardize simulation across the VA system. “We are looking at the use of simulators in the VA,” said Okuda. “Some of our facilities are being brought up to speed. We are in the process of developing a national skills program and national curricula based on the clinical gaps we have identified within the VA.” One area of emphasis, in addition to women’s health issues, involves airway management.

Some of the simulations are being developed in the VA’s own innovation centers. One recent development has been an avatar that is used to train clinicians in interviewing techniques with geriatric patients.

Dror expects medical simulators to become even more realistic and comprehensive in the future, with more incorporation of haptic feedback as well as three-dimensional depictions and advanced software development. “Computer power is constantly advancing, and that improves the realism of the simulators,” he said. “We also enable doctors to practice on specific patient data through our PROcedure Rehearsal Studio simulator, where doctors can load their specific patient CTA scans and practice on the simulator before performing the actual endovascular procedure in the operating room.”

Owens also expects greater realism from future medical training simulators with improvements in the developments of synthetic tissues, which will further reduce the dependence on live animals. He also expects that the future will see more requirements for simulators from the military medical community, despite the promise of federal budget cutbacks.

“The Army currently has 28 medical simulation training centers around the world,” he said. “They expect to expand to 40 by 2017. The military recognizes that simulation training reduces performance risk.

It enables organizations to better control the pace of training. Instead of having students sitting around in an emergency room waiting for situations to present themselves, they can schedule training for procedures on realistic simulators.

"Simulators are expensive," Owens acknowledged, "but the costs are offset by reducing risk and saving lives."

Orlando's Unique Modeling and Simulation Collaboration Receives National Attention

Terri Bernhardt
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Former President Bill Clinton has acknowledged Orlando on live television as America's example of common-sense economics. The unsolicited pat on the back is a direct result of government, industry and academia working together. "Team Orlando hasn't received a request from the Department of Defense to do business with one another," stated Kent Gritton, director, Joint Training Integration and Evaluation. "The board of directors was formed voluntarily and for the purpose of sharing information, technologies and ideas to save everyone time and money. Team Orlando was formed with the intent of providing the most realistic training our warfighers can receive, second only to the real thing."

Team Orlando is led by an Executive Board of Directors consisting of the senior leaders of the Army, Air Force, Navy and Marines modeling & simulation organizations located in the Research Park. The Executive Board provides cross cutting guidance to the Team Orlando Board of Directors for execution. The Team Orlando Board is composed of members representing all four of the DoD services and other federal agencies such as the Advanced Distributed Learning Initiative, as well as academia through the University of Central Florida and industry by the National Center for Simulation.

During his praise of Team Orlando, President Clinton described the importance of America focusing on the nexus of what the future should bring and how it is vitally important to form partnerships between government, non-government organizations (NGOs) and private industries enhanced with a strong academia research component. The investment of collaboration makes good business sense, producing a stronger product and saving billions of dollars.

President Clinton posed the question, "What good do we want"? Whether it's global warming, curing cancer or cutting our energy bill, we must get it straight from the beginning. He stated that Americans tend to fix things when they get comfortable or when they are in trouble when instead they should, at every income level, maximize impactful thinking in the very beginning. In his opinion, it's time for the government, the private sector and NGOs to strongly look at setting egos aside, trust more and be open to working together.

Why is Orlando receiving the national buzz as an example of success? "Orlando and Central Florida are the epicenter for modeling and simulation," said Tom Baptiste, executive director, National Center for Simulation. "When you combine the power of the Research Park, our close ties between a world class university, industry and Team Orlando DoD commands and organizations, we produce a synergy found nowhere else in the world. Companies who want to be serious players in the modeling and simulation industry need to consider focusing their efforts on Orlando and Central Florida."

President Clinton stated the 190-plus computer simulation companies that have broken ground here and continue to prosper are providing the best possible realistic training in existence. The collaboration of government, academia and industry creates an economic engine that benefits the region, team partners, and

most importantly the warfighter. He closed with this statement: "When groups work together, they are so much more powerful than when they sit around separately and fight about something. It's not ideology, it is hard work with keeping one eye on the competition. This is what America needs. Not mindless, fact-free fighting."

Training for Unmanned Aerial Systems

Henry Canaday
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Unmanned aerial systems (UASs) have played a critical and constantly expanding role in U.S. intelligence and military operations. UASs have increased rapidly in number and their capabilities are constantly being improved. Higher volumes and new functionalities are useless, however, unless there is trained manpower to operate and support these high-tech devices.

Training UAS personnel has been a significant challenge, partly due to the sheer number of UASs, especially smaller UASs. The training challenge has been met mostly by the services themselves, but not without some important help from private institutions.

Training for Army UASs is managed by the U.S. Army Training and Doctrine Command (TRADOC) Capabilities Manager in Fort Rucker, Ala. There are two types of training for operators of small UASs such as the RQ-11B Raven and the RQ-20A Puma: initial qualification and sustainment.

AeroVironment, the manufacturer, originally did all training for Puma and Raven. Rally Point Management now trains for Raven. Initial training for both UASs takes 80 hours over a 10-day span. There are now six small UAS training stations across the U.S., Europe and Afghanistan.

The 2-13th Aviation Regiment, 1st Aviation Brigade, U.S. Army Aviation Center of Excellence at Fort Huachuca, Ariz., trains operators and maintainers for the RQ-7B Shadow, MQ-5 Hunter and the Gray Eagle. Courses take 18 weeks for Shadow operators, 12 weeks for Hunter operators and 25 weeks for Gray Eagle operators. In fiscal year 2012, about 800 operators and more than 800 maintainers were trained.

Maintenance Training

For the Shadow, Hunter and Gray Eagle, preventive and corrective maintenance is field-level maintenance, according to the Project Management Office for Unmanned Aircraft Systems (PMO UAS), Program Executive Office Aviation. Preventive maintenance is predominantly performed by the uniformed unmanned systems repairer, but all UASs use contractor field service representatives (FSRs) to perform repairs that soldiers are not authorized to repair, based upon level of repair analysis. The Gray Eagle is now transitioning to entirely soldier field-level maintenance.

The other level of maintenance for these UASs is sustainment level, which is considered depot-level repair. Depots are currently contractor operated, but both Gray Eagle and Shadow are transitioning some work at contractor depots to the government depots.

Soldiers are trained in UAS maintenance at the UAS training facility at Fort Huachuca, with advanced and senior level training conducted at Fort Rucker and supplemental training performed at the unit. FSRs are trained by the contractor, as each prime contractor currently provides FSRs and depot operations.

PMO UAS emphasizes that the Army has created a military occupational specialty, MOS 15E, unmanned aircraft systems repairer. These soldiers are responsible for the upkeep of Army UASs.

In June 2006, the Army Aviation Center (USAAVNC) was given responsibility for UASs that had belonged to the Army Military Intelligence Center. Previously, UASs were maintained by MOS 33W, UAV electronic maintenance specialist, combined with other MOS 33s: MOS 35T, military intelligence systems maintainer/integrator and MOS 52D, generator repairer/UAV mechanical maintenance specialist. Each had an additional skill identifier, U2- for Shadow and U3- for Hunter.

After transfer to USAAVNC, UAS repairers were initially drawn from three existing aviation branch MOSs: 15B, aircraft power plant repairer, 15G, aircraft structural repairer, and 15J, aircraft armament electrical avionics. It was later determined that MOSs 15B and 15G were not required, and 15J now feeds into 15E, UAS repairer.

The first class of 15E maintainers graduated September 24, 2010. Fort Huachuca is the premier training institution for MOS 15E, while advanced and senior leader courses are conducted at Fort Rucker.

Basic 15E instruction contains seven modules: enabling skills, basic electricity, theory, emplace and displace procedures, maintenance, flight operations and troubleshooting. This basic instruction takes 16 weeks.

Shadow remains the foundation training platform. Soldiers may receive additional instruction depending upon Army requirements and unit selection. For example, Hunter repairers must undergo approximately 10 additional weeks of training beyond the foundation received on Shadow training, and Gray Eagle repairers must get 18 more weeks beyond their Shadow training. The more advanced UAS platforms require additional training due to complexity.

Today, the 15E maintainer performs tasks that were previously done by three soldiers, PMO UAS stressed. “Through adept, robust and comprehensive training, the Army has increased training efficiency and buying power by providing one highly skilled warfighter capable of maintaining the entire spectrum of Army UASs.”

No simulations are currently used for UAS maintenance training, but there are plans to use simulation devices in the future.

Private Efforts

Private firms and institutions play a significant role in supporting and training for UAS operations. Several of these are eager to do more, as UASs become even more critical to defense operations.

With 140 employees in 16 states, veteran-owned Bosh Global Services has four core competencies, according to CEO Bob Fitzgerald. There is a communication service, an engineering division that provides expertise to Bosh field personnel, aviation services in the form of pilots and sensor operators and an intelligence, surveillance and reconnaissance services.

“We can do anything except build the UAS,” Fitzgerald summarized. “We can help customers take off-the-shelf UASs and tailor them to individual needs.”

Bosh also does training and is the first and only company selected by the Air Force Academy for UAS training of cadets. “We were the first non-manufacturer selected by Air Force Special Operations Command (AFSOC) to teach small UAS operations,” Fitzgerald said. “We developed the curriculum and teach operational employment.” The firm trains on Puma and Raven for AFSOC.

Bosh training programs include UAS and ISR academic courses and the practices of all core UAS flight-operation tasks supervised by a UAS instructor. The company develops courses and uses technologies such as computer-based training and distance learning.

Courses are taught in UAS roles and missions, orientation on the aircraft, sensors and antennas, UAS employment concepts, reconnaissance techniques and electro-optical/infrared (EO/IR) sensor basics. UAS flight training includes system setup, preflight procedures, aircraft handling, basic sensor operation and basic autopilot operation.

Bosh does not yet train in UAS maintenance. “That is the last element; we can do it, but we don’t do it,” Fitzgerald explained. “It is low margin. There are lots of maintenance folks. We focus on the higher end, complex operations and intelligence.”

Bosh hires top people and is seldom the least expensive training option, Fitzgerald acknowledged. “We provide the kind of people that we think the customer needs.” He hopes this high-quality model will survive as budget pressures eventually hit UAS support.

Bosh is establishing a company to serve the commercial UAS market.

Simlat Product Manager Nira Streifler said her company provides a full range of UAS and ISR training and simulation products from fundamentals all the way up to advanced-mission rehearsal training. “Simlat products are either platform-agnostic or highly customized to specific platforms and payloads,” Streifler explained.

The Simlat UAS Stand Alone Trainer (STAR) trains UAS pilots and operators in a synthetic environment. The STAR product family includes STAR-RDR, used to train UAS radar operators. STAR-EO/IR trains EO/IR payload operators or image analysts. STAR-OPR trains UAS pilots and operators. Simlat’s CATCH (Camera Advanced Trainer for Crime and HLS) provides high fidelity simulation of scenarios in various environments, suitable for city applications, to train camera operators, supervisors and directors. The Simlat TALIS (Take-off and Landing Immersive Simulation) provides high-fidelity training for UAS external pilots, training on take-offs and landings. The Simlat C-STAR (Crew Stand Alone Training and Simulation) trains both pilot and sensor operator simultaneously.

These are just a few of the highly sophisticated simulation and training tools the Israel-based Simlat offers for UASs. “These are very high-fidelity simulations of platforms, payloads and sub-systems covering complete mission aspects,” Streifler said. Flexible, modular architecture enables easy customization and integration of Simlat simulators with other simulators. Simlat devices also offer advanced debriefing tools for excellent standardization of training and qualification of students.

The company is now working on integrating air traffic control simulation for UASs, simulation of complex UAS sensors and improving its after-action review technology.

Simulations For High-Tech UAS Training

MetaVR’s Virtual Reality Scene Generator (VRSG) generates simulated payload videos for UAS training. The company is the largest supplier of UAS commercial three-dimensional visualization software for the U.S. military.

MetaVR software has been used in several new training efforts this year. For example, AAI purchased 51 new VRSG licenses for use in its universal ground control system, designed to command and control multiple UASs simultaneously. Since 2002, AAI has purchased over 450 VRSG licenses for its embedded Shadow Crew Trainer One System Ground Control Station. These licenses support embedded trainers for AAI’s Hunters, Shadows, Aerosondes and Gray Eagles.

The U.S. Air Force Distributed Mission Operations Center at Kirtland Air Force Base has received 17 new VRSG licenses and computers for use in a Joint Terminal Attack Controller (JTAC) operational simulation suite, used for JTAC training. Eleven VRSG licenses will be installed at several Air Support Operations Squadron sites.

Embry-Riddle Aeronautical University (ERAU) is building a new UAS simulation and training laboratory in Prescott, Ariz. ERAU has purchased four VRSG licenses and five Battlespace Simulations (BSI) Modern Air Combat Environment (MACE) licenses for its UAS simulation system, to be used in classes in the fall 2012. ERAU’s Daytona Beach campus already offers a B.A. in UAS. ERAU Prescott offers a UAS minor and plans to offer a UAS major in a few years.

Finally, Sandia Research Corporation uses VRSG in its UAS research project. Combining VRSG and BSI MACE, Sandia engineers recently built a research test bed, SimSystem, which monitors the behavior of pilots, sensor operators and data exploiters as they fly missions in a shared virtual environment.

Leadership Insight

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Captain Steven "Snak" Nakagawa, a native of Monterey, Calif., and the son of an A-6 Intruder naval aviator, was commissioned in 1986 through the Naval Reserve Officer Training Corps program at the University of Southern California, where he earned a Bachelor of Science degree in mechanical engineering.

He was designated a naval flight officer in April 1988 following flight training in Pensacola, Fla. He received bombardier/navigator (B/N) training in the A-6 Intruder with the "Golden Intruders" of Attack Squadron One Two Eight (VA-128) at Naval Air Station Whidbey Island, Wash., where he earned "Top Bombardier" honors during the Visual Weapons stage of training.

During his career, Nakagawa flew in A-6 Intruders with Attack Squadron Nine Five (VA-95) "Green Lizards" where he completed three deployments aboard USS Enterprise (CVN-65) and USS Abraham Lincoln (CVN-72). He served as an instructor B/N with Fleet Replacement Attack Squadron One Two Eight (VA-128). In January 1996, Nakagawa reported to the final A-6 squadron in the Pacific Fleet, Attack Squadron One Nine Six (VA-196) "Main Battery," deploying aboard USS Carl Vinson (CVN-70).

Nakagawa graduated from the U.S. Naval Test Pilot School at NAS Patuxent River, Md., and was subsequently assigned to the Strike Aircraft Test Directorate from January 1994 to January 1996. While there, he was the test project officer for various avionics and weapon systems on the A-6, F-14 and F/A-18 aircraft.

Transitioning to the EA-6B Prowler aircraft as an electronics countermeasures officer, Nakagawa was assigned to "Scorpions" of Tactical Electronic Attack Squadron One Three Two (VAQ- 132) in March 2000. During two deployments, he flew combat missions from the USS Dwight D. Eisenhower (CVN-69) and as electronic attack embedded support with U.S. Air Force and Coalition Air Expeditionary Forces at Prince Sultan Air Base, Saudi Arabia.

Nakagawa transitioned to the aerospace engineering duty officer (AEDO) community and held various positions at Naval Air Systems Command (NAVAIR) NAS Patuxent River from March 2000 to October 2005. Serving in the EA-6B Program Office (PMA-234), he was assigned as the assistant program manager for program integration and as the deputy program manager for EA-6B Connectivity & Navigation Systems. He then served as the NAVAIR (AIR-4.1) chief engineer and the deputy program manager for the Joint Air to Surface Standoff Missile in the Precision Strike Weapons Program Office and as the assistant chief of staff to the Program Executive Officer for Strike Weapons & Unmanned Aviation.

In October 2005, he was detailed as the AEDO assignments officer for the Navy Personnel Command (PERS-43) at Naval Support Activity Mid-South in Millington, Tenn. During this assignment, he headed up acquisition selection processes for all Naval Aviation command screen boards.

Nakagawa was then assigned to the Space and Naval Warfare Systems Command in San Diego, where he served as director, Launch Systems Division in the Navy Communications Satellite Program Office, Program

Executive Office, Space Systems (PMW-146); and as the chief of staff to the Program Executive Officer for Command, Control, Communications, Computers, and Intelligence.

Nakagawa served as the executive officer of Naval Air Warfare Center Training Systems Division (NAWCTSD) for two years prior to assuming command in June 2012.

Nakagawa has more than 2,700 flight hours in 23 different types of aircraft, with 652 carrier arrested landings. His decorations include the Meritorious Service Medal (three awards), Air Medal (four Strike/Flight awards), Aerial Achievement Medal, Navy Commendation Medal (three awards), Navy Achievement Medal (three awards), and various campaign, service and unit awards. He has a Master of Science degree in aviation systems management from the University of Tennessee Space Institute and is a member of the Defense Acquisition Corps.

Q: What are the roles and responsibilities of Naval Air Warfare Center Training Systems Division [NAWCTSD]?

A: At NAWCTSD, we are the Navy's primary center for research and development, test evaluation and acquisition of the Navy's training systems. We're not the sole provider of training systems for all Navy, but [we're] the one warfare center the Navy has that specializes in modeling and simulation training systems. In addition to the Navy, we also have a mission to do interservice coordination with the Army, Air Force, and of course the Marine Corps. With the Marine Corps, the Naval Air Systems Command, that's our overall umbrella command. They do all the Marine Corps aviation, which is Naval aviation. This includes Marine Corps systems.

Q: What are the primary challenges NAWCTSD faces in achieving its goals and mission?

A: Well, this might be the same story you get from all government organizations, but [the primary challenges are] baby boomers and brain drain. We've got somewhere around half of our workforce either eligible to retire now—or [they] will be in the next five years. That's been a governmentwide problem for a while. Our task is to try and get those incredibly intelligent people with lots of knowledge capital, and somehow transfer that information down to our newer folks. We don't have a lot of journeymen-level folks; we have a lot of the expert level, artisan level folks eligible to retire, and then we've brought in a new class of beginners, or apprentice level folks, and we need to transfer that knowledge. We're dedicated to leveraging off a learning organization effort. We're implementing some culture changes to get people to really be an active part of an organization that learns from itself, passes that information around very well and then gets better because of it.

Budget can always be considered a challenge; however, I think—and I think many people in the modeling and simulation and training industry believe—that because we can do training that is absolutely positively always required for our warfighters, because we can provide training solutions cheaper, and in most cases better, by using simulation and virtual systems, [even] if budgets decline we will always need training systems. Therefore, we will always leverage modeling and simulation to do those kinds of things.

Q: How important is NAWCTSD's partnership with industry?

A: I would say critical: It's absolutely, positively, required. We are an acquisition organization for the Navy. In small cases, we need to prototype devices—either because of the time to fleet speed requirement or because it's just an area of scientific technical expertise that maybe we have but industry doesn't have readily available. In most cases, the systems that we acquire are through industry, because they have all the small business 'ma and pa' shops that come up with all these fantastic ideas. Then [there are] the large modeling, simulation and training organizations. In many cases, they are integrators and then hire on sub-vendors, or they do it all themselves. But anytime we're talking about large training systems, it's typically through industry.

Q: How do you see training at NAWCTSD evolving with conflicts in Iraq and Afghanistan coming to a close?

A: No matter what, with wartime or peacetime, the Navy is inherently a deploying organization, so our job is to provide training systems, and training will always be required for the Navy. And in fact, in many cases you do a

lot more training in peacetime than in wartime. In wartime you're actually operating the stuff you've been training for all along. As far as I'm concerned, there will be little to no decline in our training requirements.

Q: What is the process of developing standards for training systems at NAWCTSD?

A: Before we get to standards across joint services, to start with, we're always looking out in the future trying to figure out how people learn. Part of that is that is how people like you and I learn today, but people of the future [will not be] learners like you and me. Younger people than us even today learn in a whole different way, so we're also looking at future learners and trying to figure out the next technology that will help them really understand the knowledge, skills and abilities we're trying to get them to take on board. Our science and technology folks are doing the science of learning. We've got a lot of people who work very closely with the Office of Naval Research, and they're always trying to figure out smarter, better ways to train that person of today and that person of tomorrow by doing the science of learning part. How does a brain process the stuff that we're trying to put into it?

If I could give a couple of examples, [one] of the areas where we get into that is what we call adaptive training. In either adaptive training or adaptive instruction, there's an area we call Adaptive Training for Combat Information Centers. That's kind of a science project that we're doing to see if we can make some near real-time assessment of how a trainee is performing, and this is using combat information centers. It's like somebody that's running the war looking at a big screen looking at a god's eye view of ships, airplanes, submarines and ground forces and determining what the next step is, the next chess move in the battle. So evaluating what those moves are and then changing the scenario on the fly with an intelligent computer to leverage either his smarts and make him go even harder, or help him out in areas where he's weak and then adapt a scenario to help him understand what he did not understand before. It's kind of a heuristic learning system that integrates with the person to really train them smarter than a system that doesn't have any changing ability to it.

That's one area. The other area is in a classroom environment: intelligent tutoring. There are intelligent tutoring systems, because we know that somebody learns better when they have a human tutor who's focused just on them, who can determine if someone [learns better] based on visual things or by reading a manual. [We are] leveraging those capabilities. Then, what are their capacities to continue to take on more stuff? There are computer programs that are intelligent tutoring systems that use this method—they call that the Socratic method of teaching—to come up with ways to make weaker students better and the stronger students have a chance to continue to excel. It's kind of like putting our kids into advanced programs at school so they don't get held back with the rest of the class.

Q: How does NAWCTSD support international customers in terms of coordination and training systems?

A: We have an International Programs Directorate at NAWCTSD, so whenever requirements come in through various entities that could be the Department of State, the Navy International Programs Office, etc., there are all sorts of different areas that come up with requirements for international customers. Once a government organization tasks us with providing some training system to those customers, we work directly with those customers to identify the requirements and see if there's any kind of a current solution that we already have. For example, an aircraft that the Navy might have that's a foreign military sales aircraft—whether it's an F/A-18, H-60 or P-3, something like that—we ask ourselves— do we have training systems that we can leverage already? We have government off-the-shelf systems, but then of course you have release requirements. So you have to look at what software you have currently and what configuration that training system should have to best serve that international customer.

Q: In what way is NAWCTSD involved with interservice training systems support for the Marine Corps, Army, Air Force and Coast Guard?

A: We have an organization called Team Orlando. Partially because of co-location but mostly because of our strong desire to leverage each other, we have created a little Silicon Valley of modeling and simulation down here where the services, academia, the industry folks and the local federal government have all come together to share information that they have, ideas and even systems they have to pass that along to the next service or next organization. As an example, we have a training system that trains say a Marine Corps forward air controller. Say he's on the ground behind sandbags but he's got these visual system displays in front of him and he's got a radio box [with] a voice recognition system that's been designed, so he says commands into this radio, talking to the airplanes that he sees in his visual system flying around him. If the commands are not clear or not properly stated, it's not understood by the computer system, so it's training him to make sure he says it succinctly, loudly and with the correct expressions. Then he sees the aircraft coming in; he clears them hot, he marks the spot and the aircraft in the simulation will drop ordnance on the target. So the system that was designed has been passed back and forth and can be used for all services. It's just an example of how once we figure something out for one of the services, in many cases the other services have a very similar function that they perform.

That's very true of course in the Marine Corps ground systems and the Army ground systems; there are a lot of commonalities. Same commonality with aircraft in some cases, in others not, but because we're trying to do this smarter, more affordably with speed to the fleet, which are two of our primary directions heading within the Naval Air Systems Command. So the three areas are affordability, speed to the fleet and the third area is interoperability and integration. That third area is exactly what I'm talking about when we're trading similar training systems with other services, when we have to interoperate with those same services in wartime. If we have trained on very similar or the same training systems, obviously that will help us out in that interoperability and integration.

Q: Are there any new programs or initiatives set to be implemented in the near future?

A: The things I was talking about—the adaptive training systems, the intelligent tutoring—those are science of learning [programs], but those are projects that will in fact be transitioned and delivered to the fleet customers. Another example is just like the adaptive training for the CICs [Combat Information Centers]: adaptive training for submarine navigation and piloting. It's the same type of thing—adaptive training for periscope use, adaptive training for sonar operators. It does similar things with the computer model and leveraging our understanding of the science of learning. We've got a bunch of Ph.D. science of learning folks running around the building who are doing these types of projects to figure out what the next thing that we're going to field is.

Behind Enemy Lines

Brian O'Shea
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Flying over enemy territory or hostile environments carries many risks, but being shot down or forced to land puts the pilot in a whole new kind of jeopardy. Survival, evasion, resistance and escape (SERE) water survival training can mean the difference between life and death, and the U.S. military takes training to mitigate that threat seriously.

One of the largest schools where water survival SERE training is taught is Fairchild Air Force Base, Wash. There, the 66th Training Squadron conducts a non-ejection water survival course, which trains aircrew members of non-parachute-equipped aircraft, said Senior Airman Craig Allan Maertens, 66th Training Squadron, an

SERE specialist. This training includes lessons such as techniques in signaling rescue aircraft, hazardous aquatic life, food and water procurement, medical aspects of water survival and life raft procedures. Instructors train thoroughly and keep a vigilant eye as their students learn the methods of water survival.

There are two courses of water survival training offered at Fairchild, including SV90, a two-day course to prepare aircrews for ditching their aircraft at sea, getting into a life raft, and staying alive until they are recovered in the open ocean. Students are taught what to do inside a life raft, how to take care of personal needs, and how to get recovered. Academic and hands-on training are taught on the first day. The second day is dedicated to training scenarios, such as throwing students into a variety of environmental conditions using the Modular Egress Training System (METS) and having them actually egress, or escape from, the simulated aircraft.

SV84 is a one-day course dedicated to underwater egress, primarily focusing on rotary wing aircrew that have the possibility of egress with the aircraft flipped upside down in the water or underwater completely. They are taken underwater in the METS and flipped upside down. Then, they must endure an air reference release sequence to escape through a window and get to the surface of the water by using compressed air systems to breathe (helicopter aircrew breathing device, survival air egress bottles).

Technology Used

“In the training we offer here, the facilities technology has been the forefront of what makes this training realistic,” said Maertens. “Training is done indoors, so technology is included in almost every aspect of training. Our facility is filled with technology, from the pool being able to drain 1.5 feet into a holding tank to compensate for larger waves so they don’t crash over the walls of the pool, to the crane system [that is] capable of lifting all of the environmental effects and carries the METS. The METS has a lot of technology in itself, allowing it to be completely submerged and rotate underwater.”

A crane system has two rescue hoists and a main hoist to lift heavy objects and environmental effects weighing up to 24,000 pounds, said Maertens. The hoists are used to lift students up to the METS during the recovery portion of the training supported by the crane system.

“The purpose of everything is to essentially create a mock storm environment within the pool itself,” added Maertens. “We have rain and mock rotor wash coming down from the ceilings, simulated lightning, sound effects to create thunder, aircraft noise, etc. We also use radio systems during training and scuba equipment.”

The crane, blackout shades and all of the environmental effects are controlled from a remote system. The first thing they do in the morning is lower the pool level to allow for larger waves so they crash over the walls of the pool. They also have a wave ball that has a piston that displaces water, creating high swells in the pool up to 3 feet high. To add more environmental effects, they have a fan that creates wind over 40 knots.

“The technology that the students use is really limited to the radios,” said Maertens. “Students are taught key principles for rescue signaling and recovery when dealing with the open ocean and loud noises.”

The biggest challenges instructors face are getting to know all the logistics behind everything and working out the kinks to create a course that flows smoothly with all the pieces, equipment and setup, said Maertens. The challenges for the student depend on their comfort level in the water and their water confidence.

A provider of equipment used in this type of training is Survival Systems USA, which has training facilities at the Allison Aquatics Training Facility, Fort Campbell, Ky., and the HOST Training Facility, Fort Rucker, Ala.

The Survival Systems products utilized at the Fort Rucker HOST Facility include the METS Model 40 configured for UH-60, MH-47, OH-58 aircraft specific exits; the Apache METS with both the pilot and gunner modules, including stroking seats; and the Cross Gantry Hoist (XGH) with the NAVFAC P-307 compliant system and fully manlift compliant. They also provide the Shallow Water Egress Trainers (SWET), said Anthony Dickens, contract manager, HOST Facility, Survival Systems USA.

These products are designed to provide the student with several advantages in training. Initial procedural training in a SWET provides the basics of the underwater egress steps that must be taken by the student in order to successfully egress: breath hold exercises, emergency breathing device (EBD) exercises and lights on/black out conditions. They also provide full disorientation training in the METS/Apache METS utilizing the XGH lifting system with breath hold exercises, EBD exercises, cross cabin exits and lights on/blackout conditions, said Dickens.

The Survival Systems line of products is currently utilized in over 26 countries by both civilian and military agencies that have overwater flight requirements.

The Survival Systems methodology of training is founded on three principles, the first of which is safety education. “It’s not just getting the skill set down—it’s understanding why the skill set is important, and acknowledging risk factors that would typically not be considered,” said Dickens. “Training must address the real-world situation, not the simulation. [It must] teach people to consider how to egress the aircraft and the challenges there—not just ‘how to get out of the simulator.’”

The second principle is training technologies. “The equipment replicates the actual aircraft equipment, such as exits, seats, harnesses, configuration and risks. It must look, feel, operate and be realistic in relative measurements, to the reality of fleet aircraft,” Dickens added. “The modularity of the equipment allows it to keep pace with everchanging aircraft configurations and fleet turnovers in airframes.”

The last principle is applied research and development, which includes ongoing processes for determining the effectiveness of the education and technology aspects and how they are utilized in tandem to successfully train an aviator.

Survival Systems’ equipment was not developed specifically for SERE.

“We do this commercially around the world for both civilians and military agencies alike,” said Dickens. “The challenge for SERE will be in ensuring that the equipment complement in training remains current with the aircraft fleet available, especially as new aircraft are fielded, or different variants come into theater.”

SERE training can benefit significantly from an upgrade to the facility, or a shift to a new facility, that would allow incorporation of a full environmental training theater—including waves, wind, thunder, lightning, rain and downwash—and the ability to expand the HOST program beyond just underwater egress training, said Dickens. This can include wet-silk training along with a myriad of other applications in real environmental conditions. The 160th SOAR has been utilizing a Survival Training Simulation Theater (STST) from Survival Systems since 2008. The USAF has likewise been using an STST since early 2012. The U.S. Coast Guard (USCG) will begin training delivery in their STST in February 2013, and there are two other STSTs currently being utilized overseas by military and civilian agencies.

“SERE could likewise benefit from joint service training utilizing the HOST facility, but not limited to an aircraft METS,” said Dickens. “Survival Systems recently delivered the world’s first Rescue Boat Dunker to the USCG for their rescue swimmer facility. The possibilities for SERE with an STST are unlimited, if considered outside the scope of just “aviation dunker training.”

Training and Technology

Lt. Gen. Mick Bednarek, Commander, First Army
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On any given day, thousands of Reserve component (RC) soldiers are undergoing rigorous training prior to deploying for missions in Afghanistan, Kosovo, the Horn of Africa and Guantanamo Bay, to name a few. With training costs soaring and operational/training budgets diminishing, RC units are facing new challenges in accomplishing all of the required tasks to prepare them for worldwide deployments. The solution for many RC training challenges lies in the current design and conduct of the Army's Live, Virtual, Constructive, Gaming - Integrated Training Environment (LVCG-ITE) strategy.

First Army is the executing agent for RC training and has embraced its role and responsibilities for LVCG-ITE training as the Army's training enabler supporting the longterm readiness of our nation's RC forces, which now represent more than 51 percent of the Army. As such, First Army serves as the Army's RC collective training technology integrator. It leverages blended training techniques, simulations, skilled enablers and the ITE infrastructure to assist in achieving specific unit training objectives.

The Army's ITE prepares soldiers for decisive actions by replicating the operational environment in three training domains: operational, institutional and self-development. The ITE does this by linking selected training aids, devices, simulators, simulations, infrastructure, mission command and knowledge management systems together into a training scenario framework. The result for leaders and trainers is a more realistic learning environment for the soldier.

First Army's LVCG-ITE objective is to enhance RC unit readiness through technology while evolving from singular focused training devices to an ITE which facilitates rapid integration of ready RC units. To accomplish this, First Army continuously trains and educates its personnel on LVCG capabilities, training concepts, exercise development and training enablers. It incorporates LVCG concepts and enablers into training events for allocated [formerly known as Deployment Expeditionary Force (DEF)] units while advising and assisting RC apportioned [formerly known as Contingency Expeditionary Force] units in developing integrated training plans that use LVCG training systems and enablers.

During the past 11 years of training mobilized RC DEF units, First Army used LVCG simulations in its training support. For example, it used the time-honored live training simulation, where soldiers use equipment, technology and systems in a real environment to conduct squad and platoon tactical training in the field. It used virtual trainers, such as Virtual Combat Convoy Trainer (VCCT), to train drivers and gunners of various systems. For training battalions, brigades and divisions, it conducted constructive exercises using large scale battle simulations systems such as joint conflict and tactical simulation. It used an Army game called "America's Army" to teach innovative leaders small unit procedures and tactics.

The Array of Technology

First Army employs its simulations in a blended fashion whenever possible. Blended training combines traditional and electronic training techniques to offer greater flexibility to leaders and units in terms of location, duration, timing, costs and feedback methods.

In training unit staffs with command post exercises, staff exercises and culminating training events, all of the simulations that stimulate the unit's command post devices, such as the Army Battle Command Systems (ABCS), are integrated into exercise federations that connect the simulation data to operational mission command systems across the exercise network. Typically, this federated system might consist of a tactical simulation to work with the intelligence system Defense Common Ground System-Army, a Joint Deployment

Logistics Model (JDLM) for the logistics system Battle Command Sustainment and Support System, an extended air defense simulation for the air and missile defense work station, and a fires simulation for the advance field artillery tactical data system.

When training individual soldiers or small units, First Army determines which of the many virtual simulations to use based on the unit type and mission. For example, the engagement skills trainer or the fire arms training simulator is used to train or practice small arms firing. The Laerdal SimMan is used to train soldiers in basic first aid and combat lifesaving skills and to help medical professionals sharpen their clinical skills. The Call for Fire Trainer is used for artillery call-for-fire training. They are also exposed to the Virtual Combat Operations Trainer that trains convoy procedures and defensive engagement. The Mine Resistant Ambush Protected Egress Trainer (MET) trains soldiers on how to escape from vehicle rollovers. The Close Combat Tactical Trainer teaches small unit tactical operations.

The Counter-Improvised Explosive Device (C-IED) mission has generated several simulations that are used extensively in First Army training. For example, the Mobile Counter- IED Interactive Trainer introduces the various types of IEDs and familiarizes soldiers with how insurgents use IEDs. The Route Clearance Virtual Trainer Service trains soldiers on route clearance procedures. The Reconfigurable Vehicle Tactical Trainer enhances vehicle crew counter-IED skills with virtual exercises of increasing complexity. The addition of the Laerdal SimMan and the Virtual Battlespace 2 (VBS2) simulations to these C-IED specific simulations provides a highly effective training course for soldiers.

The menu of simulations is large, and the challenge for training managers is to match the simulation capabilities to the unit's mission and training objectives. For instance, while training the 38th Sustainment Brigade, Kokomo, Ind., for mobilization and deployment, First Army trainers used the virtual simulations EST and VCCT, and the constructive simulation JDLM. Whereas, during the mobilization and training of the 29th Infantry Brigade Combat Team, Kalaeloa, Hawaii, Security Force Assistance Advisor Teams, considerable use was made of the virtual simulations VCCT, MET and HMMWV Egress Assistance Trainer.

Critical Technology Enablers

First Army leverages the expertise of several agencies to enhance its training of RC units.

The Army Reserve's 75th Training Division (Mission Command) from Houston provides LVCG and ABCS expertise and manpower at mobilization force generation installations (MFGIs) Fort Hood, Texas; Fort Bliss, Texas; Camp Atterbury, Ind., and Camp Shelby, Miss. Other elements of the 75th Division assist the training brigades with exercise planning and control.

The Command Post Staff Support Branch of the Combined Arms Center-Training at Fort Leavenworth, Kan., often participates in training and exercises for battalion, brigade or division staffs.

The Training Brain Operation Center provides simulated Combined Information Data Network Exchange input using sanitized versions of events from current operations.

The Mission Command Training Program from the Combined Arms Center at Fort Leavenworth conducts a constructive warfighter exercise for a National Guard division staff and for several BCT staffs each year.

Facilities located at many active component and RC installations, called mission training complexes (MTC), provide expertise and LVCG resources for individual and unit training support. MTC facilities have the simulations mentioned above plus the Operator Driver Simulator, Aviation Combined Arms Tactical Trainer, and VBS2.

Army Technology Initiatives

As fewer RC units are mobilized for deployment, more of First Army's training support efforts will focus on apportioned units. The soon-to-be-published Army Training Strategy provides for a greater investment in

versatile home station training, combat training centers, and training support systems, while holding commanders responsible for training their units in both a fiscally and time constrained environment.

RC units require access to LVCG capability close to their home stations because most are far from active or reserve MFGIs and they have limited training opportunities throughout the year. The Army has several LVCG initiatives underway to help:

The 75th TD (MC) is building a system to support home station staff training exercises by interconnecting a unit's live tactical systems (CPOF, AFATDS, etc) with simulation, stimulation, and gaming systems (JDLM, VBS2, etc.) at Army MTCs. This system should be operational in early 2013.

The Army Low Overhead Training Toolbox (ALOTT) is a suite of simulations that fill the gap between the commander's capability to train unit staffs at home station with scarce resources and the large scale constructive exercises that require large overhead in terms of manpower, facilities and equipment. The ALOTT is currently being fielded at 10 locations including two RC locations at the 75th TC (MC) and Camp Dodge Iowa.

The Regional Simulation Center will be part of the global simulation capability but will be focused on division and below. This system will provide simulation support to MTCs from a central location.

As we begin to conclude the war in Afghanistan, and as the defense budget tightens, it is critical that we continue to train RC soldiers to the highest standards while conserving vital resources. The Army's LVCG-ITE strategy is designed to do that. It supports units conducting major combat and stability operations training, expands mission command training opportunities, enables multi-echelon training and facilitates home station training.

RC units will see a phased integration of the ITE, improving the commander's ability to more easily integrate LVCG capabilities into training and allowing units to achieve levels of training realism never before reached at home station. Army investments in the LVCG-ITE will assist RC unit commanders in moving from blended training solutions to truly integrated solutions that are holistic, persistent, consistent and available 24/7, yielding lower costs and improved training outcomes. With ITE, units will reach higher levels of proficiency before entering live training environments. First Army is postured to promulgate the Army's LVCG-ITE strategy to enhance unit readiness and facilitate the rapid integration of ready RC units in support of future Army requirements. ♦

Clyde L. Williams, Chief, Exercise Branch, G3 Training Division, HQ, First Army contributed to this article.

First Army mobilizes, trains, validates, deploys and demobilizes all Army National Guard and U.S. Army Reserve forces throughout the continental United States, providing trained and ready forces for diverse missions worldwide. For more information, visit our website at www.first.army.mil.

Construction Training

Brian O'Shea
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Driving a front loader is not as simple as driving your car. When projects need to be done, they need to be completed by deadline, and always with safety as a top priority. Mistakes made while transporting heavy loads can not only endanger the entire crew on site, but they can be costly. When the U.S. government acquires

equipment from industry with tough construction jobs in mind, industry ensures that our military and government personnel know how to properly use the equipment.

One of the biggest players in the construction equipment arena is Caterpillar Inc. Caterpillar is the largest supplier of construction equipment to the U.S. military, said Lieutenant Colonel (Ret.) Janet Kirkton, Army account manager, defense & federal products, at Caterpillar Inc. Caterpillar Inc. products include backhoe loaders, hydraulic excavators, dozers, wheel loaders, motor graders, wheel tractor-scrapers, multiterrain loaders, track loaders, soil compactors, asphalt compactors, pneumatic compactors, asphalt pavers, water distributors, articulated trucks, off-highway trucks and customized deployable earthmovers. Caterpillar also provides a purpose-built 10K adverse terrain forklift.

The primary users of Caterpillar construction equipment are the engineer and logistics units within each of the four primary services within the Department of Defense, which includes the U.S. Army, Air Force, Navy and Marine Corps, said Kirkton.

As Caterpillar's sole licensee for simulators, Simformotion LLC offers many Cat simulator systems for construction: hydraulic excavator, dozer, wheel loader, motor grader, scraper and off-highway truck. These products feature actual machine controls, realistic 3-D graphics and deformative terrain, said Melissa Moore, director of government sales, Simformotion LLC. Several models also come with companion eBook training on an iPad. Cat simulators are also used by all four primary services.

For each machine program of record, Caterpillar Defense and Federal Products Division provide new equipment training (NET) to both the heavy equipment operators and the mechanics that service the equipment, said Kirkton. Caterpillar Equipment Training Solutions has a host of instructor-led training courses, as well as online courses, available through Caterpillar University.

"In concert with the new equipment fielding plan, Caterpillar Defense and Federal Products Division schedules NET directly at the unit level," said Kirkton. "Units must complete NET prior to receiving any new equipment."

In order to reduce costs, increase safety and improve operator efficiency, military personnel use Cat simulator systems in support of both new equipment and unit training.

For new equipment training, military personnel utilize the simulators to master the controls and applications before operating the actual construction equipment. Training scenarios are self-paced; this allows personnel to train and retrain as necessary, at a fraction of the cost of operating real equipment, said Moore.

"Many types of construction projects take place at home and on foreign land and personnel must be ready to execute a wide range of construction tasks," she added. "Cat simulator systems enable units to train on basic construction tasks at anywhere, anytime, and in all weather conditions."

Cat simulator systems have many features, which make them a critical component to an effective training program, said Moore. First, the training modules are written to support the same performance standards as Caterpillar's instructor-led training for heavy equipment operators. As a result, personnel are trained to standard from the first moment they sit on a Cat simulator system. Second, each simulator system contains a comprehensive machine walk-around module, with dozens of inspection points. These are the same inspection points that Caterpillar recommends within the machine operation and maintenance manual. Third, Cat simulator systems use the same controls as the actual machines, ensuring the operator gains appropriate muscle memory during the controls familiarization module. Lastly, the training scenarios enable the operator to learn and master all the basic skills associated with routine construction applications.

Also using simulations to reduce cost while providing comprehensive training for a variety of construction equipment are Ngrain's Virtual Task Trainer (VTT) solutions, which enable the U.S. military to cost-effectively enhance maintenance training for any equipment, and have been leveraged for a range of construction equipment, said Josie Sutcliffe, vice president of marketing, Ngrain.

"For example, the U.S. Army Engineer School at Fort Leonard Wood is achieving significant cost savings using Ngrain's interactive 3-D simulations to enhance brakes system training for M917 dump trucks, M24 bucket loaders, and other vehicles with similar components," said Sutcliffe. "By replacing hard panel trainers with 3-D simulations as part of its Army Construction Equipment Repairers course, the school is able to reallocate approximately $14 million worth of saved training time to a new topic, which they were previously not able to cover. The result is that their maintainers are better trained than before."

U.S. defense organizations are using these solutions to support maintenance training for a number of other types of construction equipment, including the crane for the Heavy Expanded Mobility Tactical Truck, and various components of the Logistics Vehicle System Replacement, a heavy high-mobility truck. Instructors can also use Ngrain's solutions to train soldiers how to maintain diesel engines found in many types of constructions vehicles, added Sutcliffe.

Options include both custom solutions and a 3-D development platform. The Ngrain Virtual Task Trainer is a customized application that delivers interactive, hands-on training. It is typically deployed in either a classroom or distributed learning environment, but is sometimes also provided to field personnel for just-in-time training. At the heart of every VTT is the 3-D Knowledge Object—which visually communicates knowledge about the system it represents.

Another solution is an application development platform—called the Ngrain Production Suite—that enables OEMs and systems integrators to rapidly create virtual training and support applications for their customers. A revolutionary advancement in interactive 3-D digital content creation, the Production Suite lets multimedia developers and animators produce fully interactive 3-D training and support applications, said Sutcliffe.

VTT solutions support a range of training activities, from system orientation to theory of operations to procedures. Activities supported in a specific customer VTT solution depend on customer requirements. For example, a VTT may only support the remove and install procedure training, or it may also include parts familiarization and cycle of operations training.

Learning activities can include having the student interact with virtual equipment in real time, rotating, zooming and pulling apart components to acquire, practice and refine equipment maintenance skills. Each VTT can include modules—such as automated feedback in the form of multiple choice questions or 3-D animation—to address the training requirements. Used in a range of training scenarios, from aiding classroom instruction to supplementing hard trainers, the VTT is an Internet Explorer-based solution that gives students more hands-on time with virtual equipment, said Sutcliffe.

Another provider of construction equipment and training is Kalmar RT Center LLC, the originator of the Kalmar RT 240 Rough Terrain Container Handler (RTCH), said George Deck, training superintendent/ chief instructor, Kalmar RT Center LLC. The RTCH is a "reach stacker" type of equipment with capabilities to manipulate, transport and stack 20-foot and 40-foot International Organization for Standardization (ISO) containers. Kalmar RT Center also manufactures the Kalmar RT-022, a 5K light capacity rough terrain forklift (LCRTF) sized to handle, stack and retrieve palletized loads inside ISO containers. The LCRTF is in production and will be used by the Army and USMC next year, added Deck.

Kalmar RT Center provides operator and maintainer NET, sustainment training and system specific training for the Kalmar RT 240.

"The courses are conducted using video, animated/narrated PowerPoint and equipment specific training aids," said Deck. "The RETA, or RTCH electronic training aid, is a simulator and is used develop operational skills utilizing different programmed scenarios."

Ongoing Training

Caterpillar Defense and Federal Products Division conduct extensive operator and maintainer training twice a year, said Kirkton. These courses are geared toward supervisors of heavy equipment operators/mechanics and are designed to address the entire fleet of incoming Caterpillar equipment.

In addition to the instructor- led training described above, operator training on both the machines and the simulators is always available upon request. Training can either be conducted at a Caterpillar facility or at the unit, as appropriate, said Kirkton. Refresher training is attractive to many units, since they routinely have new personnel rotating into the organization or find themselves readying for a deployment.

Ngrain's VTTs are digital, so military instructors deliver the training content, said Sutcliffe. The solutions enable continuous learning because they can be deployed across a learning management system to support self-paced learning. They can also be deployed to support on-the-job training in the field. Ngrain's technology allows interactive 3-D equipment simulations to be deployed on low-end desktops, laptops and tablets, meaning instructors, maintenance technicians and other personnel can use them in a variety of maintenance training and operations support scenarios.

"For example, instructors in the schoolhouse use the solutions to transform the learning process and enhance course materials," said Sutcliffe. "Personnel can access the simulations over the web for distance learning purposes, as well as in the field, whenever they require on-the-job training and support."

Challenges in Heavy Equipment Training

Providing such ongoing and extensive training on construction equipment does not come without its challenges.

"With regards to simulators, the biggest challenge Moore has heard to date is time constraints," said Kirkton. "For the majority of units, training is done during drill weekends and goes by fast. Moore has heard from battalion commanders that given the choice of several activities, simulators are chosen over and above any other training activity, making simulator availability the second challenge."

Sutcliffe feels that for users, from new recruits who grew up with computer games to experienced instructors, the learning curve for interacting with virtual equipment is short. However, that was not the case when the idea of virtual training was first introduced.

"A bigger challenge, in the early years, was getting the instructors onboard that supplementing—and in some cases replacing—hands-on training was a good idea," said Sutcliffe. "In those cases, the results did the work for us. Even the most traditional of instructors saw the benefits that virtual training brings to the learning continuum."

A variety of experience levels can present challenges as well.

"One challenge we face in training soldiers and Marines is the difference in experience and training levels the students have," said Deck. "Courses are paced based on student interviews and discussion as to target the medium-level students. For the maintainer student, traditional troubleshooting skills are frequently not fully developed in favor of technology-based procedures."

Look Ahead

Caterpillar is in the process of replacing the majority of the U.S. Army's fleet of construction equipment, said Kirkton.

"Given the life cycle of military construction equipment, in excess of 20-plus years, there is a significant leap in technology resident in the new equipment," she said. "Therefore, training and effective simulation will be essential to the safe and efficient transition to the new fleet."

Simformotion is also continually releasing new Cat Simulator systems and other training solutions as technology evolves.

Getting the Shot

Kenya McCullum
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Imagine a lone military sniper, operating in stealth and stalking a target through the scope of his weapon—waiting for the perfect moment to take that perfect shot. He shoots and hits the target with laser-like precision. But how does he do it? How does the military prepare him to perform these amazing feats with his weapon?

How Sniper Schools Train Soldiers

At the USMC Scout Sniper Instructor School—which primarily trains Marines, but also takes students from other branches of the military as needed—three sniper training courses are offered to servicemembers.

The scout sniper basic course is used to train infantry Marines. This intensive course lasts about three months. During that time, trainees learn all of the basics that they need to know to become a successful scout sniper.

"When they're finished with their training, soldiers have the ability to engage man-sized targets out to 1,000 yards—at a known distance or an unknown distance," said Captain Andrew Rozic, the officer in charge of the school. "They also have the ability to determine the range to a target, and then engage that target with the accepted degree of accuracy, which is 80 percent."

The scout sniper team leaders course is designed for Marines who are already scout snipers and wish to pursue a leadership role that includes skills like mission planning. In addition, students in this five-and-a-half week course learn advanced sniping techniques to enhance their shooting abilities.

The scout sniper unit leaders course is for first and second lieutenants who want to learn about the leadership of scout sniper platoons.

In order to conduct the training, the school uses technology such as a handheld weather station, which is designed to measure variables that affect a sniper's ability to make a shot—like wind speed, humidity, barometric pressure and temperature. In addition, the school uses special computers for ballistic solutions, laser rangefinders and standard military radios for communications.

Similarly, the U.S. Army Sniper School and the Maneuver Center of Excellence conduct training to prepare soldiers for the demands of working as a sniper. In order to do this, they offer hands-on training based on the Army Learning Model 2015. In the school's course, which is five weeks long, students learn skills such as target detection and stalking, moving target engagement and rapid target techniques. In addition, trainees learn how to properly maintain the Army's suite of sniper weapon systems.

One important tool that is used in the Army's Sniper School training is a ballistic calculator, which, according to Captain Dan Wilcox, Battalion Operations Officer, 2d Battalion 29th Infantry Regiment, 197th Infantry BDE (former Sniper Company Commander), is so important to a trainee's understanding of sniping that it's the first piece of equipment that a student sniper receives upon arriving at the school.

"The calculator uses a predictive algorithm that accounts for the variables of temperature, barometric pressure, altitude, height of the line of sight over the line of bore, bullet weight, bullet diameter, ballistic coefficient, rifling twist rate, muzzle velocity, and the zero range," he said. "Once calculated, this information generates ballistic data for the sniper."

Benefits of Technology in Sniper Training

When it comes to making that perfect shot, it all boils down to a sniper and his weapon. But getting the sniper to that point depends on successful training— and the role that different technologies, like simulators, play in that training.

Cost. Training snipers can be an expensive proposition, but thanks to the use of simulation technologies, the military is able to save money on several essential components related to sniper training.

"One of the issues with sniper training is the cost factor because snipers are a very small group of the infantry battalion—an infantry battalion will generally only have four to six snipers," said Allen Priest, director of training and technology integration at Meggitt Training Systems. "Since they're a very small training liability within an infantry battalion or an infantry brigade, [it's not a good cost-to-use ratio] to go out and purchase a million dollar system to train them."

In order to save money on the expense of sniper training, the military will use simulation technology, like Meggitt's Engagement Skills Trainer and Indoor Simulated Marksmanship Trainer. These products are designed to be adapted to the military's existing systems in order to help them create scenarios that teach trainees the skills that they need to complete their missions— whether for individual soldiers or for a team of sniper trainees.

By using these products, the military not only saves money on bullets and replacing weapons that get worn down by constant use, but they save on the overall cost of everything else involved in the training process.

"Not only is it the cost of ammunition, but it's the cost of running the range, having personnel out at the range, transporting the ammunition to the range, transporting people to the range," said Priest.

Practicing complex missions. Knowing how to operate a weapon is not enough; in order to be a successful sniper, soldiers must also know how to use their weapons in different circumstances and environments. In order to accomplish this, the military will use simulation products that can reproduce the terrain of a certain geographical location so that snipers can practice their shooting skills before they arrive in these areas.

"If you're practicing mission sets and you want to practice mission sets in a region of Afghanistan, for example, more than likely we have that terrain databased and modeled," said Gregg Owens, vice president of Laser Shot Inc. "You can actually set and practice on the same terrain that you're going to be going to fight in."

The products that Laser Shot sells to the military include the Long Range Precision Shooting Simulator (LRPSS) and the Crosshair Down Range Virtual Targetry System. By using the LRPSS system, sniper trainees can practice with human-sized target avatars that are programmed into tactical scenarios. Through this product, snipers can learn skills like long-range marksmanship, how to recognize targets, and how to anticipate human movements. Similarly, the Crosshair Down Range Virtual Targetry System is used for spotter training, engaging targets at longrange distances, engaging moving targets, and rules of engagement training exercises.

Enhancing decision-making skills. Snipers are trained to pinpoint the exact moment when a shot should be taken. In order to make that perfect shot, they must learn decision-making skills that tell them when to pull the trigger and when to hold back.

"Sometimes it's harder to inhibit shooting," said Chris Berka, the CEO of Advanced Brain Monitoring. "Once you've trained somebody to be a great shot, sometimes it's harder in that split second where they have to make a decision about whether to shoot or not to shoot."

In order to help soldiers with this decision- making process, the company makes the Adaptive Peak Performance Trainer, which is designed to help soldiers know when they need to shoot, or hold back, based on how well they are able to get into the optimum pre-shot state. This optimum condition is based on the soldier's heart rate and brain activity, which the company studied extensively with a group of expert military marksmen.

Safety. Some maneuvers are too difficult, or too dangerous, to teach in a live fire environment, so in order to keep sniper trainees safe, the military will use simulation products to create scenarios that teach these skills.

No Replacement for Human Skills

Although technology is tremendously helpful when training snipers, Rozic of USMC Scout Sniper Instructor School said that it should be used to complement the soldier's judgment, not to replace it.

"An analogy would be: We train Marines to use a GPS, however, we still want them to know how to use a map and compass when that GPS breaks," he said. "So, we kind of focus on the same thing as far as long-range precision shooting. We use the wind meters and we use the ballistic computers, but we still have the Marines train to do the calculations in their head as well."

Team Orlando Update

Dolly Rairigh Glass
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The Serious Games Showcase & Challenge (SGS&C) is the premier venue for recognition of excellence in the field of serious games development. The challenge, in its seventh year, is especially prideful of its continued growth, most impressively seeing growth from entries throughout the international and student communities, as well as welcoming the winners from the first Australian SGS&C at SimTecT.

Eighteen finalists, including the business and student winners from Australia's inaugural SGS&C, will take their place in the SGS&C booth (#3263) in Orlando, Fla., at the 2012 Interservice/ Industry Training, Simulation and Education Conference (I/ITSEC) December 3-6.

The awards will be announced at the SGS&C ceremony on December 6 and will be conferred in the categories of: best business game, best government game, best student game, best mobile game, people's choice award, and the best game in the special emphasis category of adaptive force training.

The challenge showcases the innovation and creative talents in serious games and continues to show how games are a viable medium for imparting training objectives for a range of purposes, whether those are defense-related training, medical training, games that teach math or language, or better communication.

Today, SGS&C involves evaluators from more than 100 experts from across the globe, who are actively involved in serious games within academia, government or industry. "It's extremely important for the consistency and credibility of the challenge that we utilize expertise from a diverse group of evaluators," said Dr. Peter Smith, Katmai and 2012 SGS&C committee chair. "Each one of them, based on their own personal experiences and knowledge, looks at the games from a very different viewpoint, making our evaluators an important part of the overall success of the challenge."

But the SGS&C reaches out to more than just established game developers and companies, and this is seen in the increase in the number of students who have taken part in the challenge. Beginning with the 2009 SGS&C, the serious games pavilion moved into the Science Technology Engineering Mathematics (STEM) pavilion at

I/ITSEC, continuing to show the strong correlation between serious games and STEM. The entries began to be more STEM-focused and this year, there were more student entries than ever before, and about one-third of the games had a STEM application.

Each year the games have continued to improve in quality and usability. This year, seven of this year's entries also qualified for the special emphasis category of adaptive force training. Adaptive stance is an individual's ability to repeatedly try new or different strategies to solve problems, while considering feedback with the purpose of improving overall success.

"For our I/ITSEC community, it is important that some serious games have the design mechanics to hone skills indicative of an adaptive stance, because that is one of the military training goals games can address," said Elaine Raybourn, Sandia National Laboratories and SGS&C Special Emphasis Award committee lead. "Games allow us to explore how we would address problems and solve problems in relatively safe environments. We learn who we are, and how we'll respond. That's training."

"A serious game can still be effective for training even if it does not focus on honing adaptability," added Raybourn, "because we use games to train a number of cognitive and behavioral phenomena."

Multiplayer serious games are an example of games that have been used to train collective skills that are applicable in honing adaptability. "Free-play multiplayer games can be very dynamic and often allow the squad or unit to train mental agility and learn how to be effective both individually and as a team in complex, uncertain and changing environments," explained Raybourn.

"The force uses multiplayer game technology to train together in virtual or mixed reality environments that allow them to learn how they respond in different situations," said Raybourn. "Usually the use of games precedes their live action experience in the field. This escalated learning helps hone their adaptability."

I/ITSEC attendees will have their chance to sample the finalists' games, as they will each be featured at the SGS&C booth in the I/ITSEC STEM pavilion. But whichever serious games are named as winners on December 6, SGS&C organizers are excited and encouraged about the growth, including the total number of games with student and international entries—as well as the diversity and quality of each of them—and feel these are the "best of the best."

Q&A: Dr. James T. Blake

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TRAINING DEVELOPER: Preparing Soldiers to Conduct the Full Range of Military Operations

Q: Can you describe PEO STRI's role and responsibilities in the U.S. Army?

A: As the Army's materiel developer for training, testing, targets and instrumentation, we're key enablers in preparing our soldiers to conduct the full range of military operations to meet the needs of our nation; now and in the future. A complex global environment and constrained resources characterize the current state of our Army. Our soldiers must be up to any challenge. We prepare our soldiers, who are expected to respond with decisive action at a moment's notice.

In this era of tightened budgets—coupled with our Army's heightened mission—there is no time more relevant for simulated training than now. Simulation not only saves money and lives, but it also limits the environmental

impact and maximizes live training events. What's especially worth noting about simulation is the highfidelity training experience that it affords the soldier. And the ability to practice, practice, practice.

PEO STRI is hard at work doing what is best for the soldier, today, tomorrow and always. As our motto goes, "Mission first, people always. Army Strong!" We say it. We mean it. We live it.

Q: What new initiatives does PEO STRI plan to implement in 2013?

A: The U.S. soldier has always been at the heart of everything we do, but now more than ever, PEO STRI strives to meet and exceed our customers' expectations.

Dr. James T. Blake
Program Executive Officer
PEO STRI

As a first step, senior leaders across the organization met to revise our mission and vision statements, the values that drive our strategy, people and processes. Going into 2013, our objective is to be the nation's acquisition center of excellence for training, testing and simulation solutions.

We will continue to expand our reach beyond the Army to our sister services and other governmental agencies to provide our nation's heroes the training they require. Our Medical Simulation Office has been diligently working to train first responders from the different services, and state and local agencies. Soon, we'll provide a Medical Simulation Training Center capability in support of our NATO partners. Shared initiatives, like the training exemplified by the MedSim team, increase the quality of the training experience and save resources. It's a win-win situation.

Q: How has the Dismounted Soldier Training System impacted military training in 2012 and how will it continue to impact training in years to follow?

A: Receiving rave reviews all across the Army, DSTS has unquestionably revolutionized training, virtually transporting a squad of soldiers to a geo-specific combat zone that's alive with the 3-D sights and 360-degree sounds of the battlefield.

Though the idea of DSTS has been in the pipeline for quite some time, the deployment of the training system fits well with the current Army focus on squad overmatch.

"As an Army no one can challenge us at corps level, division level, brigade level or battalion level," General Dempsey said when he appeared before the Senate Appropriations Committee's defense subcommittee. "I want to ensure we've done as much as possible to make sure that the same degree of overmatch exists at squad level." "We'll look at the squad as a collective whole, not nine individual soldiers, and determine how to enable it from the bottom up to ensure that the squad has the training, leadership, doctrine, power and energy, protection and lethality to win when we send them into harm's way," Dempsey told lawmakers.

With DSTS, a squad of up to nine soldiers can enter a nondescript training room, each taking their place on an assigned 10-by-10 foot pad, and carry out their assigned mission in a totally immersive environment. To add to the realism of battle, the system is able to estimate and gauge the effects of the injuries sustained in the virtual environment, either from impact munitions such as bullets and grenades or explosive effects from IEDs.

In addition to all of the other 'gee whiz' components, the DSTS also accurately simulates the movement of ground vehicles, aircraft, dismounted infantry and guided weapons, as well as conforming visually with the environment by identifying such elements as footprints, disturbed soil, rolling terrain and dense vegetation. As well, soldiers can train in any virtual environment including nighttime, daylight, snow, rain or other weather elements that Mother Nature or, in this case, the trainer can throw at them.

Another benefit of DSTS is its portability and small space requirement to train soldiers. Requiring just 1,600 square feet of space to operate in, the DSTS can be used to train soldiers prior to deployment as well as in

forward areas of operations to train deployed soldiers. While its focus is squad-level training, multiple systems can also be networked together to train larger military units.

Q: What type of training services is the $8 billion budgeted for the Train, Educate and Coach [TEACH] contract going to be spent on?

A: The TEACH contract is intended to increase the competition and responsiveness in procuring a wide range of training services, from distance learning coursework to instructional applications for smartphones.

The TEACH contract will cover services that fall within three broad categories. The first is instruction and education services, like developing course curricula for example. The second is exercise management and support services, like training, mission rehearsal exercises and after action review support. The third category is training-related support, like system sustainment and facility management support.

The contract vehicle, set to cover a seven-year period, but with options that could extend over 10 years, will go to a handful of awardees specializing in service-related training.

Q: How has your organization streamlined the acquisition process?

A: At PEO STRI, we believe clear communication with industry leads to more responsive acquisition.

Back in 2011, soon after the Office of Management and Budget issued a “myth-busting” memorandum intended as an educational campaign on the misconceptions and facts surrounding communication with industry, we stood up a PEO STRI Acquisition Center Procurement Administrative Lead Time [PALT] industry day.

Today, the PALT industry days have grown exponentially, serving the contracting community, requiring activities and industry partners alike. The monthly PALT industry day provides more than 200 industry representatives with updates on programs, ongoing procurements and the opportunity to request the status of specific acquisitions during the question-and-answer forum.

These types of venues enhance communication and enable PEO STRI to respond quicker to critical, emerging requirements with innovative acquisition and technology solutions, thereby putting the power of simulation into the hands of America’s soldiers.

The PEO STRI PALT industry day sessions are driven solely by industry’s questions and not a fixed government agenda. To elaborate, industry attendees routinely ask questions about contract types and PALT milestones associated with a specific procurement enabling them to better allocate resources and make investment decisions. In this unscripted setting, our partners have been more open and comfortable with sharing information, and in turn we attain better information for the acquisition community.

We also have the ability to share information with industry during these sessions, creating educated partners on our internal processes and policies. For example, the Acquisition Center recently implemented an instructional document outlining internal policies and procedures on fostering productive exchanges of ideas with industry. Keeping true to abolishing old myths and breaking the paradigm, industry partners were provided access to the PEO STRI Acquisition Center’s “Communication with Industry” instruction.

Facilitating better communication with our industry partners through forums such as the PEO STRI PALT industry day shapes how we get technology into the hands of the soldier. I believe training is a team sport. The tremendous technological advances we are making in simulation, training and testing reach far beyond just benefiting our nation’s servicemembers. Through the affiliations that we form in the military, government services, industry and academia, we are able to have a significant impact on the training of not only our own military forces, but also those of our coalition partners.

At the end of the day, we are committed to strengthening our relationships with our industry partners, while expanding the capabilities of our soldiers through the delivery of the world’s finest simulation technology.

Q: Can you tell us about PEO STRI's scheduled 2013 outreach efforts and program briefing schedule for industry?

A: Based on the continual feedback we receive from our industry members, we intend to sustain a number of activities to facilitate an open dialogue with them.

We aim to provide industry with a synopsis of every new business opportunity we foresee at the annual Training and Simulation Industry Symposium. The next scheduled TSIS is planned for June 2013.

Beyond the traditional business opportunity briefings, we host a series of industry day presentations, like the PALT, to highlight large opportunities that we are working. The purpose is to convey to industry what we are doing and solicit their ideas on how we can best achieve our objectives. At each of these presentations, we afford industry a chance to ask questions and gain a better understanding of each opportunity.

We believe an active and productive exchange of information best satisfies industry and the government.

Q: How does PEO STRI plan to modernize and improve fielded training enablers to maintain relevancy as troops continue to come back from deployment?

A: As the Army's deployed footprint draws down, we anticipate an increasing demand on home station training enablers at each installation. Unit commanders will require training across the spectrum of conflict and to address the hybrid threats of the future. These complex training needs will drive a requirement to continue to modernize and improve our fielded training enablers to maintain relevancy with the current environment, doctrine and weapon systems.

One way we're ensuring simulation and training remains relevant to our combat-seasoned soldiers is through creating a realistic, high-intensity training capability at home station. The Live, Virtual and Constructive–Integrating Architecture [LVC-IA], fielded for the first time this year to Fort Hood, Texas, is a program managed by PEO STRI. Its success is attributed to the team of government, industry and academic partners who, with LVC-IA, made the integrated training environment a reality.

While we fielded the first version of the LVC-IA, we are actively involved with all of our partners to steadily add more virtual and constructive simulations to the live elements, so commanders will have an increasing number of war fighting assets available to conduct their mission rehearsals.

In addition to our effort in revitalizing home station training, we're also upgrading portions of the Army's combat training centers. The program, called Combat Training Center-Instrumentation System [CTC-IS], will modernize components at the National Training Center at Fort Irwin, Calif., and the Joint Readiness Training Center at Fort Polk, La.

The CTCs provide a realistic operational environment for training land forces at the brigade combat team level, to include subordinate and supporting units, across the full spectrum of military operations. The CTC-IS project replaces legacy voice, video, data and target instrumentation systems and networks, and it improves the combat trainer situational awareness, analysis and feedback capabilities. We're excited about deploying the next generation of home station and CTC-level training, and we're proud to be part of the team that is continually modernizing soldier training.

Q: What are the top three challenges PEO STRI will face going into 2013?

A: Our training budgets are being reduced while the demand for training is increasing. Our challenge, together with the resourcing and requirements community and our industry stakeholders, will be to maximize the use of the resources we are allocated and continue to provide soldiers with the decisive edge in training.

We're also experiencing manpower reductions across the Department of Defense for both government and support contactor positions, and we must balance how to achieve manpower targets while maintaining program performance.

My goal is to make sure we stay focused on our mission to support the training needs of the soldier and the nation while taking the necessary steps to meet those targets.

Q: How does PEO STRI train for hybrid and unforeseen threats at homestation without knowing where those threats will come from?

A: I was recently made aware of the chairman of the Joint Chief of Staff Army General Martin E. Dempsey's canny explanation of planning for unforeseen threats. It's the Wayne Gretzky rule, Dempsey says. Ice hockey all-star Gretzky, when asked about his luck on the ice, responded that he skates "where the puck is going to be, not where it's been." And in large part, that's what the Army does. As a result, we in the training and testing industry are tasked with preparing our soldiers for conventional and unconventional warfare in regions all across the world to handle everything from peacekeeping missions to combat operations.

Q: What are some of the greatest success stories PEO STRI had in 2012?

A: A few months ago I had the opportunity to see troops from the Army's 2nd Infantry Division in Korea experience the effects of state-of-the-art simulated training. PEO STRI, together with our battle buddies from the Training and Doctrine Command, supported an immersive training exercise. The Combat Training Center-like event validated the soldiers' war fighting readiness through a mix of live, virtual, constructive and game-based systems that were integrated to produce a battalion-level training exercise. I was totally impressed by the level of creativity and skill demonstrated by the soldiers of the 2nd ID in using these tools.

Then more recently, the blended training environment was amplified when soldiers at Fort Hood received the Army's first Live, Virtual, Constructive–Integrating Architecture. The technology allows commanders to train up to a brigade using a "plug and play" approach to link simulators from the live, virtual and constructive environments to create a robust training experience.

Based on mission training objectives, commanders determine at what level [company, battalion or brigade] they want to run a training exercise using LVC-IA. They also determine what combination of live, virtual and constructive simulators they need based on their training objectives.

Through coordination with the home station's Mission Training Complex, the unit will coordinate availability of the live, virtual and constructive assets, connectivity to the training aids, devices, simulators and simulations being used, and the resources available to support the training event.

Based on the training objectives, a scenario is then developed that mirrors the operational environment in which the unit would be conducting the actual mission.

Once all of the training assets are in place, the commander issues an operations order to the lower echelon commanders and the training exercise begins.

During the exercise, with LVC-IA stimulating the Mission Command System, the commanders and staff have a common operating picture that is generated by live, virtual and constructive simulations. Commanders control the exercise using soldiers in the field using real equipment; soldiers using simulated equipment; and semi-automated simulated forces. They all appear as live entities. The training exercise can last hours or several days, based on the size of the exercise and how the exercise progresses. Following the conclusion of the exercise, LVC-IA provides commanders consolidated after action reviews.

Projected fielding sites for 2013 include Forts Bliss, Texas; Campbell, Ky.; Drum, N.Y.; and Korea.

Industry Interview: Lockheed Martin

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Q: This year, Lockheed Martin marks 100 years. Can you tell us a little about the company's history and evolution?

A: One hundred years ago this past August, Glenn L. Martin established the Glenn L. Martin Company in Los Angeles, Calif. He started the company after building his first plane in a rented church, where he took a leap of faith on an innovative aircraft design at the urging of another aviation pioneer, Orville Wright.

Four months later, brothers Allan and Malcolm Loughead—who later changed to the phonetic spelling Lockheed—founded the Alco Hydro-Aeroplane Company, which was later renamed the Lockheed Aircraft Company. They set up shop in a San Francisco garage, constructing prototypes of seaplanes that would later shatter speed and distance records for overwater flights.

Mary Ann Horter
Vice President
F-35 Sustainment
Lockheed Martin

These were humble beginnings, but represent the vision and purpose that have defined our business for over a century. With our heritage in aviation, we understand what it takes to prepare airmen for their most challenging missions. Lockheed Martin has provided training since the start of our company and currently provides training systems for 36 military aircraft variants, including the most advanced training system ever developed, the F-35 Lightning II.

Our focus is helping customers achieve mission success through game-changing innovations and a full range of affordable training and logistics solutions.

Q: What sort of progress is being made at the F-35 Integrated Training Center [ITC] at Eglin Air Force Base?

A: The F-35 ITC at the 33rd Fighter Wing at Eglin AFB, Fla., is home to a full spectrum of the latest courseware, electronic classrooms, full mission simulators [FMS] and pilot and maintenance training devices. Flight operations for the F-35 began March 6 on station; there are currently 22 F-35s at Eglin and the fleet continues to grow. More than 600 pilots and maintainers have been through the ITC to date, and enrollment continues to accelerate.

The Air Force's F-35A conventional takeoff and landing [CTOL] variant reached a milestone in September with the start of a three-month operational utility evaluation. Data from all aspects of training, including maintenance, classroom, training devices and live flight, is being collected during stringent testing. At the successful conclusion of the evaluation, we expect to receive Air Education and Training Command's approval to begin formal training.

The ITC completed its 500th combined sortie in November for both the F-35A CTOL and F-35B short takeoff and vertical landing aircraft. The team accomplished the 500 sorties in 238 days, cutting the time between each milestone sortie.

Our fully integrated government and industry training team is focused and committed to providing superior training to the next generation of fifth-generation pilots and maintainers.

Q: What activity is taking place at other installations in preparation for F-35 training and operations?

A: In October, we completed installation of the first of six F-35 full mission simulators at Marine Corps Air Station [MCAS] Yuma, Ariz. The station will be home to the first operational Marine Corps F-35 squadrons

worldwide, hosting five F-35 squadrons and one operational test and evaluation squadron. Marine Fighter Attack Squadron 121 will be the first operational F-35 squadron on station.

The F-35 FMS includes a high-fidelity 360-degree visual display system and is the highest fidelity trainer in the pilot-training- device suite, accurately replicating all F-35 sensors and weapons deployment. The FMSs on-site at MCAS Yuma are currently supporting pilot familiarization and transition scenarios.

The importance of simulation to the program cannot be overstated. Approximately 50 percent of the core syllabus flights for the F-35 program will be accomplished in the pilot training devices. This allows a great deal of cost effectiveness and flexibility for our customers.

The progress in delivering training, sustainment and support equipment in preparation for aircraft operations at Yuma demonstrates our commitment to ensuring Marine Corps aviators remain at the tip of the spear. The people, platform and continued performance will solidify MCAS Yuma as one of the most advanced operations facilities in the Marine Corps.

Q: What are the challenges for the future?

A: With today's economic environment, it is clear that the military needs more sustainable training solutions that deliver maximum impact and decrease cost. The F-35 training and sustainment system was designed with that in mind.

Our fifth-generation training program is built upon a proven record of performance across multiple platforms. Lockheed Martin trains 35,000 airmen each year on 36 aircraft variants through programs that integrate technology, instruction and management systems. We have developed more than 450 training devices and 6 million square nautical miles of visual databases to support the full range of military flight training. More than 500 training instructors deliver 340,000 training hours per year in classrooms and in simulators, guaranteeing mission-ready pilots, maintainers and aircrews all over the world.

For the F-35, the training and sustainment capabilities delivered this year cement the foundation for fifth-generation pilot and maintainer readiness. More advanced and integrated than any training and logistics system ever designed, the F-35 program achieves a number of engineering firsts, but more importantly, assures the future of U.S. and coalition air power.

Command Profile: First Army

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Lieutenant General Mick Bednarek assumed command of First Army, April 6, 2011.

Upon completion of the Infantry Advanced Course in 1981, Bednarek was assigned as the Infantry branch representative for the Army Military Personnel Center at Fort Benning, Ga. He served as the branch representative until 1983 when he was reassigned to 1st Battalion, 75th Ranger Regiment at Hunter Army Airfield, Savannah, Ga. There he served as Battalion S1, Company Cdr, and Battalion S3, 1st Ranger Battalion through 1987.

Upon completion of the Command and General Staff College at Fort Leavenworth, Kan., in June 1988, Bednarek was reassigned to Vicenza, Italy, for duty with the 3d Battalion, 325th Airborne Combat Team.

He served as the Battalion S3 and deputy commander until January 1991. In February 1991, he was reassigned to the 75th Ranger Regiment as the Regimental S3 and served in that position until November 1992. In June 1993, Bednarek was reassigned to Fort Lewis, and served successive assignments as the deputy commander, 9th Infantry Regiment, commander, 3d Battalion, 9th Infantry Regiment, and commander, 1st Battalion, 24th Infantry Regiment (DEUCE FOUR). In June 1996, Bednarek assumed command of 2d Battalion, 75th Ranger Regiment, serving until June 1998. He commanded the 4th Training Brigade, Fort Jackson, S.C., from August 1999 through July 2001, then as the chief, Joint Training Group, Joint Warfighting Center, U.S. Joint Forces Command. In November 2003, Bednarek was assigned to Fort Polk, La., as commander, Operations Group, Joint Readiness Training Center. In March of 2005, Bednarek was assigned as the deputy commanding general (Operations), 25th Infantry Division, Hawaii, in support of Operation Iraqi Freedom 06-08, Iraq. Upon return from OIF, Bednarek assumed command of the 25th Infantry Division and took command of First Army Division East in June 2008, prior to assuming command of First Army.

Lt. Gen. Mick Bednarek
Commanding General
First Army

Q: What are the current goals for integrating live, virtual, constructive and [LVCG] technologies into the Reserve component forces training strategy?

A: First Army's LVCG-Integrated Training Environment [ITE] goals and strategy are based on the Chief of Staff of the Army's directive to broaden our aperture and get back to the full range of military operations and decisive action viewpoint in our training and to use technology in training the active and reserve component brigade combat teams, divisions and corps of our Army. Our mission is to increase allocated and apportioned Reserve component unit readiness through the use of all available and emerging training technologies, because we are the facilitator for rapid integration of ready reserve component units in support of future Army requirements. Our strategy is built around the three concepts of educating Reserve component leaders on the array of available LVCG resources, integrating LVCG into the training process, and developing quality warfighter exercises that focus on the integrated training environment. Another key to our strategy is educating all of those training support enablers at mobilization force generation installations, and other installations, about LVCG capabilities and how to incorporate them into training.

Q: What are your biggest challenges?

A: Some of our biggest challenges are at the brigade, division and corps level, where we are synchronizing all of the enablers at the mission command level, integrating knowledge management, integrating joint fight capabilities, and integrating all the centers of excellence across our Army to provide the commander of the unit being trained with what he or she needs to make timely and informed decisions on the battlefield. Add to that the anticipated future constraints in training budgets across the Department of the Army and DoD and we as trainers and mentors need to be more proactive in maximizing our training technology resources. Key to all of this is educating Reserve component commanders about the value of using LVCG-ITE concepts to train their staff and soldiers in the most cost-effective manner.

Additionally, we need to:

- ensure we have sufficient numbers of school-trained simulation subject matter experts
- ensure we have the right equipment, such as computer hardware, capable of running the most current programs—efficiently
- foster a spirit of cooperation among numerous organizations, such as local network enterprise centers at all state, reserve and active duty installations

Finally, we in First Army must make sure we have very good visibility of all the different technologies that exist and those that are emerging so we always have the right capabilities in the simulations to assist the unit commander accomplish his training objectives.

Q: What do you anticipate will be the greatest impacts to Reserve component training and simulation in fiscal year 2013 and why?

A: The good news is that we envision a lot of positive impacts on Reserve component training in the coming years. Use of the live, virtual, constructive and gaming enablers gives Reserve component commanders a great amount of flexibility with training options. Given the limited time for Reserve component live training, we are working hard to expand the mission command training opportunities beyond major training exercises to help maximize those shorter training opportunities at home station and regional training centers. This will allow Reserve component units to achieve levels of realistic training never before achieved at home stations. Our goal is to help units achieve higher levels of collective task proficiency through regional exportable combat training capability exercises and warfighter exercises before going to pure live training locations such as the National Training Center or Joint Readiness Training Center to conduct very resource intensive combat training center rotations.

Q: What are the impacts of future budgetary constraints on Reserve component training within the LVCG and sims environment?

A: One of the major impacts on any unit training when there are budget and resource constraints is the ability to conduct live training operations. First Army and our Army's Reserve component leaders understand that, in the constrained environment, our live training options are going to be reduced. The good news is that LVCG-ITE offers commanders options to offset training costs while still accomplishing their all-important unit training objectives. Understand that the LVCG programs that we use and those that are emerging are not designed to replace live training, but to enhance and maximize the unit's preparedness with the available training time and resources. I am fully convinced that, despite anticipated budget and resource constraints, First Army will maintain the ability to provide LVCG and technology training support to Reserve component forces in support of Forces Command's mission to provide trained and ready forces.

Q: What is First Army's strategy to continue facilitating the most effective and affordable use of available training dollars for FY13?

A: First Army is committed to providing the highest quality simulations training to our Army's Reserve component. We will work closely with our Reserve component training support enablers to continue refining the positioning of LVCG and simulation training sets to reduce the high costs associated with moving equipment and training personnel. It's also imperative that we keep our eye on emerging technological capabilities and system integration. For example, there are emerging LVCG gunnery systems that will improve first-time qualification rates on 50 caliber and Mark 19 weapon systems. These are some of our high-end crew served weaponry. This new type of training will help minimize the overall training costs by reducing the amount of live ammunition used, the cost of range maintenance and targetry, and the number of required support contracts, all of which could easily save upwards of $3 million per year.

Q: Where and how do training simulations and technology fit in to the Reserve Component Army Force Generation process? Will that change in the future?

A: The use of training simulations and technology is an integral part of the Army Force Generation process. There are expert LVCG enablers in place to train individual soldiers and units collectively throughout all echelons. The great thing is these tools can be used to support training by any unit, regardless of where a unit is within the Reserve component ARFORGEN cycle, since the complexity and level of training increases every year from "reset" through "available" year. For example, during reset, the focus is on individual soldier LVG such as small arms ranges, the engagement skills trainer, the call for fire trainer and Virtual Battlespace 2.

Training year one focuses on crew and squad LVG training such as the HMMWV egress assistance trainer, multi-purpose range complexes, shoot houses, Unit Conduct of Fire Trainer, and Dismounted Soldier Training System. Training year two centers on platoon and company LVG training systems using Homestation Instrumentation Training System, Multi Integrated Laser Engagement System, and the close combat tactical trainer. During training year three, unit collective LVCG training uses simulation resources such as the battle staff training team and the Army low overhead training toolbox. During the available year, units conduct collective proficiency and sustainment LVCG training to include CTC rotations and joint land component command training capability training.

Yes, the way we train will change in the future. We must integrate lessons learned over the course of 10-plus years of war, and refine our training so that it remains current and relevant to meet the future needs of the Army. Training budgets and new or updated simulations and training technologies will impact in a dramatic way on what, how and where we train.

Q: What programs or initiatives does First Army plan to implement in the realm of simulation and training technology?

A: One of the single most important tasks we at First Army can do is to focus on educating Reserve component units on available LVCG concepts, systems and enablers to help them more efficiently accomplish their training goals and missions. We must also continue to update and educate our First Army trainer mentors, who are our LVCG subject matter experts on emerging technology such as the new military decision making process simulations that focus on multiple echelons and civil support operations training. Our near-term plans are to demonstrate and begin using this program by end of year for both allocated and apportioned units.

Who's Who Q&A: Col. Michael Coolican

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Military Training Technology

KMI Media Group

TRAINING PROVIDER: Training Systems Acquisition Arm for the Marine Corps

Colonel Michael Coolican was commissioned in May 1988 through the NROTC Program at Villanova University, where he earned a Bachelor of Science degree in mathematics. Between 1991 and 2005, his operational experience consisted of three separate tours flying the AV-8B Harrier at MCAS Cherry Point, N.C. During these tours, he served at the squadron level as director of safety and standardization, maintenance officer, operations officer and executive officer. Additionally, he was the MAG-14 operations officer in 2005. In between flying tours, Coolican attended Amphibious Warfare School and the Marine Corps Command and Staff College where he received a master's in military studies.

In the fall of 1998, Coolican was assigned to PMA-257, Naval Air Systems Command at NAS Patuxent River. As an apprentice in the acquisition field, he began working as the configuration manager for the AV-8B. In June 1999, Major Coolican was re-assigned as the future systems officer for the AV-8B, primarily focusing on acquisition of the LITENING II Targeting Pod (TPOD). He was responsible for developing an acquisition strategy for the TPOD, ensuring a successful test plan and purchasing the first nine LITENING Pods for the USMC. Additionally, he worked closely with HQMC to ensure follow-on funding. which eventually allowed PMA-257 to acquire 56 more TPODs.

In May 2000, Coolican attended PMT-302 in Fort Belvoir. Upon his graduation, he returned to PMA-257 and assumed the duties as the AV-8B assistant program manager Systems Engineering (Class Desk). During his year as class desk, he oversaw the development of the Harrier Open System Core Avionics Requirement, further development and deployment of the LITENING TPOD, and obsolescence issues. Additionally, the program office was restructured and Coolican ran the Fleet Support Team along with the assistant program manager logistics. In this role, he directed the resources of AV-8 support throughout the country, managing the O&M,N and RDT&E budgets. At the end of this tour, Coolican completed the requisite training for a Level II certification in program management and was subsequently selected for a secondary MOS of 9958.

Colonel Michael Coolican
Program Manager
U.S. Marine Corps
Program Manager
Training Systems

Following his job as OpsO MAG-14, he was assigned to Marine Corps Systems Command as the product manager for the Combat Operations Center (COC) program. This program provides digital, mobile, interoperable command and control facilities, which enable commanders to fight on the 21st century battlefield. His duties involved procuring, fielding, training and sustaining 260 COCs for all Marine Corps battalions, regiments and major subordinate commands while simultaneously supporting up to 30 COCs in OIF/ OEF. After serving a year as a professor of systems acquisition at Defense Acquisition University teaching intermediate acquisition courses, he was reassigned to the F-35 PEO where he served as program manager for production. Coolican is Level III certified in program management, is a graduate of PMT-401 and was selected for the 8059 MOS in 2007. Prior to his assignment as PM, TRASYS, he was the assistant deputy commander, System Engineering, Interoperability, Architectures and Technology at Marine Corps Systems Command.

Q: Can you describe the role and responsibilities of Program Manager Training Systems [PM TRASYS]?

A: As part of Marine Corps Systems Command, PM TRASYS serves as the training systems acquisition arm for the Marine Corps, providing all training systems, training environments and training support services to the warfighter for their homestation and pre-deployment training requirements. PM TRASYS manages these training systems and simulations from receipt of requirement, through development, fielding, sustainment and finally disposition.

Q: What are some of the major challenges PM TRASYS will face in 2013?

A: 2013 will be the third consecutive year with a decreasing budget while the programs and USMC deployments remain constant. The challenge for PM TRASYS will be to continue to provide program management and acquisition services to our customers with fewer resources. However, based on the many years of training systems acquisition experience resident at PM TRASYS, we are confident we will continue to provide a quality level of support to our Marines.

Q: Are there any new initiatives or programs PM TRASYS will implement in 2013?

A: The Marine Corps is working on a Modeling and Simulation Strategic Roadmap that will engage a live, virtual, constructive integrated environment. This will allow current training systems and simulations to link together and allow more integrated training as a MAGTF. This requires further refinement of its capability and is being addressed by the Training and Education Command prior to implementation by the acquisition agent, PM TRASYS, in the near future.

Q: How important is the partnership between industry and PM TRASYS?

A: The relationship is extremely important. Industry has the expertise on how to best implement the training solutions based on the acquisition documents we provide them. So, it is critical we provide industry clear and concise documents for them to bid to and present their recommended solution.

Q: What are some of the challenges using battlefield effects simulators [BES] and why are they an important part of Marine training?

A: BES are an important part of Marine training because they provide safe, real-time threat simulation for live training. BES training significantly enhances the training capability, operational readiness and proficiency of Marines in tactics, techniques and procedures by providing realistic threat effects in training scenarios. BES are used in live and non-live fire training environments to re-create the battlefield with a more realistic and vibrant opposing force threat.

Q: How does the Combined Arms Command & Control Training Upgrade System [CACCTUS] prepare Marines for live-fire exercises and deployment?

A: CACCTUS prepares Marines for live-fire exercises and deployments by providing a live-virtual-constructive training environment in which units can utilize current command, control, communication, computers, and intelligence [C4I] equipment to plan, execute and evaluate combined arms and command and control [C2] tactics, techniques, and procedures [TTP]. Current capabilities support training from individuals up to the Regiment. Future capabilities will support training for a Marine Expeditionary Brigade. In unison with current C4I equipment and relevant terrain databases, CACCTUS allows units to learn and improve upon TTPs for combined arms and C2 so that their live-fire exercise will be more efficient and so that staffs and commanders have improved decision making skills and C2 capabilities in preparation for deployment.

Q: What are some of the most significant improvements in military operations in urban terrain [MOUT] over the past five years and how do you see MOUT training improving in the future?

A: The most significant developments in MOUT have been the fielding of the Infantry Immersive Trainers [IITs]. IITs are small-unit training ranges consisting of urban structures finished and decorated to replicate geo-specific locations. These training ranges are enhanced by the integration of direct fire training systems, virtual simulation screens and video instrumentation for use in after action reviews. The IITs also integrate role players so that Marines can interact with and immerse themselves in the simulated environment. The indoor and outdoor training environments replicate current operational theaters by stressing small-unit actions on the small-unit leader's tactical, moral and ethical decision making within the context of operational culture.

Additionally we fielded the Combined Arms MOUT [CA-MOUT] at 29 Palms, Calif. According to Combat Center officials, this is the current nature of conflict in many areas around the world. This, and recent history and lessons learned were some of the reasons the Combined Arms MOUT facility was constructed.

The complex supports any number of Marines and sailors, from a small 12-man squad to a full Marine expeditionary brigade, composed of more than 15,000 Marines and sailors and its supporting units. CA-MOUT's realistic settings such as classrooms, markets, hotels and other businesses complete with role-players, challenged Marines to communicate, coordinate, maneuver and operate in an urban setting. Throughout the facility, the Camp Pendleton-based Marines were constantly kept on the alert by the detonation of improvised explosive devices, and enemy ambushes coming from "spiderhole" hiding places and almost 1,900 feet of enemy tunnels. They had to search basements and find and destroy weapons caches found in almost 1,900 feet of underground tunnels, a manmade riverbed and dozens of courtyards and compounds, according to an official release.

According to Combat Center officials, the $170 million spent on CA-MOUT is a good investment. It will provide vital and realistic training Marines will need to accomplish their mission and most importantly, save many lives.

As far as MOUT training improving in the future, CTE is looking to work closely with NAVFAC in developing and fielding an urban CAS at PTA, HI for aviation use; a joint maritime training system or ship on land for Camp Pendleton for training in shipboard search, seizure and rescue training; and more sniper training facilities [towers].

Q: What are the goals and benefits of the Instrumented-Tactical Engagement Simulation System [I-TESS]?

A: I-TESS system is used in MOUT facilities and non-live fire maneuver ranges in various USMC bases and installations, providing the setting for the USMC Pre-deployment Training Program and other type individual and company level training support.

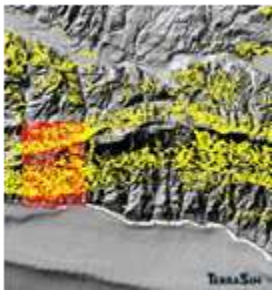
This system is critical because it provides real-time situation awareness, exercise control capabilities, and adjudicate indirect fire engagements so as to help facilitate the training exercise objectives. The goal and benefits of using I-TESS is to collect the training action/interactions of the Marines during the training exercise with the ability to provide immediate access of collected data for after action review purposes. A critical benefit is the interaction analysis of BLUFOR and OPFOR during engagements and specific maneuvering especially when combined with communication directives and orders given to individual units. Additionally, the system will capture the following:

- Fratricides
- Target engagements [hit or miss] take guess work or questionable integrity away from users and provide factual definition
- Engagement maneuvers
- Injury or disorientation [system panic button] during exercise or land navigation
- Total firing attempts hit or miss and distance fired by each Marine and outcomes for each firing point.

TerraSim Released DEMTools™ 2, a Software that Merges, Refines, and Manipulates DEMs

January 9, 2013
Modsim.org

Pittsburgh, PA – TerraSim is pleased to announce the release of DEMTools™ 2, a low-cost, stand-alone GIS application that merges, refines, and manipulates digital elevation models (DEMs) for GIS source data preparation and generation. DEMTools, the newest of TerraSim's source data preparation products, allows users to quickly import and process source elevation and vector data. This data can then be exported to a large variety of supported elevation and vector formats, including GeoTIFF, GridASCII, GridFloat, and Shapefile. DEMTools makes full use of 64-bit processor architecture to handle large area compilation and supports parallel execution on multi-core workstations.



The recent, explosive increase in available digital elevation data has created multiple, overlapping DEMs with varying levels of quality and resolution. To make these individual DEMs useful, they often require additional post-processing to create a single consistent dataset over an area of interest. For example, misaligned elevation data from differing sources may need to be brought into geometric alignment through registration.

DEMTools offers a complete set of tools to increase the quality and usability of DEMs. With DEMTools, users can:

- Match points generated in DEMTools to register a small DEM with a larger DEM
- Import and export a wide variety of elevation and vector data formats
- Generate elevation match points and perform DEM registration
- Fuse multiple elevation data files together to generate a single composite output DEM
- Expand elevation data coverage by fusing adjacent elevation data
- Arealize coastline linear vector data into polygonal ocean vector data
- Flatten elevation data using existing or user-generated polygonal vector data
- Mask land elevation and bathymetric data to generate a single composite output DEM
- Edit and manipulate existing 3D vector data
- Create and attribute 3D vector data
- Examine elevation and 3D vector metadata

Riverside Company Invests in Bohemia Interactive Simulations, Management Remains Unchanged

January 9, 2013
Modsim.org

Bohemia Interactive Simulations (BISim) is very excited to announce its partnership with the private equity firm The Riverside Company, who recently made a significant investment in the company. Riverside's interest is underpinned by its strong belief in the potential of games for training, and BISim's proven Virtual Battlespace (VBS) training environment.

VBS has become one of the most widely used training simulations in western militaries and, as a result, BISim has experienced significant growth over the past decade. BISim has established offices in Australia, the Czech Republic, the United States, the United Kingdom and Poland and has important enduring contracts to support military organizations including the United States Marine Corps, United States Army, United Kingdom Ministry of Defence and the Australian Defence Force.

Based on extensive ongoing development of VBS and multi-national expansion, BISim expects to grow strongly over the next few years. Riverside, with its experience in working with smaller, high growth companies and its international presence, is an ideal partner for BISim, and will assist the company to further expand its multi-national operations and development teams. BISim's innovation plans for VBS will focus on meeting our clients ongoing and additional training requirements as well as further leveraging cutting-edge game technology.

Peter Morrison, the CEO of BISim, said "We are very proud that Riverside has chosen to partner with BISim, as a very experienced and mature private equity firm. We look forward to years of further success built upon game-based training technology."

The existing BISim management team remains essentially unchanged into 2013, with Peter Morrison continuing as the CEO and Dr Mark Dzulko the CTO. John Givens is the President of the US office, and Ryan Stephenson

the Managing Director of the Australian team. Colin Hillier and Oli Arup continue as the Directors of the UK studio. BISim is also pleased to announce the appointment of Arthur Alexion as the new Deputy CEO. Arthur has a wealth of experience in managing growth companies and he is a welcome addition to the BISim team.

CN Finance and BDA (Business Development Asia LLC) were joint financial advisors to the Sellers. Their legal advisor was Advokatni kancelar Erhartova Vitek.

ETSA Embraces Simulation Revolution

Andy Simms
December 21, 2012
Modsim.org

Boasting cinema-quality cut scenes, stirring musical scores and immersive environments, the video games market has transformed the expectations of those seeking virtual training solutions.

Hailing a switch from bespoke programmes to a greater adoption of commercial and government off-the-shelf products, advancements in gaming have "revolutionised" the training and simulation sector according to industry specialist Graham McIntyre.

The chairman of the European Training and Simulation Association (ETSA) cites the emergence of video games as the most lucrative entertainment medium in the US and UK as the single biggest change to the field over the past two decades.

"The gaming world quickly went from having strange little characters bobbling along and jumping on platforms to the quality visuals featured in today's titles," said McIntyre, who is director of business strategy at UK-based simulation specialists NSC.

"People have previously remarked that you can judge the quality of a simulation on how the grass blows in the wind; well in the current generation of games the way the grass blows is absolutely phenomenal.

"Previously, the majority of simulation companies provided a bespoke solution with every entity – be it visuals or a supporting database – produced in-house," the electronics and electrical engineering graduate added.

"However, there were some 'believers' in the defence world – initially in Australia – who began to adopt gaming technology and use it to enhance virtual military training.

"It became possible to take the core engine behind an existing commercial product and adapt it, be it to correct soldiers' uniforms or introduce certain vehicles."

Originally introduced to British Service personnel in 2007 as a means of training troops in vehicle convoy drills, JCOVE has been developed to emulate and test soldiers' reactions to foot patrols, Taliban ambushes and the ever-present threat of improvised explosive devices.This was the path chosen by NSC when approached to provide a Joint Combat Operations Virtual Environment (JCOVE) for the British Army.

Utilising military simulator *Virtual Battlespace 2*, a spin-off from commercial game engines, the training is run on a network of laptop computers with those taking part able to communicate via headsets. It has helped ready more than 12,000 troops for the rigours of operations in Iraq and Afghanistan.

However, McIntyre acknowledged there were quarters of the training and simulation world less willing to follow NSC's lead.

"It was not so much snobbery as a case of straightforward business issues," explained the 63-year-old, who chairs the National Security and Resilience Consortium in addition to his senior roles with NSC and ETSA.

"If you own the intellectual property rights for a particular visual system, terrain or training area and you've invested money in doing so, it is difficult when someone comes along and says that product is not needed any more because something similar, but more flexible, can now be picked off the shelf at a cheaper price.

"In this context, it is understandable why certain companies don't take very kindly to the off-the-shelf model. The training and simulation industry as a whole went through a period of time when this issue had to play itself out.

"In the broadest possible sense the games industry has done the market a lot of good because simulation today doesn't immediately equate to big pound signs."

The opposite is true in the entertainment sphere where production costs rival those of Hollywood blockbusters. Microsoft's *Halo 4*, which will shoot it out with *Call of Duty: Black Ops 2* for the lion's share of the lucrative Christmas market, is reputed to have been developed by a 340-strong team at a cost of $40 million.

However, McIntyre insists that such investment in first-person shooters and squad-based military titles with their increasingly life-like visuals should not be seen as a threat to the training and simulation industry.

"On the contrary, the fact that video games have big budgets means that the customer knows what he or she can have and doesn't have to put significant investment into creating that aspect of a simulation," he said.

"The trick is to be at the leading edge of this rather than being a follower.

"The game element should be treated as a commodity – we've reached a point now where good looks are a given. Companies are not going to get more business as a result of having the best resolution of picture in the market place because lots of people have too.

"I don't ever see a situation where the games industry will subsume the simulation world, certainly not from a military perspective – there are other skills that come to bear," added McIntyre.

"The added value of the simulation industry is that it can take off-the-shelf products and know how to adapt them to suit the customers' needs.

"If the British Army wants to use *Virtual Battlespace 2* for a certain element of training then it requires an organisation to help it understand how such a tool can be used to create accredited exercises and to configure, support and manage the training. The Army is there to protect the nation, not to develop its own simulation engineers.

"One of the great things about NSC, for example, is the completeness of what we do. Simulation is quite a long way down the line when it comes to how a customer meets a requirement – there is a lot of study work, operational analysis and mathematical modelling that goes into defining what needs to be done to provide effective training.

"Pure gaming companies don't have that continuum."

The ETSA chief also stressed that advancement in simulation technology was not the sole preserve of the games industry and that the field of training and simulation faces a bright future of its own.

"People in the industry have been talking about augmented reality – live, virtual, constructive (LVC) integrated training – for a number of years but in many ways it has been a solution waiting for a problem," McIntyre said.

"The technology and means to link them have been around for a while, but doing so in a way that is seen to deliver effective training is still in its infancy – we will see that evolve over years to come.

"This is an industry that is still making huge advances."

McIntyre argues that NSC – which demonstrated its "synthetic wrap" concept at I/ITSEC 2012 in Orlando earlier this month – has been at the spearhead of developing LVC training, with the company's systems already in use and providing a tangible benefit to the UK Armed Forces.

"I would say that NSC is at the forefront of the movement from the constructive, through the virtual to the live and the linkage for an effective training environment; the programmes being used by organsations such as the UK Land Warfare Centre are not just technology for technology's sake."

AEgis' Combat ID™ Game Wins People's Choice Award at I/ITSEC'12

December 21, 2012
Modsim.org

Huntsville, Alabama (December 19, 2012) - AEgis Technologies' Combat ID™ wins the People's Choice Award at the 2012 Serious Games Showcase & Challenge (SGS&C) held at I/ITSEC. The military training game is the first in a series of planned projects where AEgis will utilize the latest technology to provide effective alternative solutions to train the warfighter. Combat ID™ Lite is free and can be downloaded from Google play, iOS and iTunes store. The full version is also available for $0.99.

"We at AEgis are extremely proud of this accomplishment and the team's success in bringing home the People's Choice Award. Combat ID™ was developed to meet the needs of our customers by offering a realistic and relevant option to traditional training methods through a high-quality, cost effective and portable gaming application," said David King, Vice President of Simulation Development.

The SGS&C celebrates the use of games and game technology as a delivery medium for instructional material for the public. The top twelve entries are selected as finalists in three categories: Business, Government and Student. The finalists are invited to showcase their games on the I/ITSEC exhibit floor where a group of worldwide industry experts chose the "Best in Category". An additional award is selected by all conference attendees for the "People's Choice Award", which is considered "Best of Show".

Combat ID™ utilizes the highest quality graphics across multiple mobile platforms and is a game that can train multiple numbers of soldiers in a shorter timeframe. Combat ID™ challenges players to embark on a series of missions and battlefield environments, correctly identify combat vehicles and then determine if they are friend or foe. After familiarizing themselves with the features of 30 potential vehicle targets in the Training Garage, the player enters the battlefield environment and must locate and select vehicle targets, evaluate and identify with the option to zoom and then select the vehicle ID from an onscreen set of options. An onscreen After Action Review provides the player instant feedback on their performance and gives them a proficiency ranking.

Research indicates that fratricide and combat vehicle recognition are still issues in current operations, according to DoD analysts, industry subject matter experts and military trend reports. Development of Combat ID™ began by determining what vehicles are most commonly used in combat, both friend and foe, providing a training environment to educate the user on those vehicles (the Combat ID™ Training Garage) and then placing them in a realistic environment that will allow them to test their proficiency in positively identifying the vehicle and eliminating the threat if it exists.

TMI Dynamatics presents iDes and iDes Professional, a technology based driver trainer method

December 14, 2012
Modsim.org

TMI Dynamatics, a South African leading developer of interactive training solutions, is proud to present its latest development, the Interactive Driver Education System, (iDes), a complete driver training solution taking advantage of the latest e-learning and simulator technology. The iDes solution covers the complete driver training track, from theory and simulators to monitored on the road driving.

E-learning

The e-learning component teaches the student the theory of driving, through animations, videos and interactive assessments. Students can learn either at training academies across the country or at their home pc. All progress is synced via a central server, enabling students to continue their studying anywhere at any time, while instructors can keep track of their student's progress online.

Simulators

The iDes solution makes use of simulators to introduce students to driving a car. TMI Dynamatics offers a wide range of simulators, from low cost driving simulators to full size truck simulators, with or without motion. All simulators run software developed by TMI Dynamatics, completely aligned to local driving regulations and driving conditions, including geo specific terrains. They also feature a Virtual Instructor, which continuously monitors the students performance in the simulator, and gives instructions and warnings where applicable. The students progress is kept in a centralized database, enabling both the student and instructor to view progress, strength and weaknesses online, enabling the instructor to focus on areas of improvements.

Integration

The iDes solution provides a fully holistic driver training program, from theory to on the road driving. The student is constantly monitored and tracked how he performs on the e-learning, the simulators and on the road. TMI Dynamatics provides on the road training using recording devices which capture the students behavior and the road on video, as well as accelerating and positioning data. This enables the instructor to replay and discuss mistakes made while driving, giving the student a better insight into his driving behavior.

iDes Professional

Alongside iDes TMI Dynamatics has also developed iDes Professional, a training solution focused at professional drivers and corporations. It extends iDes with more unit standards through the e-learning environment, all accredited with local authorities. The e-learning provides an ideal platform for larger corporations; employees can come in when it suits them rather than putting operations to a halt to train everybody in a class room. It also provides refresher courses and assessments, to make sure all employees are up to date with their training. The complete traceability of the iDes solution ensures that all employees have received the proper training and understood it. iDes Pro also makes use of the latest, fully immersive truck simulator developed by TMI Dynamatics for both novice and advanced driver training.

KC-135R Air National Guard Boom Operator Simulators to use 119 MetaVR Visual Licenses

December 14, 2012
Modsim.org

BROOKLINE, MA, December 14, 2012 — MetaVR, Inc. announces it recently delivered Virtual Reality Scene Generator (VRSG) real-time licenses for the initial production of the KC-135R Air National Guard Boom Operator Simulator System (BOSS) to FAAC Inc., part of Arotech Corporation's Training and Simulation Division. The total BOSS production run will consist of 17 simulators, each with 7 MetaVR software licenses, for a total of 119 licenses over the two-year production period of the aerial refueling simulator.

This fully immersive Distributed Mission Operations (DMO)-capable boom operator trainer is fitted within a high-fidelity KC-135R aircraft replica. The training system consists of a boom operator's pod, associated operating systems, 4-channel image generation and projection systems, instructor operator station, physics-based tanker and receiver models, threat environment generation station and ARCNet Gateway. Fully qualified boom operators at 17 Air National Guard (ANG) KC-135R flying units will use the production BOSS for continuation training, mission qualification, up-grade training, currency training, and mission-rehearsal DMO training through the ANG Distributed Training Operations Center (DTOC).

As part of the delivery, MetaVR provided 4-meter Metadesic terrain tiles of North America 3D terrain enhanced with cultural lighting in the area of the aerial refueling track 400 North South. This area of interest extends from the Texas panhandle to eastern Colorado, and the terrain features over 340,000 cultural lights points that are geospecific to actual road networks.

AEgis Expands Embedded Virtual Training Solutions with VAMPIRE® BAT™

December 1, 2012
Modsim.org

Huntsville, Alabama (November 26, 2012) – AEgis continues to expand its embedded training solution capabilities with the recent addition of VAMPIRE® Bi-directional Advanced Trainer (BAT™), a high-fidelity virtual training simulator for the One System Remote Video Terminal (OSRVT). VAMPIRE BAT will be fielded on Army OSRVT systems as an embedded simulation training capability.

VAMPIRE BAT builds on a proven line of training solutions for the U.S. Army's Project Manager for Unmanned Aircraft Systems (PM UAS). BAT operates on the existing OSRVT CF-19 Toughbook computer and offers scenario-based training that features game quality graphics, geo-specific terrain models and mission rehearsal capabilities. VAMPIRE BAT simulates air vehicle video feeds and trains emerging bi-directional capabilities that allow OSRVT operators to control UAS payloads and sensors.

"AEgis is excited to expand the VAMPIRE Embedded Training Capability for the OSRVT system. We have the best Army in the world and our soldiers deserve the best training possible," said Mark McDaniel, Director of Simulation Solutions. "The goal for any training device AEgis develops is to ensure our soldiers get a positive transfer of training. Working closely with our customer and subject matter experts, VAMPIRE BAT performs like the actual system allowing soldiers to practice key aspects of the bi-directional mission."

VAMPIRE BAT leverages AEgis' core image generation technology that is used in many of the company's simulation products including the Visualization And Mission Planning Integrated Rehearsal Environment (VAMPIRE), a mission planning and operator training solution for Raven, Wasp AE and Puma AE Unmanned Aircraft Systems (UAS). The U.S. Army's Product Manager for Small Unmanned Aircraft Systems (PM SUAS) has fielded more than 3,100 copies of VAMPIRE across all four services. Leveraging VAMPIRE as a proven and stable foundation for VAMPIRE BAT will allow AEgis to meet their customer's aggressive fielding schedules while also reducing overall cost and project risk.

Fielding of VAMPIRE BAT will begin in 2013. Fielding of the bi-directional capability for OSRVT will be completed by the end of the year. The first unit equipped is planned for 2014.

Disti's New Runtime Engine for GL Studio Successfully Integrates with Lockheed Martin's Prepar3D for Advanced Instrumentation

November 30, 2012
Modsim.org

Orlando, FL (November 30, 2012) – The DiSTI Corporation, a leading provider of interactive 3D software and customized training solutions, announces GL Studio is now compatible with Lockheed Martin's Prepar3D® simulation software. Prepar3D users can use GL Studio powered by the new Lumen Engine to create cockpit and instrumentation content for their simulation and training applications. This new capability will simplify the interface development process through seamless integration with the Prepar3D environment.

The Lumen runtime engine for GL Studio is DiSTI's newest advancement in human machine interface development technology allowing GL Studio users to expand their platform reach to include DirectX. In doing so, instrumentation integration with Prepar3D and other DirectX-based rendering technologies are possible. In addition to DirectX, the new Lumen runtime delivers the features required to meet the needs of today's interface developers, including: multi-touch, animations, advanced text capabilities, support for new graphics card features, and the foundation to build once and deploy anywhere.

NGRAIN Now Offers No-Cost 3D Authoring Tool

November 29, 2012
Modsim.org

Vancouver, BC – November 27, 2012 – NGRAIN®, the leading provider of interactive 3D simulation software and solutions for maintenance training and support, today debuted NGRAIN® Producer®, the personal learning edition, which is available free-of-charge. Producer allows anyone, with or without 3D experience, to rapidly create interactive 3D animations and real-time practice tasks. To download the software tool, visit www.ngrain.com.

"NGRAIN is focused on transforming the way people share knowledge, and a key part of achieving this vision is making interactive 3D simulations even more attainable. Not only is the free-of-charge Producer personal learning edition more feature-rich than fee-based 3D authoring tools, it also offers unparalleled ease of use," says Josie Sutcliffe, Vice President, Marketing, NGRAIN.

With Producer, the personal learning edition, users can create and update NGRAIN 3D Knowledge Object™ (3KO®) files, interactive 3D simulations that contain and visually communicate knowledge about the equipment system they represent. Producer allows users to:

- Work with 3D models that have been created in any Digital Content Creation or Computer-Aided Design program.
- Import 3D data to the compressed, interactive NGRAIN format using industry leading tools, or the NGRAIN VRML2 Converter (which is available at no cost from the NGRAIN website).
- Create and update animations – as well as interactive practice tasks – using a visual "click and capture" storyboard.
- Add important equipment knowledge, such as part details and links to reference materials, to support training and on-the-job performance for complex equipment.

Users can then easily insert 3KOs into Microsoft® PowerPoint®, Word, or Adobe® PDF files, or publish 3KOs as part of an HTML page.

Producer, the personal learning edition, allows users create powerful interactive 3D animations and tasks. Professional users can upgrade to Producer® Pro, which provides access to advanced 3D authoring capabilities and feature sets, including interactive fluid flows, part constraints, callout hotspots, inverse kinematic animations, and the ability to export animations as videos.

Producer Pro can be purchased on its own, or as part of the NGRAIN Production Suite – the industry's first interactive 3D digital content creation platform that enables media developers and animators to produce fully interactive 3D training and support applications with unmatched speed and ease. (For more on the difference between Producer, Producer Pro, and the Production Suite, view this blog post).

"Animators and digital media developers worldwide are discovering the incredible potential of NGRAIN software, which removes the cost, complexity, and technical barriers usually associated with doing 3D," says Sutcliffe. "We are excited to see the results our no-cost software and advanced development tools can help them achieve."

Aerosimulators Launches Dedicated Brasilian Helicopter Simulators Website

November 29, 2012
Modsim.org

AeroSimulators has launched a special version of their website dedicated specifically to the Brazilian helicopter simulation market: http://www.aerosimulators.com/brasil. Aside from pictures and movies of various helicopter simulators, this website also features an interesting comparison between real IR footage of rotary wing police aviation units and the imagery generated by the GIST training simulator.

The launch of this website follows the success of the previously launched website that caters to the entire Latin American helicopter training market: http://www.aerosimulators.com/ES

The popularity of both websites is a strong indicator for the booming helicopter market in South America, which will benefits helicopter operators, pilots, OEM's and training providers worldwide.

Sundog Launches Unity 4.0 Support for SilverLining and Triton Environmental Effects

November 24, 2012
Modsim.org

Orlando, Fla. (November 19, 2012) - Sundog Software has updated its SilverLining Sky and 3D Cloud and Triton Ocean and 3D Water packages for the newly released Unity 4.0 game engine. Sundog's technology makes simulation-quality skies and water visuals available to the 1.3 million registered developers using the Unity engine.

"Our environmental graphics technology fills a need for creating outdoor scenes suitable for training purposes with the Unity platform," said Frank Kane, founder of Sundog Software LLC. "The combination of our products with the low-cost Unity engine makes for a very economical alternative for creating simulation and training environments with accurate skies, volumetric clouds, lighting, and oceans for any given time, location, and weather conditions. Game developers also appreciate the realism our products can bring to their titles while maintaining fast performance. No other water asset for Unity offers GPGPU-accelerated 3D ocean waves, and SilverLining leverages Unity's particle systems to keep its 3D clouds fast on any target platform."

Both SilverLining and Triton are currently in the top-5 grossing effect script assets in Unity's Asset Store. The SilverLining Sky and 3D Cloud package supports Unity on Windows, Android, iOS, or MacOS. The Triton Ocean and 3D Water package requires Unity Pro 4.0 targeting Windows platforms. Versions of SilverLining and Triton for engines other than Unity are available from Sundog Software's website.

MetaVR Chosen for Multiple JTAC Simulation Programs

November 21, 2012
Modsim.org

MetaVR announces that it has recently sold 14 Joint Terminal Attack Control (JTAC) simulators to the U.S Air Force Special Operations Command (AFSOC) and the Air Combat Command (ACC) totaling in the amount of $1.8 million.

Nine desktop and portable JTAC simulators were sold to AFSOC with initial fieldings at Hurlbert Field, and five systems to be delivered to the Nellis Air Force Base JTAC Schoolhouse.

In a related effort, MetaVR was chosen by the Air National Guard to be the visual system for its Advanced Air National Guard Simulation (AAJTS) prototype system. MetaVR real time 3D visuals will be used on the first two full-up 4-meter dome configurations of the JTAC simulator. The 240-degree horizontal x 100-degree vertical partial-dome displays are produced by Immersive Display Solutions. The AAJTS simulators will be delivered to the Air Education and Training Command (AETC) at Randolph Air Force Base.

These sales follow the accreditation of MetaVR's JTAC simulation system, developed jointly with Battlespace Simulations (BSI).This simulation system was recently granted accreditation by the Joint Fire Support Executive Steering Committee for JTAC training. This simulation system is accredited to replace live controls (types 1, 2, 3) for both day and night, and for laser target designation with simulated military laser, in accordance with the JTAC Memorandum of Agreement. Type 1 accreditation requires either a head-mounted display (HMD) or a 220+ degree FOV dome display.

The JFS ESC accreditation applies to any simulator that uses MetaVR's Virtual Reality Scene Generator (VRSG) version 5.7 or greater and BSI's Modern Air Combat Environment (MACE) version 1.0; such simulators include the AFSOC JTAC trainer, AAJTS, JFIRES, and JTAC-TRS systems.

This JTAC training simulator, comprised of MetaVR's VRSG and BSI's MACE scenario/entity generator, includes an integrated software-based Distributed Interactive Simulation (DIS) radio, a recording capability for recording and AAR/playback of missions, and a simulated laser range finder/laser designator. MACE is a DIS-enabled threat environment capable of generating a wide variety of semi-autonomous forces.

A privately funded COTS solution, the MetaVR/BSI JTAC simulation system enables users to perform training missions on a virtual battlefield with close air support interfaces such as 9-Line, 5-Line, and Call for Fire. Features that support such missions include physics-based weapons performance, laser target designation, full-motion infrared video feeds, a mission editor, human-level behaviors, path finding, blast effects calculations, complex weather system control, and a robust weapons and entity library. The JTAC system is capable of importing existing military topographic database information to enable operators and instructors to quickly develop scenarios appropriate for mission rehearsal.

The MetaVR/BSI JTAC simulator is offered as a commercial-off-the-shelf (COTS) firm fixed price simulator with publicly available pricing, and is available in portable and desktop configurations with a head-mounted display, and as an integrated system with a fully immersive dome or curved desktop screen display from Immersive Display Solutions.

The dome configuration, called the JTAC Immersive System, provides a low-cost transportable dome solution to meet the needs of JTAC simulation training in an affordable immersive environment.

The MetaVR/BSI JTAC simulator has been fully integrated at the Michigan Air National Guard's 4-meter Joint Fires Dome in Grayling, MI, AFSOC's Special Tactics Training at Hurlburt Field, FL, and AFRL's JTAC-TRS 5-meter domes, and is currently being developed for additional US and international customers.

Arotech's Realtime Technologies Chosen to Deliver a 6-DOF, Motion-Based Research Vehicle Simulator to Ohio State University

November 9, 2012
Modsim.org

Royal Oak, Michigan – October 2012 – Realtime Technologies (RTI), a part of Arotech Corporation's (NasdaqGM: ARTX) Training and Simulation Division, announced today that it has been selected to provide two advanced vehicle simulator environments for a new research center for driver interaction being established at The Ohio State University.

Ohio State (OSU), in partnership with Honda R&D Americas, Inc., is developing a high-fidelity simulation environment for testing driver behavior in realistic scenarios on OSU's west campus. RTI officials are very excited to be working closely with the center's partner organizations on this project. Other research partners include the Ohio Supercomputer Center (OSC), Wright State University (WSU) and Ohio University (OU).

"We are very excited to be working closely with the center's highly regarded partner organizations on this project," said Richard Romano, President RTI. "We look forward to helping them create one of the best vehicle simulation research facilities in the country."

As consumer demand for vehicles that incorporate sophisticated in-vehicle information and entertainment systems increases, the risk of cognitive overload and "driver distraction" for the multi-tasking driver is magnified. The new center will create a driving simulation facility to address the need for designing and implementing vehicle instrument panels and in-vehicle information systems that can be used safely by the driver while minimizing distraction and related safety concerns.

The advanced vehicle simulator environments provided by RTI include a full cab instrumented motion-based vehicle simulator and a vehicle drive-on motion pad system. The simulator will be a full-cab six-degree-of-freedom, motion-base research vehicle simulator that includes a cylindrical-based 240-degree screen with high-resolution, edge-blended visuals. RTI also will provide its unique and powerful "SimVista" scenario development tools, along with "SimCreator" core vehicle simulation software and "SimSimulator," high-fidelity vehicle model for varied human factors research needs.

Other key components are the scenario control subsystem, which includes autonomous traffic simulation, scripted events, relational behaviors and environmental controls. This subsystem also collects data and performs measurement functions of the simulator for research analysis.

The visual subsystem handles all real-time visual rendering processes, including animated and static objects in the scene. This makes what the driver sees out the window seem very realistic. The visual component is able to render VRML or OpenFlight databases in real time. The audio software and hardware provide audio cues to match what the driver would expect under the conditions being simulated. Synthesized sounds include engine, wind, tire whine, and noise from other vehicles.

Calytrix and TerraSim Offer Updated "Sample Desert Village" Correlated Terrain Databases

November 6, 2012
Modsim.org

November 2, 2012 Pittsburgh, PA – Calytrix Technologies and TerraSim, Inc. jointly announce the availability of an enhanced set of correlated terrain databases for distributed simulations. The updated "Sample Desert Village" set of terrain databases was generated by TerraTools® from core geospatial source data, including orthophoto imagery, digital elevation data, attributed vector data, and 3D models. TerraTools® compiled those terrain information types into a common representation, then processed and exported the result to each of the various runtime formats in the set. The terrain databases are ready for testing in Live, Virtual and Constructive (LVC) distributed simulations, such as those linked together by Calytrix's LVC Game interconnectivity software.

"Sample Desert Village" contains a variety of complexity, including parametrically generated buildings with interiors, walled compounds, utility lines, automatically placed 3D models such as mosques and helipads, vegetation of various types, and paved and unpaved roads. The richness of the terrain databases support rigorous distributed simulation tests for database content and cross runtime correlation.

By making "Sample Desert Village" available on its website, Calytrix provides a set of correlated terrain databases suitable for testing diverse systems, including serious games such as VBS2, Steel Beasts, and constructive simulations such as JointSAF, JCATS, and OneSAF. These runtimes can be connected into federated simulations via Calytrix's LVC Game with other live, virtual and constructive systems. In addition to requesting access to these databases, demonstration copies of LVC Game can be requested.

Medical Simulation Center Fundamentals

Fiona Greenyer
January 10, 2013
Halldale Media

In the first of a series of articles on medical simulation centers, Group Editor Marty Kauchak reports the quest for patient safety and other requirements are fueling the community's demand for these facilities. This article appeared in MEdSim magazine issue 4 of 2012.

Simulation allows healthcare profession members to learn and enhance many skills for individual and team procedures before they step into the operating room. The rapidly evolving simulation market provides doctors, nurses and other healthcare professionals with cost-effective and high- fidelity part-task trainers to complement the array of more expensive, heritage full-task training devices prevalent throughout the community. At the same time, cutting edge Web-based instruction, virtual worlds and other forward-leaning technologies are being introduced into the continuum of academic and professional learning. Hospitals, medical schools and other institutions in the private and public sectors allow their professionals to learn and rehearse an increasing list of procedures in the virtual domain – not on an actual patient – at medical simulation centers. These venues typically have classrooms, virtual operating rooms, after-action review (debrief) stations and other facilities to allow learners to use technologies throughout their continuum of instruction.

In a series of building block-type articles, MEdSim will highlight the latest developments in medical simulation centers. This initial story looks at how the burgeoning, underlying demands for simulation are fueling the requirements for these facilities to serve as brick-and-mortar venues for learning. In follow on articles we'll look at returns on investment (ROI) and the business case for these facilities, the technologies that populate the centers and other topics.

Understanding Simulation Centers

The healthcare profession, in relation to the military, civil aviation and other high-risk communities, is belatedly embracing simulation. The other sectors have used part-task trainers, full mission simulators and other devices for decades to help its members learn and enhance their ability to operate aircraft, vehicles and ships, and perform other skills – prior to conducting the task. In a positive development, simulation is becoming a foundation of healthcare providers' culture of learning.

The majority of this activity is occurring at simulation centers. These facilities are built and equipped to allow individuals and teams to be immersed in increasingly rigorous training scenarios – without using live patients.

These venues are being built at a quickening pace. During a one week period this September, MEdSim's sister editorial resource www.halldale.com reported the opening of two centers and the donation of $7.1 million to open another facility in 2013.

The surging interest in medical simulation centers is a global phenomenon. Indeed, the embryonic Sidra Medical and Research Center's Clinical Simulation Center in Qatar, promises to be one of the leading facilities in the world [Medical Simulation Centers Transforming International Healthcare Landscape MEdSim issue 2.2012].

Two center leaders described their state-of-the-art facilities. Cate Nicholas, Ed.D., MS, PA, the Director of Simulation Education and Director of the Standardized Patient Program at the Clinical Simulation Laboratory, University of Vermont/ Fletcher Allen Health Care, told MEdSim, that her simulation laboratory is built on a distributed model with more than one physical location.

Part of the laboratory's infrastructure includes a virtual hospital. "This has six inpatient rooms, one with an attached bathroom; a multipurpose room which can be transformed into an OR/ER/MICU[medical intensive care unit]/ PICU [pediatric intensive care unit] or SICU [surgical intensive care unit] based on the needs of the faculty; two debrief rooms – one small and one large which accommodates up to 35 people; a task-trainer room which holds 16 people or more; and a virtual reality room which has a number of devices – a simulator for robotic training, a colonoscopy/endoscopy machine and arthroscopic machine."

Another attention getter is the diverse learning audiences served by this center, providing another indication of the interest by the private and public healthcare sectors in the technology.

Nicholas, who is also a physician's assistant, pointed out the Clinical Simulation Laboratory (CSL) is jointly supported by the University of Vermont Colleges of Medicine, and Nursing and Health Sciences, and Fletcher Allen Health Care, and serves multiple learning audiences. A partial list of the more than 20,000 healthcare professionals who will annually use the laboratory includes aspiring doctors, nurses and allied healthcare professionals at UVM colleges; faculty staff at the university; and staff doctors, nurses and other community professionals, as the EMT programs. The CSL also provides educational support for the Vermont Air and Army National Guard.

The Burlington, Vermont-based simulation community leader noted her learners' particular interest in part-task trainers is to develop specific clinical skills. "These devices are getting an incredible amount of use across the continuum of medical school training and across the health care continuum – they are being used quite extensively."

Also of note, the Clinical Simulation Laboratory's has a video capture system that supports the recording, replaying and debriefing of simulation scenarios.

One of the community's newest simulation centers is the Simulation Lab at Kishwaukee (Illinois) Community Hospital, part of KishHealth System. The lab is outfitted with a computer control room and a mock patient room that houses iStan, a wireless simulated patient equipped with fully operational functions including bleeding, tears, and other fluids "iStan also has realistic physiology and responses including EKG rhythms," DurRay Sanchez-Torres RN, BSN, the Clinical Development Coordinator of the Simulation Lab, pointed out. Healthcare providers are able to run scenarios, making decisions in real time, communicating with and treating iStan as an actual patient. Medications are given through IVs, oxygen is delivered through the nose and mouth, and catheters are inserted, creating a training environment like no other, as iStan speaks and reacts as a human being would to whatever stimulus is presented," Sanchez-Torres added.

The Primacy of Patient Safety

Simulation centers and their enabling technologies are an important investment for any size host institution.

Three data points on the cost of these facilities may be gleaned from facility openings through this summer. This July, CHRISTUS St. Michael Health System unveiled its new 5,200 square-foot, $1.2 million Simulation Center in Texarkana, Texas. Earlier in June, the University of Texas in San Antonio opened a new $3.9 million Simulation Center and Clinical Learning Lab for its School of Nursing, and in Australia a $1.3 million mobile

simulation center is expected to revolutionize the way clinical training is delivered in regional and remote areas of New South Wales.

Even in an era of increasing medical costs and competition for resources, medical sector decision makers are investing in simulation centers – and with compelling reasons.

In medical simulation, the training imitates reality, offers almost limitless opportunities to have things "go wrong", allows practitioners to safely demonstrate how to "do things right", and provides corrective feedback as a guide to future action, Connie Lopez, MSN, CNS, RNC-OB, CPHRM, the National Leader for Simulation-based Education & Training in the National Risk Management and Patient Safety section at Kaiser Permanente, observed.

She added, "Simulation-based education provides an opportunity to practice a variety of clinical situations where error is more likely to occur. At Kaiser Permanente, medical simulation-based training effectively targets commonly elusive educational objectives: practice without risk, curricular standardization, and pedagogic efficiency." The Kaiser Permanente investment strategy in simulation at all eight of its regions also helps illustrate the surging interest in simulation across healthcare specialties.

Simulation-based programs at Kaiser Permanente are now offered in: labor and delivery, anesthesia, operating rooms, neonatal/ pediatric intensive care units, medical/surgical units, general and interventional radiology, adult and pediatric procedural sedation, ambulatory surgery and procedural centers, clinics and emergency departments. "These programs are constantly evolving and we are looking at other high-risk areas where simulation can be utilized," Lopez pointed out.

At the association level, the American College of Surgeons' Division of Education has embraced simulation across the spectrum of education and training programs and has established an accreditation program for simulation centers. .

Following up on Lopez's theme, Ajit Sachdeva, M.D., FRCSC, FACS, the director of the ACS division, told MEdSim that patient safety was at the top of his list of requirements for using simulation.

"There are things that we need to do to train people in simulated environments so they can perform in a much more effective way in real environments and provide safe care of the highest quality," Sachdeva said.

Sachdeva noted the ACS views simulation as a way to promote excellence and expertise in surgery. "That comes through the repeated, deliberate practice, which requires a fair amount of training in simulated environments. We can change the slope of the learning curve by doing this." He emphasized learning tasks may be completed in a more concentrated manner through simulation while it takes considerable time to gain expertise in the real operating room environment,

Additionally, Sachdeva said the achievement of cognitive, judgment and technical skills may be effectively assessed and documented against pre-established standards in a simulated environment.

"We also can expose our learners to diseases and conditions that are unique and uncommon, so they are prepared for and can deal with the unexpected," he remarked.

The National Patient Safety Foundation (NPSF) views simulation through the prism of its very- focused mission: improving the safety of the healthcare system. To support the mission, the foundation has become a unique proponent of simulation – recognizing its value as an educational tool to assist healthcare professionals as they learn and apply patient safety techniques.

The NPSF's efforts in this sector have been led by Jeff Cooper, Ph.D., a long-time advocate of medical simulation and a community subject matter expert. "Jeff and our board have made us quite familiar with the value of simulation as a learning tool and the place that it has in improving safety practices," Diane Pinakiewicz, the foundation's president, told MEdSim.

At an early point in the foundation's existence, it also believed that simulation had tremendous value as a safety enabler – allowing the health care professional to practice a procedure before performing the steps in real time. "The discipline of anesthesia was able to improve its safety profile through the use of simulation," Pinakiewicz recalled. "What we realized was that simulation had broader application to safety across disciplines."

The Lucian Leape Institute, a think tank based at NPSF, also endorsed simulation in its report Unmet Needs: Teaching Physicians to Provide Safe Patient Care. Pinakiewicz pointed out that the report framed simulation as a "critical component of medical school training."

The NPSF's president also noted that the healthcare community's awareness and understanding of the value of simulation to support individual and team training has been shaped, in part, by the experience of aviation and other high-risk industries that have used simulation for decades.

"Using simulation to practice new procedures while presenting no risk to patients is invaluable to improving patient safety. If you have the capability to learn in a scenario where you are safe and protected from potentially hurting someone, and are able to learn from trial and error without affecting a patient, that has value," she said. And while some of the returns on investment or other outcomes of simulation use may be hard to quantify, using this technology to learn and rehearse, and learn experientially and not just didactically, result in more effective skills and teamwork to get the job done.

Team Building and Beyond

Much like their counterparts in the military and civil aviation sectors, medical professionals can also build team skills in a simulated environment. Kaiser Permanente's Lopez noted that her colleagues have used medical simulation to support our "teams of experts becoming an expert team." She continued, "Through the use of simulation in the medical training environment any health care provider or medical center team has the potential to improve and maintain collaborative teamwork and communications skills in addition to improving patient safety and clinical outcomes."

Indeed, MEdSim has noted the buzz at recent conferences – on the exhibition floor and in break-out sessions – about systems and strategies designed to replicate the successes of institutions such as Kaiser Permanente that build and enhance team performance through simulation.

Sachdeva, too has noted this development, but added a hint of caution for his colleagues. "People sometimes get so focused on team training that they do not sufficiently address the needs of the individual. If the individual does not have the requisite skills, no amount of teamwork is going to cut it – people on the team can only compensate for so much. Our approach has been to focus on excellence at the individual level, excellence at the team level, and excellence at the systems level. All three domains must be addressed effectively through simulation."

At the end of the day, medical simulation centers are a business and must remain financially viable. Roger Smith, Ph.D,, examined this topic in greater depth in his MEdSim feature article Surgical Education, Research and Business Design, Issue 1.2012. At a more elementary level, CEOs and other "shareholders" of organizations that invest in simulation labs, look for ROIs from their expenditures. MEdSim readers gained insights into ROI in a groundbreaking article on the topic ROI: What is it and does it really matter? by Don Combs, Ph.D., Issue 2.2012.

While ROI will be discussed in more detail in follow-on articles, the concept is included in this discussion because of its linkage to patient safety.

The Clinical Simulation Laboratory is achieving an impressive ROI by improving processes, in addition to teaching and enhancing individual skills. In one instance, Fletcher Allen Health Care, the University of Vermont's teaching hospital, is dramatically reducing the infection rate for central line insertion procedures. "We were invited into the discussion because we have central line insertion mannequins," Nicholas said, and

continued, “The key here was a total system review. Simulation had something to contribute – it was a piece of the pie. We were able to become part of a new, required training for first-year residents prior to them entering the medical intensive care unit. At the most recent follow-up they had zero central line infections with insertion related to those learners coming in – and that’s in one year.”

As part of the system review, the laboratory has also contributed to lower infection rates through collateral improvements in hand washing and other sterilization procedures, electronic health record documentation, and other actions. “I don’t think the simple task of having the learners come in and learn how to put a central line in a simulator made the difference. I think it’s because we got involved with a process review of how do we improve and lower central line infection rates from A- Z, and we took that system and replicated the process in the simulation lab,” Nicholas reflected. [Editor’s note: See related University of Washington central line study in this issue.]

The simulation laboratory is helping improve two other internal processes; skin surveys to avoid bed ulcers in hospitalized patients and preventing patient falls.

In what promises to be a watershed development in healthcare’s use of simulation, providers of malpractice insurance for healthcare professionals are reducing their rates for members who demonstrate levels of competency through simulation. While several insurance providers in this sector declined MEdSim’s invitation to provide on-the-record or on background insights on the impact of these technologies on their rates, the ACS’s Sachdeva corroborated anecdotal evidence we have received on the topic at conferences and other venues.

“The insurance companies have been watching the advances in the field of simulation. They have realized that validated and effective methods for teaching and assessment can be very useful to ensure that individuals acquire and demonstrate specific levels of competence, proficiency and expertise. In some cases, they have started offering small reductions in insurance malpractice premiums, which is a very positive trend,” Sachdeva said.

New President at SimCom Training Centers

Fiona Greenyer
January 8, 2013
Halldale Media

SimCom Training Centers has named Eric Hinson as its new president.

Hinson, who will report directly to Wally David, the company's chief executive officer, will oversee and direct the activities of SimCom's four training center locations and 56 operational simulators. Additionally, he will be responsible for identifying future growth opportunities for SimCom, implementing strategic initiatives and expanding its global influence throughout the simulator training marketplace.

"As we look to the future, we believe Eric is the right choice to lead the SimCom brand to the next level," said Wally David. "His leadership and experience in the simualtor training marketplace gives us a keen competitive advantage as we grow and expand our services. Eric is a champion of our signature 'value, personal and friendly' approach to simulator training. Being an experienced pilot himself, Eric knows how important this training philosophy can be to pilots who rely on SimCom to provide them with a realistic and challenging training environment that furthers their knowledge, skills and proficiency. Eric is a natural fit in our company's culture and we are excited to have him at SimCom."

Mechdyne Completes Phase 1 Wave at National SimCenter

Lori Ponoroff
January 8, 2013
Halldale Media

Mechdyne Corporation completed the "Phase One" installation of a Wide Area Virtual Environment (WAVE) virtual reality facility at the National Capital Area Medical Simulation Center (SimCenter) in Silver Spring, Maryland. SimCenter is part of Uniformed Services University of the Health Sciences (USUHS).

The WAVE facility will be used to educate health care professionals — including uniformed officers and other personnel in the Army, Navy, Air Force and Public Health Service — to deal with wartime casualties, disasters, and other public health emergencies. The virtual reality environment performs a key role in training active duty personnel who are supporting operations in Iraq, Afghanistan, and elsewhere.

The 1,000-square foot solution is a customized immersive environment that includes two immersive 3-D theatres connected by a corridor. This configuration provides a setting that replicates real-life situations such as a traumatic injury during combat followed by immediate victim transport to surgery. The WAVE allows medical practitioners to simulate in-the-field medical triage followed by emergency room simulation, all in real-time.

Mechdyne was awarded an additional contract in September 2012 for the project's year-long Phase Two — installation of sensory equipment for sight, sound, smell, etc., plus motion platforms for vehicle/helicopter bucks, video and audio recording of exercises, and enhanced communication systems between the participants and control room.

ZelTech, Inc. Activates ZelTech Training Solutions, LLC

Lori Ponoroff
January 2, 2013
Halldale Media

ZelTech, Inc. created ZelTech Training Solutions (ZTS), LLC, on December 31, 2012.

ZTS is a former group of Zel Technologies, LLC, that provides live training and simulation products and services to the U.S. military, particularly the U.S. Army and Marine Corps. ZTS focuses on tactical force on force and force on target training, range instrumentation, battlefield effects simulations, system service life extensions, research and development and cost effective technology insertions.

The ZTS campus is located outside Orlando, Florida, near the Army PEO for Simulation, Training and Instrumentation and the Marine Corps Program Manager for Training Systems, and is expected to expand considerably.

In addition to its training solutions, ZelTech provides advice, critical operational assistance, and leading edge technical solutions to the military, the Intelligence Community and homeland security forces. The company offers equally responsive and cost-effective solutions to those in civil government and the commercial marketplace that face similar knowledge management, collaboration, decision support, and security challenges.

Lake Superior State University Gets $400,000 Donation for Simulation

Lori Ponoroff
December 18, 2013
Halldale Media

Lake Superior State University (LSSU) got a $400,000 donation from the R.W. Considine Foundation to be used to purchase high-fidelity mannequins as part of the school's proposed new nursing simulation center in downtown Sault Sainte Marie, Michigan. The center is a a joint project between the school, the city, and War Memorial Hospital that will train LSSU students, hospital staff, first responders and other healthcare professionals in the region.

The proposed simulation center will allow students and healthcare workers to practice their skills on the equipment that responds to their care just as human patients would. The donation will fund five mannequins including a Laerdal SimMan® SimMom™, SimBaby™, SimJunior® and ALS Man designed for paramedic training.

The proposed LSSU-WMH simulation laboratory would feature the latest technology, with computer-controlled, wireless mannequins that can give feedback to those being trained, just as a patient would in real situations.

Simulator Upgrade Contract

Fiona Greenyer
December 18, 2013
Halldale Media

The Federal Aviation Administration (FAA) has commissioned Environmental Tectonics Corporation (ETC) to upgrade and modernize vital flight simulation equipment.

ETC will upgrade the software and critical components of a device known as the Gyro IPT II. Built by ETC and managed by the FAA's main facility in Oklahoma City, this equipment plays a key role in the agency's aircrew and pilot training programs.

The overhaul will expand the FAA's ability to perform basic flight training maneuvers. The refurbished trainer will be able to simulate over 22 spatial disorientation flight profiles, record flight data for individual pilots and support cutting-edge research.

ETC will retrofit the unit at its headquarters in Southampton, PA, and will undergo extensive factory validation before moving to an FAA facility housing other ETC training devices. Deliver is expected next year.

Cubic Gets New Instrumentable MILES Tactical Vehicle System Order

Lori Ponoroff
December 18, 2013
Halldale Media

Cubic Defense Applications, the defense systems business of Cubic Corporation, received a new $12.5 million order for its Instrumentable MILES Tactical Vehicle Systems (I-MILES TVS) from the U.S. Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI).

I-MILES TVS employs Cubic's wireless vehicle Multiple Integrated Laser Engagement System (MILES) technology to provide the real-time casualty assessment necessary for MILES tactical engagement training in direct-fire, force-on-force instrumented training scenarios. The system offers superior performance because of its weapon simulation and casualty assessment accuracy for vehicles and fixed structures. It adapts to any wheeled or tracked tactical vehicle and is also configurable for buildings, fixed equipment and other structures. The system includes new features that improve ease of use for soldiers, including touch-screen displays with highly intuitive graphic interfaces.

Cubic also just completed its first shipments of I-MILES TVS to the U.S. Army – it delivered more than 1,000 kits to U.S. Army installations in November, with the U.S. Army Joint Readiness Training Center at Fort Polk, Louisiana, and the National Training Center at Fort Irwin, California, receiving most of Cubic's production.

The first six tactical vehicle systems went to Fort Carson, Colorado, where they will be used to train end users. Cubic is to deliver over 3,000 systems under the first option of its 2010 contract with the U.S. Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI). It will conclude deliveries under the first option in May 2013, and then begin work on a second option, which includes the $12.5 million order.

U.S. Air Force Selects CAE Healthcare's LearningSpace for Medical Sim Centers

Lori Ponoroff
December 17, 2013
Halldale Media

The United States Air Force chose CAE Healthcare's LearningSpace as its center management solution in 25 medical simulation centers worldwide. Prime contractor Telos Corporation will provide program management services and information assurance and accreditation required for connection to the Air Force network under the NETCENTS task order.

The U.S. Air Force will install LearningSpace in Tier 1 and Tier 2 medical simulation centers in the United States, the United Kingdom, South Korea and Japan. LearningSpace is a Web-based learning management system that captures simulations and patient data on video for learner debrief and assessment.

Tier 1 medical simulation centers are the largest in the Air Force Medical Support Agency and are responsible for curriculum development, mentoring and training instructors. The first Tier one sites to install LearningSpace will include U.S. Air Force Bases (AFB) Keesler in Biloxi, Mississippi; Travis in Fairfield, California; Elmendorf in Anchorage, Alaska and Lakenheath AFB near Suffolk, England. Additional centers slated for the first phase of the LearningSpace installation include Lackland AFB in San Antonio, Texas, USA; Wright Patterson AFB in Dayton, Ohio, USA; Yakota AB outside Tokyo, Japan; and Osan AB in Osan, South Korea.

Telos serves as a prime contractor on the five-year NETCENTS contract vehicle, which was recently extended by the government for an additional two years. NETCENTS is an indefinite-delivery, indefinite-quantity

contract that provides the Air Force, the Department of Defense and other federal agencies with a single vehicle through which to buy network-centric information technologies, networking equipment, and services, as well as voice, video and data communications hardware and software and telephony solutions from preferred contractors.

CAE Healthcare's LearningSpace is currently undergoing the Department of Defense Information Assurance Certification and Accreditation Process (DIACAP) for security compliance, which is expected be completed by July 2013.

MetaVR Visual Licenses for KC-135R Air National Guard Simulators

Lori Ponoroff
December 14, 2013
Halldale Media

MetaVR, Inc. delivered Virtual Reality Scene Generator (VRSG) real-time licenses for the initial production of the KC-135R Air National Guard Boom Operator Simulator System (BOSS) to FAAC Inc., part of Arotech Corporation's Training and Simulation Division. The total BOSS production run will consist of 17 simulators, each with 7 MetaVR software licenses, for a total of 119 licenses over the two-year production period of the aerial refueling simulator.

The fully immersive Distributed Mission Operations (DMO)-capable boom operator trainer is fitted within a high-fidelity KC-135R aircraft replica. The training system consists of a boom operator's pod, associated operating systems, 4-channel image generation and projection systems, an instructor operator station, physics-based tanker and receiver models, a threat environment generation station and ARCNet Gateway. Fully qualified boom operators at 17 Air National Guard (ANG) KC-135R flying units will use the production BOSS for continuation training, mission qualification, up-grade training, currency training and mission-rehearsal DMO training through the ANG Distributed Training Operations Center (DTOC).

As part of the delivery, MetaVR provided 4-meter Metadesic terrain tiles of North America 3D terrain enhanced with cultural lighting in the area of the aerial refueling track 400 North South. This area of interest extends from the Texas panhandle to eastern Colorado, and the terrain features over 340,000 cultural lights points that are geospecific to actual road networks.

Thales Supports Royal Engineers' Interactive Trainer

Fiona Greenyer
December 11, 2013
Halldale Media

Thales UK has delivered an interactive training solution, known as the Thales Talisman Training System (T3S), which dramatically improves the effectiveness of pre-deployment training by British Army teams preparing to use the Talisman system in support of Combat Logistics Patrols in Afghanistan.

Within four months of contract award, the first training course using T3S was delivered to the Royal Engineers, the operators of Talisman. In that period, Thales designed, procured, built, tested, de-commissioned, transported and re-commissioned an entire Talisman troop training facility, including six representative vehicle bays

complete with 'out-of-the-window' views and control systems, 30 operator workstations, communications systems and after-action review facilities. To date, Thales has delivered three further training exercises at locations in the UK and Germany.

T3S comprises over 180 PCs and 70 displays operated using gaming controls. It runs a simulation based on the VBS2 gaming engine within a synthetic wrap derived from Thales's open Generic Vehicle Architecture (GVA) and Vectronics Infrastructure for Video over Ethernet (VIVOE) developments.

The training courses are delivered by the MOD's Talisman Training Advisory Team (TTAT). For each pre-deployment course, Thales supplies all the hardware and software, installs the sysetm and then provides technical oversight and support to the training. This involves maintaining the T3S equipment and supporting exercise control (EXCON) during exercises and after-action reviews.

Talisman, for which Thales is also the Mission System Design Authority, consists of manned and unmanned vehicles operating together as a system to investigate threats such as mines and improvised explosive devices (IEDs) on military supply routes in theatre.

VSTEP Signs MOU with CAE for Simulation Projects

Lori Ponoroff
December 5, 2013
Halldale Media

VSTEP, a Dutch simulation company, signed a Memorandum of Understanding (MOU) with CAE to solidify their intention to work together on simulation projects worldwide.

With the signing of the MOU, VSTEP and CAE intend to combine their mutual expertise to develop integrated simulation-based solutions for market segments including maritime, emergency response and homeland security.

Combining CAE’s simulation products, software tools and service delivery capabilities with VSTEP’s expertise in the fields of advanced maritime simulators, incident management simulators and camera operator training simulators will enhance CAE’s integrated enterprise solutions portfolio.

Driving Simulator Orders for Rheinmetall

Fiona Greenyer
December 4, 2013
Halldale Media

Rheinmetall's Simulation and Training business unit has recently been awarded a number of contracts for driving simulators worth over €10 million.

The Swiss Army has chosen Rheinmetall to modernize its FASPA tank driving simulator. Its mechanized units will be equipped with a state-of-the-art tank driving training facility consisting of six units with a total of 20 simulator cabins for Leopard 2, CV 9030, M109, Piranha 6x6 and Piranha 8x8 vehicles. Rheinmetall's subsidiary's Swiss Simtec AG, will carry out a considerable share of the work, which is due for completion end of 2013.

A driving training simulator for the new Boxer 8x8 multi-role armoured vehicle is expected to enter service with the Dutch Army in the first quarter of 2014. This simulator is similar to the driving training simulators supplied in 2008/09 for the CV9030 and YPR located at the Dutch Army's base at Oirschot. As with the two existing simulators, an authentic replica of the Boxer driver's cab will be installed on a 6 DOF motion platform.

Another customer has ordered two driving simulators for the Fuchs/Fox 2 6x6 armoured vehicle, which are slated for delivery in late 2013. These simulators will be equipped with a 6 DOF motion system and high-resolution display system. Included under this contract are specialized databases featuring the specifics of training areas and vehicle performance parameters.

Virgin Galactic Selects Quantum3D Simulation for Spaceship Training

Lori Ponoroff
December 3, 2013
Halldale Media

Virgin Galactic, the world's first commercial spaceline, ordered Quantum3D's six-channel Independence® IDX 7000 image generator to train pilots on spaceship equipment and command. Quantum3D, a provider of visual computing solutions for government and commercial applications, will be demonstrating the IDX 7000 and the imagery that will train Virgin Galactic's pilots in a variety of simulations this week at I/ITSEC 2012, at booth #2401.

The IDX 7000 offers enhanced performance and capabilities to deliver Virgin Galactic a versatile and powerful simulation and training platform that can be setup in a dedicated room or easily transported, to meet a range of onsite, on-location and mobile training needs, according to Quantum3D. Combined with Mantis® shader-based real-time scene management software with geo-specific, worldwide synthetic environments, Virgin Galactic will be able to train its pilots in a variety of simulations, from instrument/cockpit familiarization to a full range of special effects, sensors, weather, and lighting, along with mission-critical functions such as height-above-terrain and line-of-sight intersection testing.

Chemical Warfare Agent Detection Training for Canadian Forces

Fiona Greenyer
December 3, 2013
Halldale Media

Patlon Aircraft & Industries sold an Argon Electronics simulator to the Canadian Armed Forces that trains personnel to detect chemical warfare agents and toxic industrial chemicals.

Patlon Aircraft & Industries Limited of Halton Hills, Ontario, won a $6.6 million contract to supply an Argon Electronics simulator system that will be used to train Canadian Armed Forces personnel in the use of new portable devices that detect chemical warfare agents and toxic industrial chemicals during military operations.

Patlon partnered with Argon Electronics of Bedfordshire, United Kingdom, to supply Argon simulators for the Canadian Armed Forces's new handheld, personal and fixed-site chemical detectors. Patlon will also supply Argon's PlumeSIM wireless virtual training system that simulates the release of chemical agents under a wide

variety of environmental conditions. Patlon will provide initial training and in-service support over the entire life of the products.

The chemical detector simulators project is one component of the $85 million Chemical Agent Sensors Project in which the Canadian Armed Forces will acquire sophisticated chemical, biological, radiological or nuclear sensors and detectors, protective equipment, reconnaissance systems, decontamination systems and new medical countermeasures to enhance the Canadian Armed Forces's ability to survive and operate in a chemical, biological, radiological or nuclear -contaminated environment.

The Argon simulation system will allow the Canadian Armed Forces to train in the use of these new detectors without having to use chemical aerosols during training, an approach that is cost-effective and environmentally-friendly, and allows instructors to monitor training performance electronically.

The simulation system will be used primarily at the Canadian Armed Forces Fire and Chemical, Biological, Radiological or Nuclear Academy at Canadian Forces Base Borden, in southern Ontario, and by chemical, biological, radiological or nuclear defence instructors at Canadian Armed Forces units across Canada.

First deliveries of the simulation system will begin in the spring of 2013, with full operational capability expected in the coming years.

MASA SWORD Integrated with Calytrix's Comm Net Radio Simulator

Lori Ponoroff
December 3, 2013
Halldale Media

MASA Group and Calytrix Technologies have successfully integrated MASA SWORD with Calytrix's CNR-Sim Pro. SWORD's integration with CNR-Sim Pro will be showcased at MASA's booth #2201, December 3-6, at I/ITSEC 2012 in Orlando, Florida.

SWORD users can now communicate in large-scale exercises with other CNR-Sim users and DIS radio users, providing them with the additional benefit of device-free external communications. When used with CNR-Log, SWORD users' radio comms will be part of a system-wide After Action Review. With CNR-Effects, SWORD users will experience physics-based radio signal degradations that impact real-world communications.

SWORD is an automated, aggregated, constructive simulation designed to help users develop and deploy advanced and highly realistic scenarios, in particular for the training of decision-makers in command posts and crisis centers, and for the analysis of military doctrines and emergency procedures. Calytrix CNR-Sim (Comm Net Radio Simulator) is a software only, multi-channel radio simulator for Windows.

Organic Motion Introduces Role-Play Training System

Lori Ponoroff
December 3, 2013
Halldale Media

Organic Motion, Inc., an innovator of computer vision and motion capture systems, introduced Organic Motion LIVE™ (Live Interactive Virtual Environment) at I/ITSEC 2012. The company says LIVE, has the most

powerful and immersive role-play training capabilities and is aimed at maintaining the highest level of training in a budget-constrained environment.

LIVE allows role-players to drive realistic digital characters from anywhere, so fewer role-players can deliver more training scenarios – without the need to travel. It works by using advanced motion capture technology to transform the role-player's performance into a live projected digital character animation within a training environment. Because the appearance of the characters can be customized or quickly swapped and placed in training facilities anywhere in the world, a single role-player can drive complex scenarios that would require multiple role-players today. Unlike AI (artificial intelligence) avatars, which have limited, pre-defined scripts, the company says LIVE's digital characters are as dynamic and unpredictable as the real human role-players that drive them.

FAA Certifies Second ELITE Helicopter AATD

Lori Ponoroff
November 29, 2013
Halldale Media

The FAA awarded AATD certification to a new Model TH-100 rotary wing trainer by ELITE Simulation Solutions. The TH-100 is an open cockpit, single pilot IFR training device based on the performance of the single engine turbine Eurocopter AS-350B Ecureuil. The trainer features GNS 430 WAAS GPS, radar altimeter, HSI, RMI, DME, ADF, VOR, KFC 150 Flight Director and a high definition world-wide visual scenery database.

The high fidelity aero model and quality of the display and scenery makes the TH-100 an excellent procedural trainer for rotary wing specific maneuvers such as hover taxi, quick stops, confined area landings, pinnacle landings, autorotations, max performance take off, and running landings, according to Wayne Keyes, ELITE's Director of Business Development. He says it is also a tremendous emergency procedure trainer for loss of tail rotor, loss of tail rotor thrust, hot starts, hung starts, power, static system and electrical emergencies.

SAT Makes World-first Use of CESAsim

Fiona Greenyer
November 28, 2013
Halldale Media

Swiss AviationTraining (SAT) has become the world's first flight training organisation to offer the CEFAsim simulator flight evaluation facility on an Airbus A320 simulator. CEFAsim technology makes flight training debriefings more efficient, more effective and more successful.

CEFAsim software is a product of CEFA Aviation. As the simulator session progresses, the software records all the flight parameters and all the actions taken on the flight deck. It also gives the instructor the option of 'bookmarking' key moments or situations to return to them more quickly and easily during the subsequent debriefing. And by presenting visual, chart and audio sources together on the same user interface, the technology further allows any step in the session to be specifically analysed to enhance learning success.

Development of an ECMO Simulation Program. Part II.

David Malley
November 21, 2013
Halldale Media

Lindsay Johnston, MD and Stephanie Sudikoff, MD present the second part overview on establishing an Extracorporeal Membrane Oxygenation simulation program. This final installment focuses on the program curriculum issues. Part II: Curriculum of Initial and Ongoing ECMO Education.

Extracorporeal Membrane Oxygenation (ECMO) is used in the management of the most critically ill patients, and allows for temporary support of cardiac and/ or pulmonary function using a mechanical circuit. ECMO may be offered to patients with acute, potentially reversible causes of cardiac and/ or respiratory failure when predicted mortality is high (K Van Meurs et al, ECMO Extracorporeal Cardiopulmonary Support in Critical Care, 3rd Ed 2005).

ECMO teams require specialized training to maintain proficiency in caring for patients using this complex technology, for both routine management and emergency situations. Appropriate team behaviors and clear communication are of utmost importance in caring for ECMO patients, and traditional training methods do not adequately address these skills. ECMO simulation allows teams to incorporate a variety of learning objectives into each scenario, including medical knowledge, technical skills, team behaviors and communication. It also allows for the development of a standardized experience for all staff members, and can be used to recreate low frequency, high-risk situations which require prompt, potentially life-saving interventions.

Part I of this article addressed potential benefits of starting an ECMO simulation program, staff involved in this process, budgetary considerations, and adaptations to the manikin that allow for “cannulation” and dynamic, real time, interaction with the ECMO circuit. This article will address the structure of the ECMO simulation program at Yale-New Haven Children’s Hospital (YNHCH), examples of scenarios, effects on patient safety and quality improvement, and participant feedback.

Program Structure

ECMO simulations at YNHCH are held quarterly, on two consecutive days; one day is dedicated to staff in the Pediatric Intensive Care Unit and the other to the Neonatal Intensive Care Unit. Three sessions are held each day, each approximately two hours in length, and involve a multidisciplinary team simulation and debriefing. A typical session includes the following participants: 1 attending physician, 1 fellow, 1 practitioner (PA/ NP), 1-2 certified clinical perfusionists (CCP), 2-4 nurses (RN), and 1 respiratory therapist (RT). CCPs are members of the healthcare team who manage cardiopulmonary bypass in the operating room and operate, adjust, and troubleshoot issues with the ECMO circuit along with other members of the medical team. Typically, nursing staff and practitioners who have worked the overnight shift will participate in the early morning session. Staff members who are providing patient care receive coverage to attend sessions held during their clinical shift. Physicians who are on service are usually scheduled for a session later in the day to allow for completion of rounds and other patient care responsibilities. Another attending covers their clinical responsibilities while they participate in the simulation exercise.

The ECMO simulation program is an integral part of the continuing education for members of the YNHCH ECMO team. The Director of Pediatric ECMO requires that all staff members participate in a minimum of one session per year. However, in periods of lower patient volume, increased participation is encouraged and many staff members choose to attend a majority of sessions, as they are viewed as valuable opportunities for learning. Attendance at these sessions is also required for maintenance of physician ECMO credentials at YNHCH.

The ECMO simulation program at Yale was initially designed for ongoing education of active members of the ECMO team. Recently, introductory ECMO training simulations were started for incoming fellows in Neonatology, Pediatric Critical Care, Pediatric Surgery, Cardiothoracic Surgery and Cardiology. These are timed to coincide with the annual Yale ECMO Symposium, which covers important topics in ECMO management, including a review of inclusion and exclusion criteria, criteria for cannulation, equipment, interpretation of lab values and circuit pressures, and management of routine patient issues and ECMO emergencies. The initial fellow ECMO simulations involve the management of a single "patient" in a 3-4 hour experience to review and reinforce basic ECMO concepts, during which time three separate scenarios are simulated and debriefed.

Session Structure

The structure of a typical session is listed in Table 1. Participants are welcomed and introduced to one another and the simulation environment. The "Confidentiality Agreement" is discussed. This agreement states that these sessions are entirely dedicated to learning, and participant performance will not be used for assessment or punitive purposes. Audio and video recordings are utilized, so participants are asked to fill out the appropriate forms to allow these images to be used for educational or promotional reasons.

Table 1. ECMO Simulation Timeframe.

Activity	*Time Dedicated*
Introduction	5 minutes
Orientation to Simulator & Environment	10 minutes
Presentation of Clinical Scenario	5 minutes
Simulation	15-30 minutes
Pre-Briefing/ Debriefing	30- 45 minutes
Wrap-Up/ Feedback Evaluations	5 minutes

Next, participants are brought into the simulation room. They are oriented to the ECMO simulator and its capabilities, the equipment available (code cart, defibrillator, airway equipment, etc), documentation for patient vital signs, labs, ECMO flow sheets, and imaging studies, and the mechanism for requesting additional information or equipment. An instructor typically serves as a confederate during the scenarios to allow for efficient scenario flow.

The scenario is then described, including the case history, present status and issues, IV access, and medications. Bedside vital sign flow sheets, ECMO flow sheets, laboratory studies and relevant imaging studies are available for review. Staff members are given the opportunity to ask questions, after which point the simulation takes place. After the simulation is complete, participants move into a separate conference room for debriefing. In the "pre-briefing" period, confidentiality is again discussed, along with a timeframe and plan for the debriefing. All learners are expected to actively participate in the discussion, and the facilitator serves as a guide for the discussion, rather than a "lecturer." The 3D Model of Debriefing is utilized at the SYN:APSE Simulation Center at Yale-New Haven Health System (Zigmont JJ, Kappus LJ, Sudikoff SN. Seminars in Perinatology, 35: 52-58, 2011). This strategy provides learners the opportunity to first "Diffuse" emotions elicited from the simulation. The next phase, "Discovering," is a reflective observation of performance and identification of performance gaps that can be enhanced by facilitator's observations, participants' recalled experiences, and video review. Participants in this phase should ideally acquire new information to build or enhance their own

mental model. The final phase, "Deepening," involves connecting the learned material into clinical practice. At the close of the debriefing, the facilitator should provide a summary of lessons learned. Finally, participants are asked to fill out a feedback survey to help guide further ECMO simulation activities.

Scenarios

Utilization of simulation for ECMO training allows facilitators to recreate essentially any patient scenario, from routine management issues to low frequency, high-risk emergencies. This can be used to create a standardized learning experience for all staff, and allow for exposure to very rare events that happen infrequently in clinical practice, but where prompt and correct actions are vital. At Yale, we have simulated (or have plans to simulate) a wide variety of cases, which are listed in Table 2. Scenarios include: (1) routine ECMO management decisions, such as decreased venous return or "cutting out," management of a weaning/ clamp trial, or identification and management of recirculation; (2) patient emergencies, such as seizures, hypertension, or massive hemorrhage; (3) circuit emergencies, such as oxygenator failure, air entrapment, or raceway rupture; and (4) team behavior and communication focus, such as cannulation or intra-hospital patient transport while on ECMO or (5) introduction to new equipment, such as the centrifugal pump.

Table 2. Types of ECMO Simulation Scenarios

Category of Simulation	Examples	Adaptations to the Simulator
Routine Management	- Interpretation of Blood Gases - Interpretation of Circuit Pressures - Decreased Venous Return - Bleeding/ Anticoagulation - Recirculation on (VV) - Circuit Change - Weaning/ Clamp trial (VA)	- None - Adjustment of fluid in reservoir - Removal of fluid from reservoir - Blood at dressing site - Increased SVO2 - Depend upon reason for change - Alteration of VS, BG, SVO2
Patient Emergencies	- Massive Hemorrhage - Hypertension - Hypotension - Seizures - Massive Intracranial Hemorrhage	- Bleeding at dressing, IV sites - Addition of fluid to reservoir - Removal of fluid from reservoir - Alteration of VS, SVO2 - None
Circuit Emergencies	- Acute Oxygenator Failure - Cannula Displacement - Air Entrainment - Power Failure - Raceway Rupture	- Alteration of VS, BG & titration of pre-membrane pressure - Catheter to eject "blood" from cannula site - Air injected into either arterial or venous side of circuit - Turn off power to circuit - Cut hole in raceway tubing, lots of "blood"
Team Behaviors/ Communication	- Cannulation - Intra-Hospital Transport on ECMO	- "Model" of neck for surgical cannulation - None
Introduction of New Equipment	- Centrifugal Pump/Quadrox	- None

Legend: VS-Vital Signs; BG-Blood Gas; SVO2-Mixed Venous Oxygen Saturation

The learning objectives and scenario can be easily tailored to the experience level of the participants by altering the "signal to noise" ratio. Briefly, this means that for experienced ECMO teams, facilitators might include an increased level of scenario complexity or "noise," in the form of teamwork/ communication challenges or equipment issues, compared to "signal," or pure clinical content (Dismukes R, Smith G. Facilitation and Debriefing in Aviation Training and Operations. Aldershot, UK, Ashgate 2000). For example, new critical care fellows will still be gaining familiarity with routine concepts such as interpretation of blood gases and circuit pressures, anticoagulation, and how to come off bypass quickly in an emergency. Their session will focus mainly on the medical facts and technical aspects of the case. Conversely, a session designed for more experienced team members might include more complex medical issues in addition to teamwork challenges, such as managing conflict with a member of the ancillary staff or having to counsel a distressed or angry parent as the patient is decompensating.

Topics and learning objectives are typically selected through consultation with the Director of the Pediatric ECMO program, and are often based on actual patients. A file has been maintained on every clinical ECMO

patient and includes all ECMO flow sheets, circuit pressures, and blood gas results. This information can be de-identified and modified to fit a desired scenario. For example, when simulating a case of a failing oxygenator, it is much easier to use an actual case with the associated patient history, labs, and radiologic studies than to create one de novo. The staff at SYN:APSE simulation center and the CCP on the ECMO simulation planning team play an essential role in the creation of a realistic clinical environment. The circuit pressures are adjusted through addition or removal of fluid from the manikin's reservoir, and can be more finely titrated by injecting or removing fluid or air into the pressure transducer lines. Moulage, the use of complicated makeup and theatre techniques to provide elements of realism in the simulation environment, is also frequently utilized in the YNHCH ECMO simulation program (Smith-Stoner M. Nurse Educator. 36(1):21-4, 2011 Jan-Feb). For example, when simulating arterial cannula displacement and hemorrhage, participants are more readily able to suspend disbelief when they can actually visualize pulsatile "bleeding" from the cannula site than if it were simply described to them.

Patient Safety and Quality Improvement

The ECMO simulation program has been used to identify systems issues and change practice to improve patient safety. We have had several examples since the program has been implemented. During the simulated intra-hospital transport on ECMO scenario, it was difficult for teams to fit the patient's bed, ECMO circuit, ventilator and all necessary staff into the hospital elevator. This led to the development of a structured diagram which depicts where all participants and equipment should be positioned in the elevator, ensuring access to the patient and the circuit in the case of an emergency, and decreasing the time needed to complete this portion of the transport. It was also noted that, in the event of a power failure, the hand crank would not be accessible in the elevator. Therefore, prior to transport, it is now placed on top of the pump to be within reach if needed.

Issues identified during ECMO simulations helped to streamline the process of medication administration. The routine practice for administering heparin at the time of cannulation required the initial heparin bolus to be drawn off the syringe that would then be infused to maintain anticoagulation within the ordered range. The calculations were confusing for staff, and there was concern that this could result in an incorrect amount of heparin being given to the patient. This process was simulated on multiple occasions, and has since resulted in a change in practice. The initial bolus of heparin is now provided by the pharmacy, and is delivered to the unit in a separate syringe. This item has been updated in the cannulation checklist, and will be revisited in future simulations.

During the weaning and clamp trial simulation, multiple staff members identified the need for a comprehensive checklist distinct from the pre-existing decannulation checklist. This document will include issues about including the surgical and cardiology teams in discussions about timing, thinking about the need for IV access after the cannulae are removed, and medical management issues such as frequency of blood gases, anticoagulation concerns, and flashing the cannulae. This checklist is currently under development.

Another issue that has been raised frequently in our debriefing sessions is interdisciplinary communication between members of the ECMO team. Since each group has previously trained independently (e.g., RNs in nursing school, MDs in medical school), it can be challenging to ensure that individuals feel empowered to make sure their perspective is understood by the team leader. There have been several instances where participants did not seem to have a similar understanding of the clinical situation, otherwise known as having a "shared mental model." As an example, in the recirculation on VV ECMO scenario, it was clear to the

facilitators that the CCPs were aware of the medical issue early in the case, but this was not clearly communicated to the other members of the team, which then delayed the team's initiation of corrective actions.

ECMO presents a unique situation in team dynamics, given that there are actually two separate sub-teams working independently: the team caring primarily for the patient (RN, RT), and the team managing the circuit (CCP). The team leader has to be fully aware of the needs and concerns of both groups to effectively manage the patient's care. For example, during a circuit emergency that requires the patient to come off bypass temporarily, the pump team focuses on fixing the problem with the circuit, and the patient team focuses on resuscitation until the issue is resolved and the patient can be placed back on bypass. The team leader needs to have situational awareness of both groups, provide updates to each group about the other's status, and coordinate the overall clinical plan and resuscitation.

Team training has been widely recognized as a method by which to improve patient safety and decrease rates of medical errors. All staff members in the YNHCH Neonatal Intensive Care Unit participated in multidisciplinary team training sessions including simulation over a 6-week period in 2010. Multiple suggestions were raised to improve the communication in the unit, and have subsequently been implemented, including a daily multidisciplinary team huddle to discuss patient flow, increased involvement of the respiratory therapists in decisions about ventilator management, and having two staff members attend all resuscitations in case additional support is needed (Colacchio K, Johnston LC, Zigmont JJ, Kappus LJ, Sudikoff SN. J Neonatal-Perinatal Med, In Press). CCPs were not included in the initial team training of YNHCH employees, but there has been discussion about having this group participate in subsequent training sessions to enhance communication among all members of the ECMO team.

Overall, we have noted improvement in team behaviors and communication since the ECMO simulation program has been initiated, but we have plans to objectively measure these skills. There are several tools available to evaluate team performance. One is the TeamSTEPPS™ Teamwork Perceptions Questionnaire (T-TPQ) (http://teamstepps.ahrq.gov/Teamwork_Perception_Questionnaire.pdf). This is a self-reported measure of teamwork, within a unit or department, which measures individuals' perceptions of group-level team skills and behaviors. The T-TPQ is based upon the core concepts in TeamSTEPPS™, including team structure, leadership, communication, mutual support and situation monitoring. The Mayo High Performance Teamwork Scale can also be used to evaluate participants' perceptions of the team behaviors of their group (Malec JF, Torsher LC, Dunn WF, Wiegmann DA, Arnold JJ, Brown DA, Phatak V. Simul Healthcare 2007; 2: 4–10). There are other tools that can be used for observation-based team performance evaluation, including the TeamSTEPPS™ TeamPerformancObservationTool, http://www.ahrq.gov/teamsteppstools/instructor/reference/tmpot.htm, which can be used by a facilitator or other observer to evaluate a team on the following categories: Team Structure; Leadership; Situation Monitoring; Mutual Support and Communication. Other observation-based tools include: Ottawa Crisis Resource Management Global Rating Scale (Kim J, Neilipovitz D, Cardinal P, Chiu M, ClinchJ. Crit Care Med 2006; 34: 2167–2174), University of Texas Behavioral Marker Audit Form (UT BAMF), Anesthetists' Non-Technical Skills (ANTS), Observational Teamwork Assessment of Surgery (OTAS), and Communication and Teamwork Skills (CATS). (MA Rosen et al. J Emerg Trauma Shock, 2010 Oct-Dec; 3(4): 353-359.) Importantly, these tools could either be used in simulation-based training, or in a clinical environment.

Feedback/ Evaluations

Participants in the Yale ECMO simulation program complete evaluations of each session to relay their feedback to the facilitators. Overwhelmingly, feedback has been very good to excellent. Common positive themes have included the ability to practice low frequency, high-risk scenarios without risk to patients, ability to practice skills that are not necessarily encountered commonly in the clinical environment, and staff report that they learn or reinforce many concepts through the debriefing that follows the simulation.

Conclusion

Development of an institutional ECMO simulation program confers many benefits for all members of the multidisciplinary ECMO team. Working with perfusionists and simulation specialists, a wide variety of clinical experiences can be recreated, including routine management decisions as well as emergency situations. Combining these clinical experiences with effective debriefing allows adult learners to enhance their understanding of the clinical situation and improve their skills. These sessions can be used to guide quality improvement efforts, and further enhance patient safety initiatives. medsim

About the Authors

Lindsay Johnston, MD is the Associate Director of Pediatric Simulation and a faculty member in the Department of Pediatrics, Neonatology, at the Yale University School of Medicine. Stephanie N. Sudikoff, MD is the Director of Simulation, Yale-New Haven Health System, and an Associate Professor of Pediatrics, Pediatric Critical Care, at Yale Medical School.

ETC Simulation Wins Netherlands Contract for ADMS

Lori Ponoroff
November 15, 2013
Halldale Media

Environmental Tectonics Corporation's (ETC) Simulation Division was awarded a contract from the Netherlands Institute for Safety (NIFV) to expand its Advanced Disaster Management Simulator (ADMS(TM)) with chemical, biological, radiological, nuclear and explosive (CBRNE) incidents and more simulation systems.

ETC will deliver three portable ADMS Training Systems with CBRNE scenarios to NIFV. The simulation will include specific Netherlands Ministry of Defense vehicles; mass decontamination facilities; and CBRNE incidents. The ADMS systems will be used to develop virtual reality based training programs, provide joint civil and military training and evaluate the effectiveness of such training. NIFV will provide facilitator/instructor training and technical support to the CBRNE school.

NIFV is a national center of expertise with four Academies including the Fire Academy, Academy for Crisis Management, Emergency Medical Service Academy and Academy for Leadership. Since 2001, NIFV has trained thousands of emergency responders and crisis management teams using ADMS.

Boeing Adapts Training Technologies to F/A-18E and F-15E

Lori Ponoroff
November 15, 2013
Halldale Media

Boeing's F-15E Eagle and the F/A-18E Super Hornet are now equipped to train in an environment that puts them at odds against real aircraft and computer-generated enemy threats at the same time.

Two military aircraft produced by Boeing – the F-15E Eagle and the F/A-18E Super Hornet – now are equipped to train in an environment that puts them at odds against real aircraft and computer-generated enemy threats at the same time.

Under a $6.3 million, three-year contract with the U.S. Air Force Research Laboratory, Boeing is developing these simulation capabilities for both aircraft – and under the current contract, the pilot project will culminate with a capstone demonstration at Nellis Air Force Base in Nevada in late 2013.

The technology can provide aircrews with a complex virtual strike environment in which to train, while potentially decreasing the number of real aircraft and other assets to practice against. Generally, an actual combat aircraft is networked with ground-based simulation computers that provide computer-generated threats. Before this new capability, pilots could practice using flight simulators on the ground, but when they trained in the actual aircraft, other people were needed to play the role of an opponent, commonly referred to as a "red" or adversary team.

Having a virtual combat simulation while actually flying is expected to reduce the number of real aircraft or other live assets needed to form a red team, providing cost-savings and a safer training environment.

Havelsan & Pakistan Sign Training Agreement

Fiona Greenyer
November 14, 2013
Halldale Media

Turkey's Havelsan software and systems integration company has signed a memorandum of understanding with the Pakistan Armed Forces regarding simulation and training, at the International Defence Exhibition and Conference in Karachi.

The MoU covers research and development, the Pakistan Armed Force's C4I (Command, Control, Communications, Computers, and Intelligence) and simulators for the Pakistan Air Force and Army, including flight, driving and possibly artillery simulators.

Projects that will benefit from the agreements include the JF-17 Thunder, F-16 Fighting Falcon, C-130 Hercules, Mil Mi-17 and Super Mushak. Pakistan's Military Vehicle Research and Development Establishment (MVRDE) in particular will benefit from the agreements.

MPS Delivers First A320 Simulator

Fiona Greenyer
November 14, 2013
Halldale Media

Multi Pilot Solutions B.V. (MPS) has delivered their first Airbus A320 fixed based simulator to European Pilot Selection and Training (EPST).

The MPS A320 is the third MPS simulator for European Pilot Selection & Training after two B737NG fixed base simulators. The MPS A320 standard version is equipped with a collimated visual system and comes with a qualification as a type specific FNPT II MCC per EASA regulations.

The simulator can be upgraded at the request of the customer to an A320 advanced version later by adding the circuit-breakers panels, upgrading the software and re-qualification to EASA FTD Level 1 or 2.

Argon Delivers CBRN Training Systems to Sweden

Lori Ponoroff
November 13, 2013
Halldale Media

Argon Electronics completed delivery of a variety of CBRN training simulators for the Swedish Armed Forces. The contract included AP2C-SIM, S4PE-SIM, and LCD3.2e-SIM simulators and also a number of Argon's PlumeSIM instrumented CBRN training systems for deployment with the simulators at a number of locations used by the Swedish Armed Forces.

The contract award follows the successful implementation of Argon simulators at the Swedish Armed Forces CBRN school in Umea in 2008. The new contract, which included the upgrade of the original simulators to function with PlumeSIM, had a tight deadline so the upgraded equipment could be deployed at RECCEX-12, a multinational CBRN exercise hosted by the Swedish Armed forces.

More than 50 Argon simulators were used for the RECCEX-12 exercises that took place over two days in late August. The exercises were witnessed by Swedish Military Procurement representatives and visiting defence attaches.

CAE Healthcare Acquires Blue Phantom

Lori Ponoroff
November 6, 2013
Halldale Media

CAE Healthcare acquired Blue Phantom™, a provider in the medical ultrasound imaging simulation business, to help advance CAE's healthcare simulation vision and help its customers in their pursuit to improve clinical training and delivery of patient care.

With the Blue Phantom acquisition, CAE plans to expand its healthcare simulation business by integrating tissue-based simulation into its product offerings and enhance its human patient simulators and VIMEDIX™ line of computer based ultrasound simulators.

CAE Healthcare says Ultrasound guidance is becoming a standard of care for a number of procedures and over the coming years, practicing physicians and other healthcare professionals around the world will need the hands-on training in ultrasound that only simulation can provide. And now, the company will offer a comprehensive product line for both ultrasound imaging diagnostics in virtual reality and ultrasound-guided interventions with phantoms training for anesthesiology, cardiology, critical care, emergency medicine, endocrinology, infusion nursing, nephrology, obstetrics and gynecology, pediatrics, pulmonology, radiology and surgery.

CAE Healthcare Sells 1,000th iStan Patient Simulator

Fiona Greenyer
November 1, 2013
Halldale Media

CAE Healthcare has sold its 1,000th iStan patient simulator. It was sold to the Paris Simulation Center at the University of Louisville School of Medicine in the United States.

Developed in 2007, iStan was the first high-fidelity patient simulator that could be operated wirelessly for added mobility and realism in healthcare training.

Since his introduction to the market, iStan has simulated auto accidents on roadways, logging injuries in forests, heat stroke at the beach, burns from chemical plant explosions and football injuries on the field. He has been transported from point-of-injury to simulated emergency or operating rooms - all while maintaining the clinical signs and symptoms of his simulated condition.

"When he was introduced five years ago, iStan was a technological breakthrough - the first simulator that could blink, talk, cry, and simulate a real patient in almost any setting," said Michael Bernstein, president of CAE Healthcare. "iStan set a standard in the industry, and he is still one of our best-selling simulators. Today, wireless patient simulation has been widely adopted among emergency medical responders, hospital teams and medical education programs."

Established in 2001, the 2,500-square-foot Paris Simulation Center supports training of current and future healthcare professionals at the University of Louisville Health Science Campus. The center works closely with departments, course directors, individual faculty, and other health care organizations to develop education experiences that effectively utilize simulation.

Intelligent Tutoring Systems: Today and Tomorrow

Fiona Greenyer
November 1, 2013
Halldale Media

Imagine having your own personal instructor, who is finely attuned to your needs and progress, and can provide meaningful feedback at the appropriate time. Well, Intelligent Tutoring Systems (ITS) have the potential to provide this kind of learning support; however, that potential may not be easily realized. Currently exotic, Intelligent Tutoring Systems need to become routine.

To meet the military requirements within fiscal constraints and make ITS commonplace, developers need practical, cost efficient and replicable processes for constructing and delivering ITS. Then the business case will emerge for program managers. Currently ITSs are effective but expensive.

The Air Force Research Laboratory demonstrated the promise of ITS in the late 1980s. The Sherlock maintenance tutor trained technicians to troubleshoot faults that were not solved by documented procedures. Thirty-two hours of instruction at technicians' work sites resulted in four years' worth of performance gains, proving the value of individualized simulation-based training.

The Navy tested ITS in schoolhouses. The Office of Naval Research developed automated tutors in the late 1990s to support sailors who read below Navy minimum standards. Tests with sailors in basic training and with high school students at risk of dropping out revealed that students with a history of reading difficulty improved

their ability by two grade levels (e.g., from 6th to 8th grade) in 40 hours of ITS instruction. More recent examples of proven ITS include physics tutors used at the U.S. Naval Academy, the Digital Tutor, which the Defense Advanced Research Projects Agency developed for computer network technicians, and the Tactical Language and Culture Training System, which trains ground forces to effectively communicate with host nation civilians in foreign lands.

ITS technology can address current training delivery goals. Gen. Martin E. Dempsey, Chairman of the Joint Chiefs of Staff, has said the military needs training with realistic, complex, and unpredictable scenarios, followed by reviews which feed subsequent instruction. The Army Learning Concept 2015 embodies this vision and recommends experiential instruction in which remediation adapts to each trainee's needs. ITS technology provides immersive, complex practice environments in which assessment of trainees' performance guides individually adapted remediation.

At the recent Training & Simulation Industry Symposium (TSIS) in Orlando, Brian Hicks, director of cross warfare programs at the Naval Aviation Warfare Center Training System Division, said Navy commands will seek to "optimize progress with intelligent tutoring systems. The goal is to use advanced tutor concepts for scalability, repeatability and training - to deploy the technology."

As it stands, scientists and researchers are hand-crafting ITS for each new program, which causes costs to skyrocket. ITS are built individually for specific domains--different skills are best learned in different ways. Some skills that require snap judgments, such as visually recognizing friend or foe (is a jet fighter a MiG-25 or an F-15?), or where to spray a fire retardant, are trained with repeated samples and immediate feedback. Other skills that require deliberation and application of doctrine or principles, such as mission planning, are best taught with in-depth reflection of cases that highlight factors critical for making decisions.

In today's budget climate, hand-crafting each ITS by top flight research scientists cannot be sustained. Winston 'Wink' Bennett, technical advisor for continuous learning and performance assessment research at the AFRL's Human Effectiveness Directorate, said, "ITS today and tomorrow need to use models that are more easily crafted by subject-matter experts and instructional specialists so that they can be more cost-effective to create, maintain, and update."

ITS can be developed affordably. Alan Lesgold, principal investigator of AFRL's Sherlock family of tutors, pointed out that while the first generation of instructional components underlying Sherlock cost millions of dollars, subsequent cycles of ITS that trained chip manufacturing technicians in the private sector were developed for less than $100,000. Costs were reduced as the developers improved the efficiency of their methods.

The future of ITS for the military needs to follow two tracks: one is to use best current practices to build tutors that are practical, cost-efficient and ready now. The second is to improve ITS. This division is similar to the development of planes, ships, and guns. Engineers apply current technology and practices for creating products now while scientists research better capabilities for tomorrow.

Deploying ITS Now

For current applications, developers need guidelines that drive the process for efficiently constructing ITS. The guidelines should specify how to collect and structure the information needed for a program's development. For example, the designer needs to know whether a task must be learned so that it can be done in a few seconds, minutes or hours. The guidelines will consist of questions that developers use to efficiently create an ITS. Once the guidelines are established, they will shave analysis and development time - and therefore money - off the development cycle.

Guidelines will assist the development of the two major components of an ITS, the simulation and the coaching. The simulation provides the practice environment. For trainees who maintain equipment, the

simulation mimics the equipment maintained and the relevant work environment, including technical documentation. For front-line soldiers, the simulation is the battlefield.

ITS can use existing systems' simulations in two ways. First, many simulations do not have instruction. These simulations can provide adaptive coaching by adding the ITS coaching component. Second, when new simulations need to be built, the developers should examine existing simulations as a base for further refinement. For example, a driving simulator for new vehicles could be more easily designed by adapting existing vehicle simulators. Just as traffic engineers can look at current interchanges to design a new interchange, applied tutor developers should look to previous simulations for insight.

The second component is the instruction. This includes three elements: the expertise that needs to be taught, the "expert model;" the assessment of what the leaner knows and does not know, the "student model;" and the instructional approach, the "pedagogy," to teach the trainee.

Before delving into these three elements, the developer must have a vision of the end product and its elements. For example, if the remediation only follows one of three paths, the student model need only select one of those three paths; finer diagnosis will not improve remediation. Efficient ITS development requires an integrated view of the elements within the final design.

The expert model can be created by applying the appropriate expert interview techniques. Many techniques have been studied and developed. Selecting an efficient method depends on the specifics of a domain: How accessible are experts? Who are the best experts? Is there an existing simulation? How much student data is available for review? How complex is the expert's knowledge? All of these questions are part of the guidelines.

The student model assesses trainee performance, captures trainee capabilities, and guides future remediation. The student model can take many forms and can answer many questions, such as what is a trainee's present capability, and how does the trainee compare to other performers. Its fundamental purpose within an ITS is to serve as a bridge between the expert's knowledge and a student's understanding by informing remediation.

The pedagogy applies current learning science. The guidelines will incorporate both learning principles that are general across domains and those that apply within a domain. Recent general learning principles address how to overcome student misconceptions, and the benefits of engaging students with interactions rather than just laying out the facts.

Currently, neither ITS sponsors nor developers have committed to developing general engineering guidelines for constructing ITS using current technology. The military has begun to collect guidelines and structures for efficient ITS construction. Robert Sottilare, director of the Learning in Intelligent Tutoring Environments Laboratory at the Army Research Laboratory, Human Research and Research Directorate, has sought collaborators to contribute to Army Research Laboratory's Generalized Intelligent Framework for Tutoring. Such frameworks need to be developed for currently deployable ITS technology.

Decisions to deploy ITS will require program managers to make the business case that ITS save resources. This decision should be based on analyses that compare ITS with alternative approaches to improving readiness. LCDR Joseph Cohn, division deputy of the human and bioengineered systems at the Office of Naval Research and Dexter Fletcher, a researcher at the Institute for Defense Analysis, recently developed a decision analysis framework that goes beyond assessing a training system's effectiveness - it integrates assessed effectiveness with economic theory. In addition to reporting Return on Investment, their framework uses Net Present Value to estimate the costs and benefits of implementing a training system over time. When applying Net Present Value to DARPA's Digital Tutor, the implementation of this program would save the Navy $2B over 12 years.

Critical to any business case is the assessment of training on performance in the field. But field measurements require recording a performer's actions, and the situations in which those actions are taken. Collecting these data is expensive and difficult. As mobile and video technology enable data to be more easily collected, using

field data to assess the effectiveness of different training methods will become feasible. Guidelines for ITS should include not only how to build ITS, but how to assess the benefits of ITS.

Developing ITS for the Future

While some developers will carry on the work of deploying practical, affordable systems, other researchers and scientists will proceed with improving future ITS. Research promises to make ITS more sensitive to student needs, and provide greater variety and more powerful instructional methods.

One major target of researchers is the use of physiological measures. EEG recordings, for example, can improve ITS assessment and remediation by discriminating trainees' thoughts. Gwendolyn Campbell, senior research psychologist at the Naval Air Warfare Center Training Systems Divisionand her collaborators monitored brainwaves of trainees while they were identifying tanks. Some mistakes were trainees' intended selections - they truly could not identify the tank. Other mistakes were just slips - trainees realized they had made a mistake. Brainwaves identified when trainees knew they had made a mistake. By monitoring brainwaves, the ITS will better understand what caused a trainee's error, and respond accordingly.

Brainwaves and other physiological measures have been used to study emotions and learning. Since students learn better when they are engaged than when they are bored or frustrated, researchers have been investigating how to assess and respond to students' emotions while learning. Researchers funded by the National Science Foundation have divided the important learning emotions into different categories: engagement, delight, surprise, boredom, frustration and confusion. These can be assessed by brainwaves, but simpler methods are being investigated, including recognizing facial expressions and measuring posture. Once an emotion is known, a tutor can address it.

Researchers also work on integrating Natural Language Processing in ITS. For many skills, trainees need to practice saying the right words to another person. For example, a Forward Air Traffic Controller must convey the right content in the right format. To be maximally effective, the ITS needs to understand what a person is saying Understanding structured speech, such as from a sailor on Deck Watch or an Air Traffic Controller, is relatively easy, because the statements follow a standard format. It's harder if the trainee's speech is unstructured, such as when a commander is briefing a mission. ITS will be more realistic and effective as natural language processing improves.

As the military builds detailed personnel records of each warfighter's history and competencies, these data inform what the ITS needs to train. Similarly, performance demonstrated in ITS should be included in trainees' personnel records, and could factor into assessing a warfighter's capabilities. Specifying how much data will be stored and how it will be used must be discussed and standardized as long-term personnel records are developed.

Researchers are also applying more powerful artificial intelligence to ITS. Improved artificial intelligence techniques from programs such as DARPA's Cognitive Agents that Learn and Organize can be used to construct expert models, student models, and potentially generate instructional content.

ITS can improve warfighters' training and will do so sooner or later. The military needs ITS capabilities to individualize training now. ITS proponents need to engage in both the fun research which improves future ITS and the hard work of fielding them with currently available technology.

About the Author

Bob Pokorny is director of education and training technologies at Intelligent Automation Inc., and has been working on ITS since the mid-1980s.

Q4 Services, 3D perception and RPA Upgrade Navy Simulators

Lori Ponoroff
October 31, 2013
Halldale Media

Q4 Services, 3D perception and RPA Electronic Solutions joined forces to upgrade the U.S. Navy P-3C Orion Simulators with technology capable of one arc minute of accuracy. Q4 Services won the contract following its successful completion of the 2011 SBIR program. Q4 was supported by 3D perception and RPA to integrate RPA's automated alignment scanner with 3D perception's image processing solutions to provide StarScan, a complete visual alignment solution, for the Navy's current Simulator contract.

Q4 assisted RPA and 3D perception to develop StarScan through the successful SBIR program. StarScan uses high-resolution optical sensors to perform 360-degree, three-dimensional screen measurements resulting in a precise 3D map of the screen surface. This is live-linked to 3DP's UTM display processor, where the measurement data is processed, and geometric warping and blending is applied to raw source visuals.

Axis Awarded Fast Forward Prize for FFS

Fiona Greenyer
October 31, 2013
Halldale Media

Axis Flight Training Systems GmbH has recently been awarded the Fast Forward Award by the Chamber of Commerce of Styria, for the most innovative product of 2012.

The prize was awarded for Axis' groundbreaking FFS deisng, which marries state of the art fidelity with exceptional operational availability and economy.

Axis' innovative features include trend monitoring and automated self-testing so that predictive maintenance can be done in off hours, to drastically reduce unplanned downtime, while automated simulator start up means that operations can start earlier in the day to maximize training hours. On the fidelity side, another Axis innovation is its icing function, which is unique on the market. Conventional icing simulations kick in suddenly, so that flight characteristics go from normal to unflyable more or less instantly. This and all of Axis' latest features are implemented in its ATR 42/72 FFS for Farnair's new Flight Training Organization, which was recently Level D certified.

Axis CEO Martin Rossman noted that "as pilots and engineers, from the outset our intention has been to design and build FFS' that combine engineering excellence and flight training effectiveness. This award is a recognition of that, and is a great motivation as we continue on our growth course."

Thales and Transas Conclude Cooperation Agreement

Fiona Greenyer
October 31, 2013
Halldale Media

Thales Germany and Transas Marine International have signed a cooperation agreement to develop and market a full warship trainer (FWST).

The modular simulation solution, which will be offered in various configurations, is the first of its kind to create a virtual simulation of an entire warship for training purposes. This encompasses the ship's control from the bridge, the work in the engine room, CMS (Combat Management System) training, realistic doorgunner exercises for helicopter missions or weapons training for boarding teams. A first generation configuration of the FWST is expected to be available to the market in short order.

The training system will enable individual teams to train various scenarios, for instance as part of the classical navigation training on the bridge, or a classic skirmish from an operations centre. But as part of the final deployment preparation, all individual teams of a ship's crew (e.g. bridge, operations centre and engine room, as well as deployed units, such as boarding teams and their airborne and floating security components) operate as a complex unit.

The FWST approach provides the option to train classic maritime scenarios, as well as current and future scenarios. In addition to playing the role of a training device, the FWST can also assume an important function for the development of deployable principles and procedures, and also as part of future procurement projects. Its overall modular approach also enables customers to flexibly expand individual training elements, thus customising their individual training centre to their respective specific needs.

THE NATIONAL CENTER FOR SIMULATION

Orlando simulation engineers develop 'spiritual triage' training for military chaplains

Richard Burnett, Orlando Sentinel
December 24, 2012
National Center for Simulation

During more than a decade of combat in Iraq and Afghanistan, U.S. military chaplains often found themselves caught between heaven and hell: one moment leading a prayer service, the next dodging enemy fire to be at the side of a dying soldier.

From loss, grief and post-traumatic stress to plain old holiday blues, combat chaplains have seen it all in responding to calls for help from soldiers struggling with issues of faith and doubt, life and death.

Now, with the U.S. out of Iraq, operations winding down in Afghanistan and military spending under budget-cutting pressure, the Army is calling on Central Florida's computer-simulation training industry to create new "virtual" exercises for chaplains — at a bargain price.

By all accounts, it is the first time the local training-simulation industry has tackled the sometimes thorny issue of war and faith. Considered the country's largest cluster of military-training contractors, the local industry is known more for high-tech weapons simulators than for counseling simulations — much less religious ones.

Yet training-simulation engineers in Orlando are now crafting "serious-game" software to lead chaplains through a "virtual battlefield" in which they respond to injured and dying soldiers. Dubbed the "Spiritual Triage Trainer," it is based on a combat-medic training simulator that the Army has been using for the past several years.

"The Army's chaplain school really doesn't have a budget for these kinds of things, so we were looking for something we already have that we could reuse," said Beth Pettit, chief of medical-simulation training at the U.S. Army Research Lab's simulation-technology center in Orlando. "We saw this as low-hanging fruit: a low-cost system that could be turned around relatively quickly."

Some of the region's military-training companies have been branching out in recent years to develop applications in related areas such as health care and medicine, emergency preparedness and law enforcement.

Battlefield medicine, for example, has become a multimillion-dollar business for Orlando-based Engineering & Computer Simulations Inc., which is working with the Army to develop the new chaplain-training simulations. ECS created the combat-medic program that underlies much of the chaplain program's technical coding.

ECS recently received an Army research contract worth about $100,000 to develop a prototype of the chaplain trainer. Initially, at least, it's a thrifty deal for the Army, because the cost is about one-third that of a typical research contract, according to ECS. And that's because much of the technology involved is already available in the combat-medic system, officials said.

"The chaplain's school liked what they saw in our medic trainer, and we agreed to work with them to re-create those same kind of scenarios in the chaplain system," said Brent Smith, ECS chief technology officer. "We figured out pretty quickly it wouldn't be too difficult to 're-skin' the medic figure to reflect the uniform of the chaplain and chaplain's assistant."

After that basic reconfiguring, however, the task becomes much more complex, as engineers create the dialogue and other interactive elements needed in the training scenarios, he said. The prototype will also be set up in such a way that it can be used by chaplains of any religious faith, Smith said.

"The chaplains call it 'spiritual triage' — and much like the medics treat physical wounds, this is designed to help Protestant ministers, rabbis, imams, priests and other chaplains respond to the spiritual needs on the battlefield," he said.

The prototype, which ECS is expected to deliver in mid-2013, will be used to enhance chaplains' classroom training at Fort Jackson in South Carolina, said Bill Pike, manager of science and technology at the Army Research Lab's Orlando unit. If the system passes its performance tests at the Army Chaplain School there, a full-production contract could follow, he said.

"In a typical triage situation, while medics help those who can be saved, the chaplain is more than likely dealing with those who won't live," Pike said. "Some of these scenarios will be very difficult for the chaplains, like dealing with someone from another faith, or no faith at all. We could ratchet it up even more by introducing a noncombatant of an entirely different faith and culture. With simulation, there are a lot of things you can do that are very difficult to do in real-world training."

It is not surprising that the Army is looking at the potential benefits of training simulations for chaplains, given the budget pressures the military now faces, said Capt. Lance Sellon, a Methodist minister in Jacksonville and an Army chaplain in the National Guard's 124th Infantry Regiment, based in Orlando.

At the same time, the Army has to be careful to maintain some sort of balance in its training methods, he said.

"Obviously, a simulator can't replicate wearing body armor and running around with 40 pounds of gear, having just done a 50-yard sprint from one wounded soldier to another, being out of breath and under great stress," Sellon said.

"But I think there's undoubtedly cognitive benefits from using a simulator," he added. "I'm able to go through the process, find solutions, establish protocols in my mind that I can use when I encounter them in the real world."

Realtime Immersive's Virtual AttainTM Awarded Best Business Game in the 2012 Serious Games Showcase & Challenge

December 14, 2012
National Center for Simulation

RealTime Immersive Inc., a CryENGINE® simulation and serious games company, announced its Serious Game Submission entitled Virtual AttainTM has been awarded Best Business Game in the 2012 Serious Games Showcase & Challenge. Virtual AttainTM was one of more than 50 entries and 18 finalists. The judging process included more than 100 people from academia, government, and industry worldwide.

Virtual AttainTM is a CryENGINE® powered solution inspired by efforts inside the U.S. Air Force and U.S. Special Operations Command. It was designed to be used by soldiers who have previously received training, such as patrol operations, casualty evacuation, call for fire, egress, and special operation tactics. The game puts the commander or patrol leader in a virtual driver seat with a real life scenario where things can go wrong before they step foot on the battlefield. It was designed to help soldiers start planning for what could happen given the history of an area of operation.

Virtual AttainTM incorporates robust review features, including the Observation Marking System, After Action Review, and Situational Decision Point. These features allow players to make critical decisions during high-pressure, time-limited situations. Students can enhance their situational awareness in hostile environments by taking individual skills previously learned from real world environments and putting them into practice in a simulated team environment.

John Brooks, CEO of RealTime Immersive, Inc. stated, "The RTI team is honored to be recognized by the Serious Games Showcase & Challenge community of experts and proud to be selected as Best Business Game for 2012. We look forward to expanding the features used in Virtual AttainTM to address a wide array of military and non-military training needs."

ECS Recognized Globally for Joint & Coalition Warfighting Mobile Game

November 2, 2012
National Center for Simulation

Orlando, FL - Engineering & Computer Simulations (ECS) announced today that the Cross-Cultural Competence Trainer (3CT) Mobile was selected as a finalist in the 2012 Serious Games Showcase & Challenge (SGS&C), which is held annually at the Interservice/Industry Training, Simulation and Education Conference (I/ITSEC). The Joint Staff J7, Joint & Coalition Warfighting (JCW), Joint Knowledge Online (JKO) submitted

the entry into the Mobile and Government categories. Engineering & Computer Simulations developed the game under contract to Joint Knowledge Online.

3CT is a non-theater specific culture training course comprised of a military track and a civilian track including mission specific lessons such as humanitarian assistance/disaster relief and provincial reconstruction teams (PRTs). The 3CT Mobile course is a companion to the course on JKO and will allow users to receive credit as if they took it on their computer. 3CT Mobile has interactive serious game scenarios for each lesson. ECS converted the desktop version of 3CT to a cross-platform mobile version in support of Joint Knowledge Online.

"We are honored to be able to compete against other serious games across government, industry and academia," stated Matt Spruill, Vice President and Chief Technologist for ECS. "The opportunity to not only produce 3CT Mobile for JKO but also to be a part of the Serious Games Showcase & Challenge booth at I/ITSEC this year is tremendously rewarding."

National DEFENSE

Companies Offer Cheaper Simulation Tools to Military

Valerie Insinna
February 2013
National Defense

As the Defense Department looks for more cost-effective ways to train its soldiers, the simulation industry has responded by promoting cheaper technology with roots in entertainment gaming.

Oculus VR debuted its new virtual reality headset, Oculus Rift, at a simulation conference last December.

The device is aimed primarily at entertainment gaming, but the company is interested in moving into military simulation, said Joseph Chen, Oculus's senior product manager.

"Part of this is getting in front of folks that have a much higher expectation of what a VR [virtual reality] should look like, as opposed to a gamer whose last experience in VR was probably at an arcade," he said. "We need to understand what they need, what they want, and then start making those relationships if we are going to have any kind of activities in this area."

Oculus Rift had a modest start. After being funded through donations made on Kickstarter, the project gradually picked up support from video game industry heavyweights such as Valve Corp., which produces popular series such as Portal and Half-Life.

The headset could be used for military applications where high resolution is not as important, such as some flight simulators or a virtual patrol to find improvised explosive devices, Chen said.

"This is a $300 development kit. There's no way that we can realistically expect that this is going to be as high a resolution as some of these multi-thousand dollar systems, so we do have a lower resolution."

But because of the lower cost point, it can be more broadly used by the military, he added, allowing more soldiers to be trained more quickly, and with more repetitions.

The prototype is a combination of high and low technology — Chen acknowledged the headset on display used cardboard and duct tape to hold together a smartphone screen, which acts as a display, and a lens.

A tracking cable links the device to a desktop computer, where software distorts the images so that the player feels he is immersed in a 3-D environment. A motion sensor in the headset allows the player to look around his surroundings, and a game controller is used to move.

"There's not actually a whole lot new to the world about this hardware, it's just a new implementation," Chen said.

Larger defense contractors are also seeing the benefits of using products already available in the commercial space.

Northrop Grumman's Virtual Immersive Portable Environment (VIPE) holodeck uses commercial-off-the-shelf projectors and Kinect, a motion sensor for the Xbox 360.

"The biggest thing that separates us, I think, is going to be our cost point," said Ryan Frost, a modeling and simulation senior programmer for Northrop Grumman. VIPE costs less than $500,000, while the industry standard price for similar technologies is more than $1 million, he added.

Budget Cuts, Fuels Costs Could Spur Military Spending on Virtual Training

Sandra I. Erwin
December 2012
National Defense

The Air Force estimates it could save about $1.7 billion over five years by reducing flying hours by 5 percent and shifting more of its pilot and crew training to simulators.

The Navy believes that a roughly $500 million investment in flight simulators over seven years could lower annual aviation training costs by $119 million.

These projections portend lucrative opportunities for the industry that manufactures high-tech combat simulators for the U.S. military. Simulator makers for years have predicted that Pentagon budget cuts and rising fuel prices could work to their benefit. The thinking is that the military will probably have to cut back on live field exercises and increasingly rely on computer-based war gaming and training.

The U.S. military market for combat and weapon simulators currently is valued at about $5 billion a year, according to industry surveys. With training services included, it is an $11-billion-a-year business, says Gene Colabatistto, group president of military products and training services at CAE, a leading manufacturer of flight simulators, based in Montreal, Quebec.

"It's a pretty big market," and it could grow in the next several years, he says.

Colabatistto took over CAE's military sector just six months ago, after spending most of his career in the intelligence community and defense industry. He is bullish about the simulation business, especially as budget cuts are looming for the Pentagon. "Simulation-based training is an obvious hedge against a down budget," he says in an interview. "It's one that saves cost."

But the industry nevertheless should not assume that cutbacks to live training will fuel sales of simulators, Colabatistto cautions.

The government's budget cycle is such that it can take years for proposed military programs to be funded by Congress. With a flat or declining budget top line, if the Air Force or the Navy decides it wants to reduce live

training and spend more on simulators, money would have to be reallocated from the training account to pay for new simulation devices and software. Contractors have to hope that the Pentagon and Congress will back the plan, says Colabatistto, because there will not be "new money" to buy simulators. Once it becomes apparent to the military that simulators could help them save money, he says, it would take two to three years to have funds appropriated.

Contractors in the simulation and training sector today have their eyes on a handful of programs. One is a potential billion-dollar deal to train thousands of Air Force KC-46 tanker pilots and crews over the next two decades. A contract award is expected in early 2013.

CAE, the incumbent contractor for the current tanker trainers, the KC-135, is one of the bidders. Also in the running are Lockheed Martin Corp., The Boeing Co., L-3 Link and FlightSafety.

The project includes both new hardware and schoolhouse services, also referred to as "KC-46 University."

The Navy also is emerging as a major customer for the simulation industry.

In tactical aviation, for instance, Navy F/A-18E/F Super Hornet pilots perform 18 percent of their training in simulators. By 2020, that percentage will grow to 32, says a Government Accountability Office report to Congress. For the EA-18G electronic warfare fleet, "synthetic" training will climb from 20 to 34 percent by 2020. In the MH-60R and MH-60S helicopter programs, the share of simulation-based training will rise from 38 to 48 percent, and from 41 to 49 percent, respectively.

CAE manufactures the simulators for the Navy's P-8 maritime patrol aircraft fleet. This program is a "tangible example of how the Navy is changing the training curriculum" and increasing the use of simulators, says Colabatistto.

The Navy will buy 117 P-8 aircraft from Boeing to replace 130 P-3 airplanes. While the P-3 training program includes just six simulators, CAE already is building 10 simulators for the P-8.

Although flight simulators dominate the industry, the military also is seeking to provide synthetic training to ground forces. The Air Force's own tactical-air controllers — operators who deploy side by side with Army troops to help identify targets for aerial strikes — will be training in "immersive" domes that replicate a war-zone.

During a recent industry trade show in Washington, D.C., Cubic Defense Applications, based in San Diego, displayed one such 360-degree dome that the company expects to sell to the Air Force.

Cubic received a contract from the Air Force Research Laboratory to develop software that can create a seamless training exercise where live aircraft interact with computer-generated entities, including virtual enemy pilots who fly joystick-operated aircraft.

The industry buzzword for this training experience is LVC, for live-virtual-constructive. The live training would be real troops on the ground and actual aircraft flying missions. The virtual piece is a videogame-like simulation that is run by a human operator. The constructive simulation has computer-generated actors that are programmed to operate autonomously, without a human in the loop.

LVC is what the Air Force and Navy believe they need to conduct realistic fifth-generation tactical air warfare training without breaking the bank. The technology would allow commanders to challenge the F-35 Joint Strike Fighter, for example, to defend itself from an attack by simultaneous enemy aircraft and missiles.

Cubic recently performed an LVC demo at Nellis Air Force, Nev., where pilots train for aerial battles.

Creating a training environment that combines so many sources of data is a huge technological challenge, says Bob Pescatore, director of business development at Cubic.

"It's a lot of information," he says. In the Nellis demo, friendly forces flew two live F-15 Air Force fighters and two Navy F/A-18 Super Hornets. The enemy fleet had two live F-16 fighters and 12 computer-generated simulations. They were all connected via the Link 16 tactical combat network.

"Four blue [friendly] aircraft saw the constructive targets just like they would see the live targets," Pescatore says. The blue aircraft's radar warning receivers were "stimulated" by computer-generated aircraft. "To make that happen you have to modify the software in the aircraft to make it believe the information." Also, every move by every entity in the war game has to be synchronized to make it realistic. "Software integration is very complicated," Pescatore says.

The Air Force expects F-35 pilots to train this way, he says. "We need to be able to handle many targets at a time and train to that." Conducting a large-scale exercise entirely with live aircraft and weapons would be hugely expensive, he says.

The LVC trend also is apparent in Army training. Chief of Staff Gen. Raymond Odierno has directed commanders to revamp exercises to prepare soldiers for complex missions that combine low- and high-intensity conflict in various parts of the world. "We have to start using live, virtual and constructive [training] for combined arms maneuver, and additionally to be regionally capable," Odierno says.

The first attempt at applying LVC is happening at Fort Hood, Texas, where the 2nd Brigade Combat Team of the 1st Cavalry Division is testing an "integrated training environment." Odierno says the Army is only doing this as a "pilot" program because it still has no idea how much it will cost to install at every training center.

The combination of multiple Army weapon simulators already exists in systems used to train tank and helicopter crews. The Army is looking to expand the concept to cover the entire force.

The upshot for contractors is that they need to keep investing in new technology, says Colabatistto.

Companies should try to anticipate customers' needs and develop forward-thinking technology before the military decides what it wants to buy, he says.

CAE is pouring corporate research-and-development funds into high-tech displays, motion systems and image generation technology, he says. "We tend to make the heaviest investment in content," which is what makes simulations feel real to the trainee. The military is a demanding consumer, he says. "They want mission-based training. … You have to make the environment immersive."

As to how much money the military ultimately could save by trading live flying hours for training in simulators, the jury is still out. The Government Accountability Office challenged the Air Force's $1.7 billion future savings projection, pointing out that the estimate does not include the upfront cost of buying simulators and providing technical support.

"The Air Force included the savings associated with reductions in live training but not the potential costs associated with increases in virtual training," says a GAO report published in July.

The live training cost of one F-15E flight hour, for instance, is about $17,449, and the plan would be to cut 1,782 hours from future training and save $31 million. Similar calculations were made for each of the Air Force's fleets. The problem, GAO argues, is that the Air Force has not "developed a methodology to collect and track information on the cost of its virtual training program."

These costs could include expenses for aircrew to travel to simulator locations, additional contractor personnel to schedule and operate simulators, and the purchase of additional simulators to meet increased demand, the report says. "According to Air Force officials, identifying virtual training costs is challenging because funds to support virtual training and distributed mission operations are dispersed across multiple program elements."

GAO auditors reviewed a 2011 Air Force study that pegged total expenditures on virtual training in fiscal year 2012 at $1.9 billion. But the study acknowledged that not all costs had been captured, the GAO report says.

"Without a means to collect or calculate its virtual training costs, the Air Force lacks the information it needs to make informed investment decisions in the future regarding the mix of live and virtual training."

Military Will Increasingly Rely on Simulations During Budget Crunch

Valerie Insinna
January 2013
National Defense

Orlando, FL — The commanding general of the 2D Marine Aircraft Wing issued a challenge to the industrial base: Make the military affordable, portable simulators so soldiers can train while they're abroad.

Readiness goes down once troops leave the country, so the services will need simulators to keep training fresh during deployments, said U.S. Marine Corps Maj. Gen. Glenn Walters during a Dec. 4 keynote speech at the Interservice/Industry Training, Simulation and Education Conference.

"It has got to be smaller. It has got to be transportable. It has got to be cheap, because we're going to have forces spread out all over," he said.

Walters also called on contractors to create training for leaders on decision-making skills so that when commanders encounter real-life scenarios where troops are in danger, they can use experiences or processes learned during simulations.

"That's going to be difficult, because I think if I brought every general and flag officer on the stage, we'd all have a slightly different thought process on how to get to the same end state, and all of them could be correct," he said.

Such training would help save lives and make the force more combat effective, which he said is especially important with a smaller force forecasted for the coming decade. Additionally, increasing the use of simulations will be pivotal during a more austere fiscal climate with reduced funding for training and operations, he added.

"We have a moral obligation as leaders to make sure that those soldiers, sailors, airmen and Marines that we send forward are ready," Walters said. Simulation "is the one key to get us there at the best bang for the buck, no doubt in my mind."

Echoing the importance of cost savings, the program manager of the Marine Corps training systems referenced the "power of innovation" theme of the conference.

"The other way to think about innovation is being innovative in the how much we pay for things, how much we pay for different types of training systems and simulators," said Col. Michael Coolican. "It's not just innovation on the technology side, it's innovation in what we can afford and how we spend our money."

At the beginning of the wars in Afghanistan and Iraq, the military struggled with a shortfall of joint tactical air controllers (JTAC). Because training for JTACs is expensive, simulators helped to offset the cost, Walters said. "Our JTAC training is on track. About a third of their training is now done on a simulator. Personally, I think it needs to get up to 50 percent."

Without the proper training and simulators, he estimated the military would have seen two or three times the casualties.

T-X Jet Training System Competition Pits Old Aircraft Versus New

Stew Magnuson
December 2012
National Defense

In a building near Washington's Dulles Airport, BAE Systems houses a trailer it has been hauling to air shows all over the United States.

Inside is a suite of simulators for the Hawk Advanced Jet Training System, a British built aircraft the company will be offering as a candidate to replace the Air Force's aging T-38 trainers. More than 12,000 visitors have toured the mobile showcase, including 400 military officers, said Robert Wood, BAE's T-X lead executive.

"Everything in the trailer is off the shelf and in use by the Royal Air Force today. ... There is nothing science fiction there. It is all current stuff," Wood said, eager to point out that the Hawk and its training system are being actively used today and would require minimal development costs.

With so few new big-ticket military hardware programs in the pipeline, major contractors are gearing up for the acquisition of the next-generation T-X jet fighter trainer, and its supporting simulators. Partnerships have been formed, and the marketing has already begun even though the start date is unclear with the current budget crunch. Trainers are not among the most glamorous aviation programs, but with a planned buy of 350 aircraft along with the simulators, and an estimated cost of $11 billion to $17 billion over the contract's lifetime — including sustainment costs — competition in these austere times will be keen.

One of the candidates will be BAE Systems with its updated version of the Hawk, a purpose-built trainer that has been in production since the 1970s. It has partnered with Northrop Grumman, which will do the manufacturing, and L-3 Link Simulation and Training.

Lockheed Martin will also be in the hunt. It is offering another off-the-shelf aircraft, the T-50, which it is building in South Korea with its manufacturing partner, Korean Aerospace Industries. Lockheed Martin formed the partnership to build trainers for the Korean air force in the 1990s with an eye toward a T-38 replacement program, said Mike Griswold, director of T-50 business development.

"It has been a long time in coming," he said. Budget concerns have pushed the program's timeline to the right. The T-38s, meanwhile, are becoming increasingly expensive to operate and maintain as parts become obsolete.

Wood pointed out that the T-38 is four and half decades old and is the only aircraft in the Air Force inventory that has no completely funded replacement program.

Large, lumbering aircraft such as the B-52 bomber, along with lift and tankers may last longer, but this is a fighter with an airframe that has to withstand G-forces.

"The bottom line is: they have to replace the T-38," Wood said. "So it is not just a question of 'if,' it is a question of 'when.'"

The reason has more to do with the training gaps the Air Force has identified than obsolete parts and the structural integrity, both Wood and Griswold said.

"The T-38 is a remarkable airplane but it really was designed to train third-generation pilots starting with the F-4," Griswold said. "It showed this amazing ability to adapt as training needs changed." But the relatively new F-22 and the upcoming deployment for the F-35 will hasten the need for a trainer that can accommodate these fourth- and fifth-generation fighters, he added.

The F-22 and F-35 are single-seat aircraft. In the past, a pilot would come out of the training program and go into a two-seat F-16 or F-15, and receive additional operational training in a squadron. When an F-35 or F-22 pilot makes his or her first flight, it is solo, Griswold noted.

"That kind of raises the bar on what the training needs are now," he added.

The Air Force has a list of about 12 training gaps that the T-38 can't fill. Among the top needs are sensor management, air-to-air intercepts, sustained G-force, night vision training and air-to-air refueling.

The Air Force is currently going through its list to look at the cost benefit analysis of each of these shortfalls.

Night operations, aerial refueling and high G-force maneuvers will have to be taught in the training curriculum as opposed to the fighter squadron, which is the way it is done now because the third-generation fighters are two seaters, Griswold said.

"You can train at low speeds but combat happens at longer distances now at higher and higher speeds. It is important to be able to train at those speeds as well," he said. Simulators can only provide so much. At some point, the trainee needs to experience the speed and acceleration in the air, he added.

In this regard, the T-50 has a leg up. It is the only potential entrant that can reach supersonic speeds at Mach 1.2.

The T-X will also have to duplicate the sophisticated electronics found in the next-generation fighters' cockpits without actually having them installed.

Since it would be far too expensive to outfit the trainers with real radars, the T-X will be able to replicate bogies using GPS and communication links to show where another aircraft is flying, or indicate that an enemy fighter is approaching on the screen when in reality, there is nothing there.

"Everything is going to be scrutinized for affordability nowadays," Griswold said. For example, the off-the-shelf aircraft the two manufacturers are offering don't allow for aerial refueling. That would have to be added. Whether the service wants to pay for that, or find a different way to simulate that skill, has yet to be determined.

New training and simulation trends will also allow the Air Force to save funds. Combined live and virtual training concepts could allow one pilot to remain in a simulator, while another is actually in the air.

The Air Force has indicated that the simulator and aircraft portions of the program will not be awarded separately. While BAE has teamed with L-3 link, Lockheed Martin will rely on its global training and logistics division.

"The T-X program is about the complete system and not just one or the other," Griswold pointed out. Obviously there won't be near as many simulators as the proposed 350 aircraft. The exact number of the ground-based systems needed will be determined by the Air Force, he said.

Both the aircraft and the simulators will have to be changeable. Just as the T-38 was over the years able to take on upgrades, so too must its replacement, Griswold said.

It will not only have to meet today's requirements, but be able to adapt because it will be in service for 40 or 50 years. Open architecture and a flexible design for the simulator and the aircraft will be important.

"You've got to keep an eye on what are the current requirements of today as well as long term," Griswold said.

The BAE and Lockheed Martin entrants have the advantage of both having aircraft in production. Korea Aerospace has produced 80 T-50s as of October.

There are nearly 1,000 Hawks being flown throughout the world dating back to its first iteration in the 1970s. The new T2mk128 models are being flown in 11 countries.

Wood pointed out that four nations will be flying the latest model as the lead-in trainer for the F-35: Australia, Canada, United Kingdom, and the United States. Marine Corps and Navy pilots will use a variant for their F-35s.

Both BAE and Lockheed Martin executives said if they win the contract they will produce their trainers in the United States rather than the United Kingdom and South Korea respectively. Neither has announced a potential domestic factory location yet.

There are at least two other potential bidders, The Boeing Co. and Italy's Alenia Aermacchi North America.

Boeing declined to offer an executive to interview, but a company spokesperson provided a statement: "Over the past several years, Boeing has conducted extensive studies of both purpose-built and derivative platforms as well as many industry teaming approaches. Our analysis consistently indicates a purpose-built solution will provide the most affordable and effective solution to the Air Force's advanced flight training requirements."

The spokesperson declined a request for follow-up questions on how it reached its conclusion and how long it would take to develop a new trainer from scratch.

Alenia Aermacchi North America will be offering the T-100 Integrated Training System, according to its website. The trainer is based on its M-346, built in partnership with Russia's Yak Aircraft Corp. Italy, Singapore and Israel have ordered a total of 57 aircraft, but they are still in production, according to company press releases. Officials did not respond to a request for an interview.

Wood said the program must get underway as soon as possible. There are ongoing upgrades to some T-38s that will extend some of them to 2026. A request for proposals is expected in late 2013 or early 2014. The goal would be to have the T-X flying by 2020 with all the T-38s replaced by 2026.

"Any idea of new development is going down a path fraught with high-risk, high cost and delay. Period," Wood insisted, taking a not-too-subtle jab at Boeing. "Look at any program and ask how many have come in on cost, on schedule and on budget," he added.

Richard Aboulafia, vice president of analysis at The Teal Group, is bullish on the Italian's M-346. The Hawk has been the king of the relatively small trainer/light-fighter market for decades, but the world is moving on and wants something new, he said.

Alenia Aermacchi's new M-346 seems to be it, Aboulafia said.

He called the Hawk the "underdog" in the upcoming competition because of its decades-old design.

"It is conceivable that a 1970s design can be reborn again, it is just not likely," he said.

As for Boeing's plan to build a new aircraft, it has two choices: spend about $1 billion of its own internal research-and-development dollars, or hope the Air Force wants to foot the bill. It is unlikely Boeing's board of directors or its shareholders would go for the former, and even less likely that the Air Force in the current budget climate would pay for the latter, he said.

As for the T-50, the question is whether the Air Force would want to pay a premium to acquire a supersonic trainer. It is more costly to buy and operate, he said.

"It's a good plane, but it is expensive," he added.

Alenia Aermacchi has reportedly been looking for a U.S. partner. Despite Boeing's public statements, a marriage between the two might be on the horizon, Aboulafia predicted.

Correction: The original article misspelled Mike Griswold's name.

Contracts Highlight Growing Role of Video Game Training

Valerie Insinna
February 2013
National Defense

The Army and Navy are seeking out video game technology to engage young soldiers and sailors, and both services plan on awarding major contracts in 2013 for virtual, PC-based training.

But even though the military increasingly wants to get its hands on technologies that look and play like Call of Duty, industry executives say there are still barriers keeping the most innovative and entertaining games from being acquired.

Although graphics and game play in simulations have become more up to date, outdated technology is still prevalent in the industry. The military sometimes still uses software written in 2002, said Brian Waddle, worldwide vice president of sales and marketing for Havok, a gaming technology developer that expanded into military simulation after specializing in entertainment.

"The industry needs to find a way to get past the older code that's sitting out there," he said. "They [soldiers] look at these simulators, and they don't take them seriously because they don't look as good as what they're playing in their living rooms."

The simulation industry has been largely welcoming to game developers, but the military tends to lock onto a certain kind of technology and can be resistant to change, he said. Sometimes when a request for proposals goes out, "the RFP is designed for older technology to win, and that's a shame."

Currently, the Army is conducting a competition for the flagship of its Games for Training program, with an award of approximately $44.5 million over five years. It wants another first-person shooter to replace Bohemia Interactive's Virtual Battlespace 2 (VBS2).

Officials at the Program Executive Office for Simulation, Training and Instrumentation (STRI) said they are evaluating proposals for the competition, which were received in October, but declined to say more about the Games for Training program until a contract is awarded.

That will likely happen in March or April, said Bohemia Interactive President John Givens.

In the weeks following proposal submissions, the Army required companies to prove that they could create a specified terrain in 24 hours. Within that scenario, they then had to demonstrate a list of capabilities, such as showing a squad climbing up a hill and taking down a target, Givens said.

Havok had partnered with other companies to bid for the Games for Training recompete, but pulled out months before the proposal was due, Waddle said. "We felt that it favored Bohemia and it didn't make sense for us to continue."

Bohemia CEO Pete Morrison disputed the suggestion by countering that Bohemia also had to make improvements to VBS2 in order to meet requirements. "I don't think there's any ulterior motive here. It was a completely open competition."

PEO STRI is looking for a game that has all of the capability of VBS2, but with better graphics and the ability to play across mobile and PC-based platforms, it stated in the solicitation.

It also is seeking the ability to integrate more players and move them across a larger landmass, such as an accurate virtual replica of Afghanistan, Morrison said. The idea is a first person, massively multiplayer online game like World of Warcraft, played on a huge scale.

This poses classic video game challenges to developers, Morrison added.

"Most computer games, they have little tiny playboxes, and they are really tailored to deliver a specific entertainment experience," he said. "The military wants to simulate things like the entirety of Afghanistan, so that's a huge challenge."

Increasing networking capability is also difficult, as adding players to a game can create lag time, Morrison added.

Bohemia demonstrated that the updated version of VBS2 could support 40 to 50 players from around the world in a terrain as vast as Colorado at the Interservice/Industry Training, Simulation and Education Conference in Orlando, Fla. The version that Bohemia is offering for the contest can accommodate hundreds, Morrison said.

The Army also wants to improve the game's artificial intelligence (AI), Morrison continued. For that, Bohemia has partnered with Xaitment, a German developer of AI middleware that is more customizable than Bohemia's own software.

One strength of VBS2 is its adaptability, said Givens. It can be networked to the Army's aviation combined arms tactical trainer (AVCATT), a helicopter flight simulator. The software can also be run on the Dismounted Soldier Training System, a combat trainer where a soldier wearing sensors, a helmet-mounted display and carrying a replica weapon, navigates a virtual battlefield.

Game-based training conducted during 2012 in Fort Benning, Ga., incorporated a VBS2 modification that matched a soldier's height, weight, and appearance to his video game avatar. The avatar was also customized to reflect the soldier's shooting accuracy and running speed, Givens said.

"If they were shooting 15 out of 40 targets, and they were a standard shooter, that's how they shot inside the game," he said. "What we found in recent tests … is that soldiers are more inclined to go out to the range and get a better score because they weren't hitting the targets in that super-user mode like typical games do."

More than 100 sites have fielded VBS2, Givens said. The program is also used by the Marine Corps, which awarded Bohemia a $10.3 million contract in October to further develop the game's terrain by improving the appearance of two dimensional maps and offering support for physics-based building destruction.

While the Army has used VBS2 as a broad platform with many applications, the Navy is looking for game-like technologies that will train its sailors for specific purposes.

The service is scheduled in January to award three contracts for virtual training for the Littoral Combat Ship, with vendors expecting around $100 million for each contract. One of the program's goals is to save money.

Two contracts will go toward curriculum for Lockheed Martin's Freedom variant (LCS-1) and Austal-General Dynamics' Independence variant (LCS-2), each clocking in at around 4,500 training hours. A third set of courseware for anti-submarine, surface, and mine warfare would amount to approximately 2,250 hours of instruction, according to the Navy's solicitation.

The lessons incorporate individual, self-paced courses and group training led by an instructor.

The LCS variants were built to operate with a small crew size, initially 40 core crewmembers before the Navy announced an expansion in 2012. Because the service is employing a "Train to Qualify" concept requiring crewmembers to be ready to execute orders immediately upon reporting for duty, most of the training for the ship will be done on shore.

"Everybody on that ship needs to learn how to do multiple jobs," said John Burwell, director of business development for Dynamics Research Corp., which is bidding as a prime contractor on the Lockheed variant. "To train them to do this, they have this whole new training paradigm that's based on these 3D models and going through and doing it all as gaming instead of death by PowerPoint." The LCS has been mired in controversy for cost overruns incurred because of changes to its designs midway through construction, and

criticism that the relatively small, light ship is less survivable than others in the fleet. Navy officials hope that doing game-based training will ultimately save money and wear and tear on the ships.

As part of the competition, companies were required to provide an hour-long training curriculum to the Navy, as well as the development cost, said Ron Smits, DRC's director of knowledge management.

The scenario had to show a full understanding of courseware development, including a pretest to assess ability, training to improve skills, and a post-test to gauge what was learned, Smits said. He declined to provide any more specifics on the curriculum DRC offered.

The Navy mandated small business participation, but instead of trying to meet the requirement and use small business as "filler," DRC executives sought out a number of companies that have done game research or development, Smits said. The hope is to have a collective approach in creating the curriculum, with a more innovative, less expensive end product.

The virtual training curriculum will run on Crytek's CryEngine 3, the engine used to create Crysis 2. This popular first-person shooter features a Force Recon Marine battling aliens in New York City.

Although CryEngine 3 was initially developed for entertainment gaming on personal computers and consoles such as Xbox 360 and PlayStation 3, it has since been licensed for military projects such as the U.S. Army's Dismounted Soldier Training System and a virtual helicopter dock for the Australian Navy.

Alion Science and Technology Corp. is already using CryEngine 3 to develop the Virtual Maintenance Performance Aid (VMPA) for the Navy, which will be delivered in June. It will train readiness control officers on LCS-2 to do maintenance in an interactive virtual ship environment.

Development of the VMPA began as an Office of Naval Research Project in 2008. Funding and requirements were expanded over time, and it is now a program of record, said Scott Casey, senior software engineer for Alion.

VMPA employs a first-person viewpoint and allows the officer to become familiar with the control panels, equipment and layout of the LCS before he reports to the ship. It uses the same controls as computer gaming and can be run on any PC or laptop, so long as the graphics card meets specifications, he said.

"When I brought that original one on a laptop onto the actual ship, the commanding officer said, 'Oh is this like Doom?'" Casey said. "I said, 'Yeah.' She goes, 'Can I try it?'"

Alion is working on creating multiplayer scenarios where individual crew members can fulfill tasks needed to complete missions, including moving the ship and responding to equipment malfunctions and enemy attacks.

A simulation for the LCS-1 using a different engine has already been delivered, and Alion has agreed to subcontract for multiple companies competing for the LCS curriculum, Casey added.

RealTime Immersive, Inc., which licenses CryEngine 3 in the United States, displayed a teaser trailer showing a virtual mockup of the LCS at I/ITSEC.

RealTime CEO John Brooks declined to comment on whether the company would be involved in design or support of the LCS curriculum, but highlighted CryEngine 3 capabilities that will be used in the design process.

A feature called the observation marker system can be used by the Navy to virtually bookmark where there are discrepancies between the LCS and the 3D model, providing a way to critique the contractor that created the courseware.

"Because you're building in this big virtual space … you need to be able to mark areas and say, 'The contractor needs to build this valve here,' or 'You need to change this logic here,'" he said. Another capability, situational decision points, presents the player with a set of options that lead to different outcomes, testing the sailor's decision-making skills and forcing him to make a choice within a certain time limit.

Military Services Seek to Reduce Cost of Keeping Forces Ready to Fight

Valerie Insinna
December 2012
National Defense

Orlando, Fla. — Cuts to military spending will challenge the armed services to lower the cost of training and maintaining force readiness, Defense Department officials said Dec. 4 during a panel discussion at the Interservice/Industry Training, Simulation and Education Conference.

The most immediate cost-cutting measure will be to reduce flying hours and increase simulation-based training, said Vice Adm. David Dunaway, commander of Naval Air Systems Command.

Training pilots for the F-35 Joint Strike Fighter demands more complicated environments and bigger training ranges, Dunaway said. “"We are just not going to be able to afford to train for these complex missions up and away. That's a future that we have to put into this modern simulation environment."

During the past decade, the services have made important advances in live, virtual, and constructive training, but the department still needs to make improvements, said Laura Junor, deputy assistant secretary of defense for readiness.

For example, some of the services are trying to procure more land for training, but finding enough space has been difficult, she said. "So is there a way that we can figure out how to either really or virtually link the ranges we have to simulate a much larger training range? Is there any way to do that cross continents to pull our international partners in?”

Cyber warfare is another area that is gaining attention. Although the Defense Department set up Cyber Command in 2009, the agency is still working on articulating what it means to be a "ready cyber force," Junor said. “We have to get much better at integrating cyber, both offensive and defensive cyber into our planning and into our training. The threat of cyber is inherent to every kind of warfare operation that we conduct."

In the coming years, the Department must also find ways keep motivation going during training, even though there may not be an enemy or war to fight.

“I’m afraid that we will have retention problems again,” Junor added. “Don't forget, it’s the best folks that tend to have options, and keeping quality recruits coming in and retaining those that we need is going to be an important part going forward.”

In order to help solve these issues, Deputy Defense Secretary Ash Carter set up the Deputy’s Management Action Group in 2011. Junor said the group is “trying desperately to allocate what resources we have against way too many important competing needs."

Soldiers Test Impact of Virtual Training on Live-Fire Performance

Dan Parsons
December 2012
National Defense

During a recent exercise called Bold Quest, held at Ft. Benning, Ga., soldiers and Marines tried their hands at the latest virtual training technology. The event was aimed at studying whether and how such training can augment live exercises at the small-unit level. Initial reaction to the use of simulators to train dismounted soldiers was positive, but the systems still cannot replace the real-world in many instances, officials said.

"We don't believe immersive training will ever be a replacement for live training," said Gary Daniel, project lead for the Army's Expeditionary Warrior Experiment, of which Bold Quest was a part. "We are focused on how it can enhance a training program at the small-unit level to make their live training more effective and more efficient."

During the exercise, several squad-sized units from the Army, Marine Corps and Canadian military performed specific missions using a suite of simulators over a three-day period. On the fourth day, the squads performed the same tactical missions — area reconnaissance, cordon and search and attack — in a live environment. A squad also used a virtual marksmanship training system and then qualified on its weapons at a live-fire range.

The jury is still out on whether virtual rehearsal improves performance in the real world. Army Test and Evaluation Command is scheduled to publish a report on the exercise within 60 days.

Officials involved with the testing agreed, however, that virtual and immersive systems could have a significant impact on the way small units train and the breadth of scenarios they can practice.

"The ability to alter the environment the soldiers are training in," is unique to immersive training systems, said Lt. Col. Aaron Lilley, ATEC's lead military analyst for Bold Quest. "You could have a squad in an urban environment in the desert and with a few keystrokes, move them to the jungle, and with a few more keystrokes, move them to grassland somewhere else. Even in a very large training footprint in reality I don't know if you could get that variety of environments at one station."

Virtual, or immersive, training simulators are based on video-game technology that is familiar to many soldiers. Several systems were tested during the Bold Quest exercise, including the Dismounted Soldier Training System, the Small Unit Immersion Training System and virtual marksmanship systems.

Dismounted Soldier allows up to nine troops to participate in an area about the size of a basketball court. Each wears sensors and experiences the virtual world through a helmet-mounted display.

"We're finding out that they can do lots of things to some benefit," said Daniel. "One of the real benefits at the squad level is the squad leader can take his eight soldiers into these immersive trainers and teach things that are learned through repetition and do them with multiple repetitions in a short period of time, cheaply."

Virtual and immersive training systems also allow administrators to alter the complexity of the scenario in which soldiers are engaged. A training official at a computer console can instantly add or subtract obstacles or enemies with a click of a mouse, said Daniel.

The systems allow soldiers to rehearse standard operating procedures for scenarios that would be unsafe, prohibitively expensive or impossible to replicate in reality, said Jim Morris, director of training development at Ft. Benning.

"How many opportunities does a leader have to employ a UAV? Not many," Morris said. "In an immersive environment, every soldier can do it, and it doesn't cost much money. There are a lot of things we can do in immersion that you really can't do any other place."

Morris offered helicopter pilot training as an example of how only immersion can replicate certain scenarios. While many helicopter pilots will have to deal with a lost tail rotor in combat, none of them is likely to have trained for that contingency during live exercises.

"But they've all practiced it in immersive trainers," he said.

The virtual marksmanship training system tested at Bold Quest could, in theory, be better at teaching accurate shooting than time on a live range, officials said. Shooting coaches can not only observe their students' behavior and shot placement, but can actually see the same sight-picture as the shooter. It allows coaches a much more intensive set of criteria and observable variables by which to critique their students, said Daniel.

Still, these simulators are unlikely to completely replace live-fire marksmanship training. Morris said transitioning marksmanship to the virtual world was less risky because ranges are not meant to simulate combat.

“Do 40 live rounds on a pop-up target replicate your marksmanship ability in the real world?” he said. “Most targets don’t pop up. They’re not stationary and on ranges. They’re running around the battlefield.”

Without having run the numbers on data gathered at Bold Quest, officials already identified one area where virtual marksmanship trainers can make a difference: training noncommissioned officers to teach marksmanship.

“One of the unintended consequences … is we’re recognizing a void in preparedness of NCOs to teach rifle marksmanship. They could be advantageous in teaching NCOs how to teach soldiers.”

While nearly every one of the Bold Quest officials was positive in their assessment of the technologies tested, not everything came up roses. Soldiers are familiar with video game technology, but the immersive environments don’t yet capture their imaginations completely.

“Technology is really improving year over year, but we’re not really at the point yet where a soldier can completely suspend disbelief and accept that they are inside an immersive world,” said Lilley. “Some things are pretty hard to replicate.”

Motion is one difficult element to simulate. Dismounted Soldier restricts users to a 10-foot-square pad in which to move while operating in an endless virtual environment. Their instinct to physically move often interferes with virtual training scenarios, Lilley said.

Another limitation is the need to feel fellow soldiers during operations, especially in urban environments.

“When soldiers enter and clear a room, they would like to be able to feel the soldier in front and the one behind, patting them on the shoulder telling them it’s OK to go. That’s a sophisticated concept that could be years away.”

Northrop Grumman Signs Up First Customer for its UAV Training System

Valerie Insinna
December 2012
National Defense

Orlando, FL. — Northrop Grumman announced Dec. 5 that it has signed up the first customer for its Sandstorm/Longshot training system for unmanned aerial systems.

"The customer was so enthused by the sale, they've asked for more already,” Karl Purdy, the company’s new UAS programs manager, said at the Interservice/Industry Training, Simulation and Education conference. He declined to disclose the customer's name.

Sandstorm/Longshot is offered on a fee-for-service basis, where Northrop Grumman provides un unmanned aircraft, instruction, maintenance, and a safety pilot trained to monitor flights and take control of the plane to prevent crashes. It can simulate the General Atomics MQ-9 Reaper and MQ-1 Predator. The contractor is looking into expanding the system for the Shadow and Hunter.

The UAV that student pilots control is less expensive to fly than Reapers or Predators, company literature states. Students can book time to control the aircraft from any computer with a high-speed connection. They are not required to be near the airport where the UAV is located. Northrop Grumman says its UAV can go on 100 flights for the price of one Predator sortie.

The system is designed to improve pilots' takeoff and landing skills. In November, a Washington Post report reviewed Air Force investigations on UAV mishaps at overseas civilian airports, highlighting pilot error as one of the major causes of the crashes.

Northrop Grumman believes that incorporating Sandstorm/Longshot into existing training could save the Air Force $75 million a year when compared to the cost of flying Reapers, Predators, or other simulators.

Using Sandstorm/Longshot could help clear a backlog for training Air Force pilots, which is caused by a shortage of simulators. Although adding the system would be an additional cost, it could increase throughput by 25 percent, Purdy said. Pilots can logon, book flying time and be operating the aircraft with 15 minutes, company literature said.

The system is not yet certified as simulator for military use, but last month Northrop Grumman met with Air Combat Command staff. The contractor has proposed splitting a class of students into two groups, with half of students spending two weeks doing normal training and the other half doing training with Sandstorm/Longshot, Purdy said.

“We've flown the aircraft now 250 hours; not a single mishap,” Purdy said. “No other UAV can claim in the first 250 hours that they didn't have a mishap except for Global Hawk.”

Trainees can operate the aircraft from anywhere in the United States, he continued. Northrop Grumman intends to do a demonstration next February or March with student pilots flying the aircraft from Great Britain.

Army Training Contends With Uncertain Future

Valerie Insinna
December 2012
National Defense

In some ways, the fictional town of Dara Lam looked familiar. Townspeople shuffled past a mosque at the center of the village as drones buzzed overhead. U.S. soldiers made conversation with local residents, trying to build intelligence and sniff out the enemy. But when an enemy tank rolled through the middle of town, it became clear this foe was better trained and equipped than the insurgencies of the past decade.

“I never saw a tank in Afghanistan or Iraq,” said Brent Prier, a specialist from 82nd Airborne Division’s 325th Airborne Infantry Regiment.

This scenario was part of the first Decisive Action training rotation held in October at the Joint Readiness Training Center in Fort Polk, La. More than 4,800 personnel from the Army, Air Force and special operations forces participated.

Although the war in Afghanistan is scheduled to come to a close in 2014, the Army is already training its soldiers against a mix of near-peer conventional forces, insurgent elements and criminal groups.

If the last decade of war was defined by prolonged counterinsurgency operations and troop surges, new training hints that future combat operations could be shorter, with more integration across conventional and special operations forces, and force-on-force tactics.

In the past, training had been focused on a specific geographical area and enemy, said Lt. Col. Matthew M. Canfield, chief of staff of the operations group at the JRTC.

“If you’re going to Kandahar province in Afghanistan, we replicate Kandahar province in the box,” he said. “Then we moved into something maybe a little more general in its focus, without a specific geographical tie.

We refer to that as full spectrum operations. And from that, now we've moved into the next generation of the doctrine."

The Decisive Action training environment is designed to be fluid and complex, taking place in a nearly urban environment with a civilian population and political infrastructure, said Capt. Dennis Grinde, operational plans officer at the JRTC.

Although the scenario involved five fictional countries in the Caucasus, the training incorporated situations that were strikingly similar to the recent attacks against U.S. embassies in Arab Spring countries as well as continuing counterinsurgency operations in the Middle East.

In the scenario, enemy nation "Ariana" seeks nuclear weapons, is hostile toward the United States and Israel, and wants greater control of the region's natural resources. After Ariana invaded "Atropia," a U.S. ally, it planned to storm a U.S. consulate in the city of Dara Lam.

To kick off the 11 days of force-on-force training, paratroopers jumped out of C-130s onto an Atropian airfield and then raced into the mock village of Dara Lam to defend the consulate.

However, U.S. forces didn't simply face another nation's military. They also grappled with the South Atroprian People's Army, a local insurgent force that received support from the Arianan Special Purpose Forces. Additionally, the Baqqani crime syndicate sought to exploit the unstable environment for its own ends.

Decisive Action training is geared toward what Grinde called an undefined threat. "What we mean by that is it is a freethinking, aggressive enemy that has realistic capabilities and realistic motives," Grinde said.

This hybrid enemy presents more complicated rules of engagement and reflects the unknown nature of threats the Army could be facing in the future.

"We are coming down from pretty intense operations both in Iraq and now in Afghanistan," said Undersecretary of the Army Joseph Westphal, who stopped by to watch the training. "Now, as we transition to the future, one never knows, right? So one never knows when the president will need his Army to address an issue somewhere around the world. We need to be trained and ready at all times."

For conventional Army forces, this rotation was a return to force-on-force tactics that had not been practiced since the service began focusing on counterinsurgency operations.

"Some of the things that we did that I haven't done in a long time was build bunkers," and laying down concertina wire, said Prier, who had previously been deployed to Iraq and Afghanistan. "We were going old school for a while."

Prier and his eight-man team were responsible for providing security for the consulate building, rotating the team day and night to guard its two gates and collecting intelligence from civilians, which was then shared with other units.

It was also a return to a more Spartan way of living, he said.

"In Afghanistan and Iraq, we built it up. We had huts and living quarters with beds and whatnot," said Prier. "And within the training, we had guys that had never slept in the dirt for more than two days or three days actually spending two weeks in the dirt."

Also key to this mission was cooperation and information sharing with special operations forces.

To accomplish this, personnel from the special operations task force were integrated into conventional units and vice versa, said Army Lt. Col. Hank Henry, commander of Special Operations Forces for the exercise.

"How we really facilitate a clear interoperability and interdependence is the development and sustainment of a common operations picture and a common intelligence picture," said Henry. Such integration "enables us to gain and maintain that intelligence picture, which further facilitated our targeting process."

Prier said that his team built a good rapport with special operators, sharing intelligence at least once a day.

“Every time we talked to the SOF forces we just pretty much got debriefed from the information that they had gotten from going out and interacting with the roleplayers, so they were a good source of intelligence,” he said.

SOF also conducted varied operations in support of conventional forces, including mending a hole on a flight landing strip at the beginning of the exercise and conducting infiltration operations utilizing its relationship with a local Atroprian resistance force, Henry said. “They [the resistance force] bring a very unique perspective to the fight as well, because they live here. So they understand the terrain.”

Cooperation between conventional and Special Operations Forces is common in Afghanistan, but Army Chief of Staff Gen. Ray Odierno has been pushing for greater integration through joint training. Odierno traveled to Fort Polk to observe the first stage of the exercises in mid-October.

During his visit, Westphal called such integration the way of the future.

This cooperation will be more important as the Army moves to a more austere fiscal climate, with a downsizing of the force by about 80,000 in the next five years that will necessitate shorter, more targeted missions.

“We will probably deploy more than we have before,” Westphal said. “It won’t be these long-term combat deployments that we’ve seen over the last 10 years.”

Integrating special operations and conventional forces is “one of the ways we’re going to have to do our work in the future, not only to be more effective, but also to be more economically sustainable,” Westphal said. The Army also needs to keep investing in joint training bases such as Fort Polk, he added.

As the Defense Department shifts its focus to the Asia-Pacific region, the Army must strive to be more agile, flexible and rapidly deployed, officials said.

Historically, the president has relied on the Navy and the Marine Corps as a rapid response force, Canfield said, but the tactics practiced during the Decisive Action rotation give the president another option of how to put troops on the ground.

“We have now what we’re calling the global response force, which is an expeditionary force out of the 18th Airborne Corps that can execute joint forcible entry [and] go to take down an airfield,” Canfield said. “Marines are pretty good if I’ve got a shoreline and ocean or a sea, but the 18th Airborne Corps with the Air Force and their C-17s gets them farther in.”

During the final days of the rotation, Prier and his unit received intelligence that the Arianan army and associated insurgency forces would try to invade the consulate. His unit tried to fortify their defenses, putting up barbed wire and flipping over trucks to create a blockade around the embassy, but the enemy forces had one final surprise.

“We got intel a few minutes prior to the actual attack that they acquired a military Humvee, which believe it or not, actually just pulled up to our front gate where my guys were on guard,” he said.

By then, U.S. forces had increased the number of soldiers at the gate, outnumbering their enemy by 3 to 1. The Arianans were detained before they breached the consulate gate.

After the embassy was secure, Prier and his unit helped execute an airborne assault on Arianan forces — a practice of offensive tactics and the finale of the training. Troops flew in on Black Hawk helicopters and traveled on foot for six kilometers before their final attack on the Arianans.

“We’ve been trained on COIN [counter-insurgency] environments for so long it’s just second nature now,” said Prier. “So the biggest upset would be the new force-on-force [element], that’s the one that would be the most strenuous because we haven’t done it in so long.”

Training Rotation Incorporates Diplomatic Features

Valerie Insinna
December 2012
National Defense

A military exercise at Fort Polk, La., has fused diplomatic elements into Army training, stressing the importance of interagency and multinational cooperation during an operation.

The training, held at the Joint Readiness Training Center in October, included participation from over 4,800 personnel from the Army, Air Force and special operations forces.

Mock village of Dara Lam at the Joint Readiness Training Center.

In the scenario, the United States comes to the aid of an allied nation, "Atropia," after it is attacked by a hostile nation named "Ariana."

Former State Department and U.S. Agency for International Development personnel staffed a mock consulate in a fictional Atropian town called "Dara Lam" and worked with the Army to organize noncombatant evacuation operations.

U.S. forces also had to coordinate with local Atropian government officials, who were portrayed by roleplayers.

Matthew Welch, a roleplayer who acted as Dara Lam's provincial governor, said he had worked with the brigade commander, deputy brigade commander and American consulate general on getting water, food and necessities for the people of Dara Lam.

"At one time we had over 10,000 displaced citizens in Dara Lam because of what's going on, and I worked very closely with them on getting the supplies to keep the city running," he said.

During his visit to the JRTC, Undersecretary of the Army Joseph Westphal said he talked to commanders about challenges they faced on the interagency aspect of the training.

"In an exercise like this, very unique in a way, there are going to be mistakes; there are going to be things we didn't consider," he said. Part of his job as the chief management officer would be to work with Army leadership on how best to coordinate with other government agencies in the future, he said.

Communication between Americans and Atropians wasn't limited just to high-level commanders and government officials. Soldiers also had to speak with Atropian civilians in order to gather intelligence and sniff out potential insurgents.

"My guys went out on pretty much almost every patrol or every other patrol," said Brent Prier, a specialist from 82nd Airborne Division's 325th Airborne Infantry Regiment. "We got to do a lot of interacting. We went throughout the town, we met practically every roleplayer … that was actively in town on a day-to-day basis."

Roleplayers agreed that it was important that soldiers make mistakes in training rather than in theater. For example, soldiers attempted to get into an Atropian vehicle without permission, which could have caused friction if it had happened on an actual battlefield, said Mike Ketchum, who played the Atropian director of finance.

"We'll cooperate all you want, but you can't get into our stuff without asking. If you ask us, we'll cooperate. But if you don't, we're not," he said.

However, not all roleplayers were willing to cooperate. Lloyd Elletson, who formerly served with the National Guard, portrayed an instigator participating in protests where he and other dissatisfied Atropian citizens threw simulated rocks and bottles.

Troops need to be able to work with helpful citizens as well as manage troublemakers who aim to further agitate volatile environments, Elletson said. “They [soldiers] have to show accountability for their actions.”

First Students Graduate from Navy's New Basic Division Officer Course

Lt. Forrest Griggs - Surface Warfare Officers School Command Public Affairs
December 5, 2012
Navy.mil

NORFOLK, Va. (NNS) -- The Surface Warfare Officers School (SWOS) Basic Division Officer Course (BDOC) graduated its inaugural class of Division Officers at a ceremony in Norfolk Nov. 30.

The class, consisting of 70 junior officers, completed the eight-week course designed for prospective surface warfare officers.

"The Basic Division Officer's Course gives new division officers the foundational knowledge and skills needed to make them more effective in running their divisions and leading their personnel," said Capt. Richard A. Brown, SWOS commanding officer.

The course places emphasis on in-class instruction and the use of technology such as the Conning Officer Virtual Environment (COVE) simulators, which simulate every class of ship in the U.S. Navy and all their homeports, in addition to many routine ports of call around the world. COVE allows for the reinforcement of concepts in navigation, seamanship, and shiphandling. The new BDOC also provides instruction on administration, engineering, leadership, and damage control.

Rear Adm. David M. Thomas Jr., commander, Naval Surface Forces Atlantic, spoke at the graduation, and thanked the guests and students for being part of this major achievement for the Surface Warfare community. Thomas reminded the graduates of the importance of their challenging roles and how they will be relied upon as leaders on their ships.

"You're a symbol of our nation, our Navy, your ship, and your division. Everybody is watching you, so please live up to those very high expectations that I have of you, that the Navy has of you," said Thomas. "Remember, work hard, do your best, be a part of what's going on aboard your ship and most importantly, be a good person."

Ensign Arian Davis, assigned to USS Mesa Verde (LPD 19) earned the BDOC award for Honor Graduate; possessing the highest overall grade point average for the course.

"It was an awesome opportunity, mainly getting to know other SWOs and the different aspects of the ship," said Davis. "The instructors and officer-in-charge were very supportive, staying late with me and answering my questions; I had thousands of questions."

Ensign Carson Talley, assigned to USS Stout (DDG 55), was selected for the COVE shiphandler class award, given to the student who best demonstrates safely docking their ship and displaying the greatest understanding of shiphandling principles.

BDOC training sites in Norfolk and San Diego have staffs of seven, headed by a lieutenant commander, and six lieutenant instructors. BDOC training facilities have been equipped with state-of-the-art electronic classrooms and shiphandling simulators including COVE. Junior officers attending BDOC will also use computer-based training (CBT) for advanced qualifications.

SWOS is headquartered in Newport, R.I., and oversees nine learning sites, providing more than 1,000 courses a year to more than 60,000 Sailors. SWOS uses a mix of instructor-led classes, hands-on labs, simulation and computer-based training. Courses include specialized training supporting all enlisted engineering ratings, and surface warfare officers at every level. Building maritime partnerships, the command also provides training to many international students.

Combat Simulation Prepares Riverine Sailors for Deployment

Mass Communication Specialist 3rd Class Kay Savarese - Navy Expeditionary Combat Command Public Affairs
November16,2012
Navy.mil

PORTSMOUTH, Va. (NNS) -- Thirteen Sailors from Coastal Riverine Group (CORIVGRU) 2 completed training with the use of a combat simulator during an Embarked Security Combat Skills (ESCS) course in Portsmouth, Va., Nov. 16.

Embarked security teams board high-value assets to provide force protection to noncombatant Military Sealift Command (MCS) vessels and contracted ships around the world, ensuring safe passage for the ships and crews, specifically within the 5th Fleet Area of Responsibility.

"We teach them all the basic tools and fundamentals they need to conduct embarked security team missions," said Master-at-Arms 1st Class Beverly Henson, ESCS instructor and coordinator. "While deployed, these teams protect ships that are contracted by the Navy but don't have the weapons to defend themselves efficiently through dangerous areas."

The training course utilizes the Laser Shoot Littoral Combat Simulator, developed by Laser Shot and Virtual Battle Space 2, to help prepare the students for the challenges of their upcoming deployment to Bahrain by exposing them to scenarios they may encounter.

"This training is kind of a crash course to prepare us for deployment," said Master-at-Arms Seaman Lance Shults, a student attending the course. "I have never done anything like this before. It's all brand new to me. We're getting all the training we can here, so we're prepared for when we get to Bahrain."

The simulator enhances the classroom portion of the course, bringing a sense of realism to training scenarios by using a central platform surrounded by screens. An instructor controls a computer, which projects an image of the open ocean onto the screens as well as an array of variables - ships, small watercraft, floating objects, etc., the students may encounter while on deployment. The central platform serves as the vessel from which the students operate, utilizing a system of hydraulics to simulate the movements of an actual boat.

"Before the simulator, we spent a lot of time in the classroom," said Shults. "You can read power points all day, but it's totally different when you get up on that platform and you're doing the training hands-on. I learn so much more by using my hands and actually seeing the environment on the screens with the computers."

This is the second evolution of students to attend the four-week course in Portsmouth since the formation of Coastal Riverine Force (CORIVFOR) June 1.

"With the merger between Maritime Expeditionary Security and Riverines, we took the defensive and offensive sides and mixed them together," said Henson. "The expeditionary security community used to be completely defensive, while the Riverines were primarily offensive. When the two forces combined to form Coastal Riverine Force, the dynamic changed a bit.

"Prior to the merger, this training was conducted on the West Coast," said Henson. "So far, the two classes we've had come through the course on the East Coast have done really well. We throw a vast amount of information at them in a short period of time, and they put in fairly long days in order to be able to retain it all and become a well-rounded Sailor before beginning their mission."

Following the simulator portion of the course, the students will continue their training using a stationary training vessel and actual boats in the open water, employing the skills they have learned thus far.

"They're throwing every situation they can at us, so it's been kind of a challenge-but it's new; it's fresh; it's fun," said Shults. "It's highly beneficial because if I'm in a situation overseas, I will have this experience to look back on and I will be more prepared since I have actually practiced how to react in that situation."

Upon graduation from the course, the students will deploy to Bahrain where they will receive follow-on training and perform their mission as an embarked security team.

CORIVFOR performs core maritime expeditionary security missions in the green and brown waters, bridging the gap between traditional Navy blue water operations and land-based forces, providing port and harbor security for vital waterways and protection of high value assets and maritime infrastructure.

SIGNAL ONLINE
More than a magazine: We're AFCEA.

Northrop Grumman to Modernize U.S. Army Training Centers

George I. Seffers
January 11, 2013
Signal

The U.S. Army Program Executive Office for Simulation, Training and Instrumentation has awarded Northrop Grumman Corporation, Herndon, Va., a six-year contract to modernize the existing instrumentation systems at the National Training and the Joint Readiness Training centers. Northrop Grumman will modernize the range data measurement system and observer controller communication system portions of the range communication system at the National Training Center in Fort Irwin, Calif. The company also will modernize the observer controller communication system and range data measurement system at the Joint Readiness Training Center in Fort Polk, La.

CAE to Provide C-130B-H Simulator Training

George I. Seffers
January 4, 2013
Signal

CAE USA Inc., Tampa, Fla., is being awarded a $12,500,000 maximum ceiling, firm-fixed-price, indefinite-delivery, indefinite-quantity contract for C-130B-H simulator training. The location of the performance is Tampa Bay, Fla. The contracting activity is the Air Education Training Command, Randolph Air Force Base, Texas.

URS to Support Electronic Warfare

George I. Seffers
November 16, 2012
Signal

URS Federal Technical Services Inc., Germantown Md., is being awarded a maximum value $7,893,315 fixed-price, indefinite-delivery/indefinite-quantity contract for engineering, technical, and programmatic support for the Spectrum Electronic Warfare Department of Naval Surface Warfare Center, Crane, Ind. Spectrum Electronic Warfare Department's primary focus areas are in direct support of airborne electronic defense, airborne electronic attack, maritime, and expeditionary divisions. This contract is a continuation of current services, pending the competitive award of follow-on support. Contract support tasks include: research and development support; system engineering and process engineering; modeling, simulation, and analysis; prototyping, pre-production, model-making and fabrication support; system design documentation and technical data support; software engineering, development, programming and network support; reliability, maintainability and availability; human factors, performance and usability engineering; system safety engineering; configuration management; quality assurance; interoperability, test & evaluation, trials; logistics; supply and provisioning; training; and program support. The Naval Surface Warfare Center, Crane, Ind., is the contracting activity.

SEDNA to Research Future Naval Acoustic Systems

George I. Seffers
November 30, 2012
Signal

SEDNA Digital Solutions LLC, Manassas, Va., is being awarded a $14,964,337 contract modification to exercise previously awarded options for engineering and technical services to support development, integration, test, demonstration and certification of a high-fidelity front end simulation for common processing systems. This effort includes exploring new approaches to high-fidelity stimulation for testing sensor interfaces and processing, as well as developing new or augmenting existing capabilities as required to meet the acoustic processing needs for the Navy's submarine sonar systems. These services will provide for the continued engineering, fabrication, test, installation, and training services for the analysis, design and, prototyping of components related to open architecture concepts for an improved capability for both legacy and future variants

of Navy acoustic systems. The Naval Sea Systems Command, Washington Navy Yard, Washington, D.C., is the contracting activity.

AFCEA International and U.S. Naval Institute Copernicus Award

December 29, 2012
Signal

Award Overview:

The Copernicus award was established in 1997 as a result of a discussion among Lieutenant General C. Norman Wood, USAF (Ret.), then President and CEO of AFCEA International, Captain James A. Barber, USN (Ret.), then Publisher and CEO of the U.S. Naval Institute, and the late Vice Admiral Art Cebrowski, USN, who was the Navy N6 at that time. The name for the award came from the Copernicus Architecture used as the blueprint for the future C4I structure of the Navy. Recipients are selected based on their sustained superior performance in a C4I/IT-related job. The selections are made each year by Navy judges who review applications from the Navy, Marine Corps and Coast Guard, including active duty and civilians. AFCEA and the U.S. Naval Institute present the awards at their annual Western Conference held in San Diego each winter.

While the award was established in 1997, its history with AFCEA goes much farther back. The Copernicus Architecture (shifting the center of the universe) was drafted in December 1990, under the direction of the Navy's Vice Admiral Jerry O. Tuttle. It was explained in the August 1991 Signal and in the AFCEA International Press book Naval Command and Control, Policy, Programs, People and Issues (December 1991). This revolution in post-Cold War Navy C3 thinking, but without the name Copernicus, first appeared in the August 1988 Signal, in Strategic C3 Systems for the 21st Century, by Admiral Tuttle. A review of that architecture contains issues that resonate and are unsolved today.

It predicted "prolonged regional conflicts in the Middle East and Persian Gulf...a scramble for intelligence and resultant inundation of information." It called for a modular approach to software with data in a common binary format and open system architectures. It recommended shifting investment away from "stove-pipe, vertical, end-to-end systems, in favor of horizontal building block programs and with off-the-shelf commercial equipment. It said the requirement for joint interoperability is greatly magnified in C4I systems, especially in the contingency and low intensity conflict environments... where a joint task force commander is likely to be the tactical on-scene commander."

Vice Admiral Cebrowski (a disciple of Tuttle's) was honored in 2003 with a special award of merit for initiating these awards. His last major address was at West 2005 after leaving as the first Director of the Office of Force Transformation. The U.S. Naval Institute and AFCEA are honored to recognize individuals who continue to demonstrate in operations that Copernicus remains relevant today.

2013 Copernicus Award Winners

LCDR Scott James Dancer, USN - Naval Ocean Processing Facility, Whidbey Island (NOPFWI)

Lieutenant Commander Dancer, assigned as the Command, Control, Communications, Computers, Combat Systems, and Intelligence (C5I) Department Head, is responsible for all external and internal communications, information systems, 67 personnel in four divisions, Integrated Undersea Surveillance (IUSS) systems maintenance, facilities maintenance, one remote site, and command and control of five forward-deployed Surveillance Towed Array Sensory System (SurTASS) ships in the Seventh Fleet's area of responsibility. Commander Dancer developed an ambitious program to improve communications support and connectivity for his command, deployed SurTASS ships in the Seventh Fleet, and antisubmarine warfare theater commanders.

His keen insight in bandwidth management ensured that all mission-essential tactical Internet protocol (IP) connectivity via defense satellite and shore-based IP hardened systems supported mission objectives. He developed and instituted a bandwidth management plan for SurTASS ships, which resulted in the tracking of more than 16 threat subsurface contacts of interest. He planned and designed a secure and non-secure video-teleconference suite that supports task force commanders, Submarine Forces Pacific, and immediate superiors in the chains of command mission-essential conferences, as well as facilitates IUSS supporting qualification boards and meetings. Commander Dancer's technical expertise was evident with his oversight of a SurTASS team trainer installation that provided a mock simulator of the operations center on board a SurTASS ship, resulting in "train as you fight" realism for the SurTASS crew. As the facilities manager, he was responsible for all installations and modifications for an 80,000-square-foot facility and a remote site in Coos Bay, Oregon. These projects supported C5I services for not only his command, but also other tenant commands including Trident Training Facility Learning Detachment, Navy Information Operations Command, and all SurTASS ships. Commander Dancer dedicated time and leadership to the implementation, design, and delivery of cyber security training and procedural initiatives ensuring that command networks were secure and that all information systems were protected. He was responsible for a 100% Navy Enlisted Classification (NEC) Code 2791 conversion rate for 15 Information System Technicians, making NOPFWI the only command under Commander, Submarine Force, U.S. Pacific Fleet, to achieve this milestone. Commander Dancer has made a lasting impact not only at NOPFWI, but throughout the IUSS community.

Wajdi Fakhoury - Program Executive Office, Integrated Warfare Systems (IWS)

Mr. Fakhoury, as the Deputy Major Program Manager, leads and coordinates all of the internal and external functional support. Mr. Fakhoury is one of the Navy's experts on sensor netting and tracking, having worked in the sensor netting area since 1996. Mr. Fakhoury provides the civilian leadership and continuity that resulted in success for numerous critical Navy and Department of Defense (DoD) sensor fusion initiatives, including developing and executing a comprehensive approach to resolve the critical interoperability problem. With an understanding of the warfare needs at all levels, he implemented enhanced management and systems engineering approaches and developed metrics. His personal involvement in developing integrated process teams that crossed acquisition, technical, and operation boundaries was key to aligning these multiple groups. His drive to use modeling and simulation early in the process and involve both the certification and operational evaluation communities was integral to developing a plan that delivered capability to the Fleet 18 months ahead of schedule. The use of the Trident Warrior 12 also demonstrated significant tactical picture improvements across multiple ships and aircraft. Mr. Fakhoury was integral to the development and management of the Joint Cooperative Engagement Capability (CEC)/Joint Land-Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) integration design. By combining the sea-based surveillance and weapons capability of CEC and the Aegis weapon system with JLENS, the time for detection and identification of threats has been significantly reduced. This demonstration was critical to the advancement of the Navy’s integrated fire control–counter air capability currently under development. Mr. Fakhoury has provided critical leadership to the Joint Track Management Capability, the current DoD approach to developing a joint tactical picture across services.

For the complete list of winners, go to http://www.afcea.org/awards/copernicusaward.htm

Spotlight: PM CATT Welcomes New Leader COL Harold Buhl, Jr.

Dolly Rairigh Glass
January 8, 2013
Team Orlando News

Just a few months ago, Colonel Harold Buhl, Jr., joined the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) as their Project Manager for Combined Arms Tactical Trainers (PM CATT).

Buhl was raised in rural Pennsylvania, an area of the country that he described as a humble part of the country, and one where the choices 30 years ago for a young man's future were primarily that of either joining the military, entering seminary, or factory work.

"With fair grades I applied for an ROTC scholarship and was lucky enough to be selected," Buhl said. "I attended college in Philadelphia and was commissioned as an Armor Officer in 1988. If I hadn't gotten a scholarship, I probably would have enlisted."

As a young boy growing up in Pennsylvania in the Poconos Mountains, Buhl spent much of his time climbing, biking, hiking and collecting scrap lumber to construct forts. "I was very much an outdoor kid," Buhl said. "There were no video games and we might have gotten three television channels if the weather was right," he joked.

While in college, Buhl majored in physics. "I tend to be a big picture type of person and physics, from what I saw, provided me the best opportunity because I really wasn't sure what I wanted to do when I grew up," Buhl said. "Physics gave me a baseline to pursue a career in either science, engineering or medicine, and a bachelor's degree that would enable me to do just about anything else in a graduate field."

Buhl's first assignment was as a Cavalry Scout Platoon leader in the First Squadron, First Cavalry, Katterbach, West Germany with duty on the former Intra-German and Czechoslovakian borders. He also served in Southwest Asia during Operations Desert Shield and Storm. "We deployed to Saudi Arabia to liberate Kuwait from the Iraqi invasion in 1991," Buhl said. "That event almost immediately was a precursor to the Berlin Wall coming down and Yeltsin coming to power, providing autonomy to Russia's socialist republics that were part of the Soviet Union," Buhl explained. "That very formative era really was a drastic change for the Army and, as a military officer, it offered a good set of lessons and perspective."

Buhl paralleled these events to the 9/11 tragedy. "I don't want to compare and try to say they were even remotely alike, but they were transformative events in our history," Buhl said. "When I map those events against the different assignments that I've had through the years, I've had the opportunity to see what we were before the transformative event, and maybe what our conditions were to enable change, and then to see how we reacted or what opportunities presented themselves after the fact."

Buhl served his Lieutenant Colonel Command assignment as the Commander of the Ronald Reagan Ballistic Missile Defense Test Site at Kwajalein Atoll (RTS) from July 2007 to July 2009. He then served as the Assistant to the Director of the Missile Defense Agency at the U.S. Strategic Command (US STRATCOM), located on Offutt Air Force Base, NE.

Just prior to joining PEO STRI, Buhl was at the Industrial College of the Armed Forces (ICAF) completing his graduate thesis, Acquiring Joint Force Effectiveness in a Diminishing Resource Environment.

Buhl said he'd like to think that everybody he has worked with throughout his many assignments has made a tremendous impact on him. "I learn from everyone I meet," Buhl explained. "Ninety-nine percent of the time, these interactions prove to be useful life lessons."

"I've had the fortunate opportunity to say that each assignment I've had has been a good assignment, although some have been more challenging and difficult than others," Buhl said.

Talking about his new PM CATT position, Buhl described PEO STRI's technology and the capabilities that customers would want. "We are an Army organization, but we do work for Combat Commands, and other Services and Agencies within the government. We provide those capabilities as a benefit to the taxpayer," Buhl said.

Buhl described that PEO STRI is organizationally aligned in three simulation domains: live, virtual and constructive, with targets and threats across each domain. He is responsible for the virtual training capabilities that PEO STRI provides to the Army.

"In the virtual domain, PM CATT has a wide portfolio because most of the time when you want to train in an emergency situation, without putting somebody at risk or equipment at risk, you want to do it in a virtual or a gaming environment," Buhl explained. "Virtual Environments can be very immersive and really make the stress level go up, the heart palpitate, and the trainee break a sweat."

"Across the virtual portfolio there are many great technologies and capabilities, but the key is first immersing Soldiers in a virtual world so they experience it in a controlled environment before they see it for the first time in combat or in a stressful live situation," Buhl said.

Buhl's assignments have kept him busy throughout the years, but every moment that isn't devoted to his job, he tries to spend with his wife and two children. "We enjoy doing things as a family," Buhl said. "Previously we lived in Virginia, Nebraska, Kentucky, among other places. Being out in the middle of nowhere provides a lot of opportunities to see many things in America, hiking and spending time together as a family." While on Kwajalein Island, nearly smack in the middle of the expansive Pacific Ocean, they became "expert" bicycle riders because there are no cars. "We biked as a family quite a bit for fun, but also for exercise."

"Here [in Orlando] my wife and children are very much beach people, and so I am a beach person by default," he smiled. "They love the fact they can just drive over to the beach and spend a couple hours or most of a day before being home that night."

While Buhl's family enjoys all that Central Florida offers them, he is focused on how PM CATT is going to provide virtual capabilities to meet the needs of the Army, today and in the future.

The Army recently published a new Army training strategy, and PEO STRI leaders subsequently participated in a strategic planning to discuss the future of PEO STRI, their support of the Army, the Combatant Commands and the Department of Defense (DoD).

Armed with those data points, Buhl's team met to posture the intellectual capabilities, the costs and the programs that PM CATT currently has, and where they need to go to support the Army's training in the next 15 to 30 years.

"It's very important for us to do this because the budget cycles and the requirement cycles are two things that are not within our direct control as materiel developers, but do directly impact our operation," Buhl said. "We need to make sure we look at narrow enough capability paths that still provide flexibility within which we can reach a wide set of opportunities."

"As one looks at the decreasing budgets and the need to put money in those places that are going to provide the best opportunity and flexibility for the return on investment, we need to ensure that we're investing in the infrastructure we have here – our people," Buhl said. "The intellectual capital that we have here is tremendous; the government has invested a lot in these folks who possess a tremendous amount of experience, information, and knowledge. We need to make sure that whatever we do, we provide only the opportunity to expand to build a stronger foundation as we look at the uncertainty that is out there ahead of us."

Moving forward Buhl said it's important for the government and industry to leverage each other's capabilities. "We need to partner as much as we can within ethical and legal boundaries so that our industry counterparts can understand what's going on, and they can posture themselves for success in a business sense that's parallel with where we're going," said Buhl.

Buhl said the government-industry relationship thrives in a competitively cooperative environment so that all parties are pulling together for the interests of the nation, and competing for the best solutions.

"At the end of the day, I know all the businesses that I've dealt with are focused on the same goal as us, and that's our Soldiers," Buhl said. "Like us, they want to make sure our Soldiers see something for the first time in a training environment, and not when somebody is shooting at them."

"It's all about these Soldiers, our national treasure, those men and women that we put in harm's way," Buhl said.

LIVE – It's No Game. Real Soldiers. Real Action. Real Sweat

Rick Gregory, APEO Business
Operations Support Staff
January 6, 2013
Team Orlando News

"Bang, bang! You're dead," the youngster playing a Soldier with a toy rifle would shout at his opposing force, usually his brother or a friend.

"No, I'm not, you missed me!" would be the "enemy's" response. "Are too!" the argument would continue.

Fortunately, today's real Soldiers training in the live domain of the Live, Virtual and Constructive -Integrating Architecture don't have to spend time arguing with each other thanks to a system called the Multiple Integrated Laser Engagement System (MILES).

When originally fielded in the 1980s, the Soldier knew he had been shot by opposing forces when his MILES sensor made a beeping noise. A controller in the field training exercise would then tell the Soldier he was "dead" and no longer in that portion of the exercise. It was easy, however, for the Soldier to fudge a bit and reenter the mock battle by simply refreshing his MILES equipment. Additionally, the system did not capture any data, so commanders had no way of knowing who shot who. Those days are gone.

With the new MILES, when combined with the Homestation Instrumentation System (HITS), commanders and staff in the tactical operations center can track all the action, including Soldiers, vehicles and equipment, on the HITS exercise control (EXCON) stations, similar to EXCON stations at the maneuver combat training centers (MCTC).

"We have made tremendous strides in technology over the years to provide our Soldiers the most realistic live training possible," said Col. Mike Flanagan, project manager for Training Devices. "With HITS combined with MILES, commanders can now track the activity of up to 2,000 live players and 8,000 constructive participants during live force-on-force and force-on-target exercises. Together, MILES and HITS are the vital facilitators for the live portion of LVC-IA."

During mission rehearsal exercises, Soldiers, individual and crew-served weapons, and tactical vehicles are outfitted with MILES. The movement of each asset is then tracked through HITS, providing commanders a picture of all the activity on the battlefield.

HITS not only shows commanders the real-time movement of the assets deployed, but also provides information on the casualty effects of the simulated weapons engagements such as direct fire from individual weapons and the results of indirect fire from simulated engagements such as artillery and mortar rounds.

"Commanders now have an exceptional tool that provides them an at-the-moment assessment of what is going on during the mission rehearsal exercise," Flanagan said. "Best yet, HITS also provides a full after-action review within 20 minutes of completion of the exercise."

He added that HITS can simultaneously monitor and record up to 16 tactical voice networks as well as use recorded live video feeds from field cameras.

"I speak for everyone on the PM TRADE team when I say we are extremely proud to work alongside our fellow PM teams to field LVC-IA," Flanagan said. "With 26 years in the Army, I speak for myself when I say the PM TRADE team is one of the finest that I have had the pleasure and honor to lead."

Liaisons Filling Important Role for Team Orlando Military Services

Dolly Rairigh Glass
January 6, 2013
Team Orlando News

Some of the people helping to complete the important work done by Team Orlando don't live in Orlando. Within each service, their specific titles may differ and their day-to-day jobs may differ, and while they are in different parts of the country – and some, in other countries – the jobs they are doing are vital to the overall mission of supporting the Warfighter.

Bill Fischer, PEO STRI's lead Field Service Representative (FSR), is located in Fort Carson, CO, and is one of nine FSRs presently serving at tactical, operational and strategic levels, as well as Centers of Excellence.

One of those groups is the Field Service Representatives (FSR) within the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI). These are retired senior-ranking military officers with expertise in senior leader relationships, training management, and use of simulations for training. The FSRs directly support all levels of the PEO STRI team and report to the Warfighter Outreach Office within the Assistant PEO for Customer Support.

Their mission begins with establishing personal relationships with the senior leadership at the installation where they serve in order to liaise between PEO STRI's Program Executive Officer (PEO), Deputy PEO, O6 Project Managers, Executives and the General Officer leadership at their locations.

Also critical to their success is keeping the installation's training leadership aware of PEO STRI's products and services; to assist PEO STRI staff as they conduct business at FSR locations; and to keep the PEO STRI leadership team aware of customer satisfaction with PEO STRI products and services.

Presently, there are nine FSRs serving at tactical, operational and strategic levels, as well as several Centers of Excellence. PEO STRI has FSRs who serve at Joint Staff J7 Joint & Coalition Warfighting (JCW) at Suffolk, VA; Combined Arms Center – Training (CAC-T) and Ft. Leavenworth, KS; Joint Base Lewis McChord, Ft.

Lewis, WA; III Corps and Ft. Hood, TX; XVIII Airborne Corps and Ft. Bragg, NC; Maneuver Center of Excellence and Ft. Benning, GA; Fires Center of Excellence and Ft. Sill, OK; 1st Armored Division and Ft. Bliss, TX; and 4th Infantry Division and Ft Carson, CO.

Training Liaison Officers (TLO) are part of the Program Manager for Training Systems (PM TRASYS) team, and Martin Bushika, Business Manager, PM TRASYS, describes the TLOs, a team of eight, as the "entire command conduit with our fighter customers."

The exact responsibility for the TLO is not exact at all – it changes with the needs of the base. But they are structured personnel who are a part of the five competencies, which was recently formalized by PM TRASYS, and those competencies are engineering, logistics, resource management, contracts and program management. With people in each of those areas, the idea is to perform multi-disciplined IPTs to support all of their acquisition activities.

The TLO's support tasks that are appropriate for their competency, and are also structured under an operational support and administrative control. For those under an operation control, they basically support IPT.

"You have a lot of integrated product teams dealing with all the issues of their bases' training systems," said Bushika. "The TLO's are part of those IPT's and are aware of what's going on in the acquisition and fielding, the various training capabilities, and they participate to the extent needed.

THE TLO's are constantly communicating with all the diverse interests at the different bases, and a lot is going on within their community to facilitate the way training capabilities are made available to the Warfighters. "The training and education command for which we essentially produce the training capabilities – we are the materiel developer, and they're the combat developer, they have requirements and we as the acquisition professional deliver those capabilities," explained Bushika. "They want to make sure that all these good training capabilities that we put out there, the Warfighter knows about them, how to use them and can get to them efficiently."

TLO Lynn Stremlau said it is difficult but not impossible to make all their customers happy. "I feel that our personal relationships we create with the face-to-face interactions affords us the opportunity to use those relationships to better know our customers," he said.

"This allows us to speak to them candidly about the good, and the bad, that we may be experiencing with regard to equipment delivery, funding issues and delivery dates. The very nature of our positions, which is work 'in the field' with our customers, facilitates a positive relationship with our customers," said Stremlau.

PEO STRI's lead FSR Bill Fischer said he and his colleague FSRs maintain currency in training and training management procedures, know and understand PEO STRI's products and services and keep their customer fully aware of those capabilities.

He said it's also important they maintain a continuous dialogue with customers on PEO STRI capabilities and fieldings, escort senior leaders from the installation to PEO STRI for meetings with leaders and briefings by the PMs, arrange for PEO STRI leaders to visit the installations and include the customers in the weekly reports that are sent to PEO and DPEO.

"We are always looking for ways to assist both PEO STRI and the installation, whether it is upgrading a gunnery device, making a change to a digital range complex or setting up a meeting with key installation personnel," Fischer said.

Fischer said he believes there are several major benefits to having FSRs supporting PEO STRI, beginning with their immediate access to the senior leadership at their locations. "This enables PEO STRI's senior leaders to have immediate access to the installations' senior leaders when communications at that level are necessary to resolve issues."

Another benefit to having the FSRs is the daily contact with the training leaders at their installation that provide a direct conduit between the PEO STRI Project Managers, Program Managers (PM) and Project Directors (PD) and the installation's training leaders, who facilitate PEO STRI's fieldings of new products. They serve as linchpins between PEO STRI and the installations for the fielding of newly developed training capabilities in support of the emerging important capabilities to support home station training.

"And twice a year they personally brief the PEO STRI leadership team on training issues, training management and use of PEO STRI products and services, which keeps PEO STRI leaders fully aware of recent developments in the field," he said.

All of the FSRs have a broad experience in leading and training Soldiers, and this experience, be it in the infantry, armor, aviation, or field artillery, has prepared the team to assist both PEO STRI and the installation leadership to receive and put into training the capabilities that PEO STRI fields. "We communicate at the same level as the installation leadership because we have the same common leadership and training backgrounds, hence we have credibility with the installation's leadership and can represent PEO STRI as part of the installation team," Fischer said.

"The ability to support the Army's materiel developer for training devices as it develops, fields and sustains training capabilities used by our Warfighters is the best part of being an FSR," Fischer said. "The reward is seeing young men and women progress through their training regiment, from individual training using capabilities such as the EST 2000 through collective training, using digital ranges and constructive simulations."

"We also are proud to be part of a process that not only enhances training, but also saves the country money by providing simulations that Soldiers can train in before expending funds on munitions, fuel and maintenance incurred during live training."

For PM TRASYS' Stremlau, he said the best part of being a TLO is the diversity of the work. "We represent all of the APMs and therefore work on varying projects that are ever changing. Additionally, we are not tied to a desk, so have the added bonus of working in the field and with our customers face to face."

"Location, location, location," said Robert Nazro, Newport, R.I., Naval Air Warfare Training Systems Division (NAWCTSD) In-Service Engineer, about the best part of his job. "Being located at the customer brings a lot more focus on the end item and what the trainers are really being used for, as well as how the Fleet plans for and expects upgrades and creates requirements."

NAWCTSD currently has 90 people on board within their In-Service Engineering Offices (ISEO) division, who are a part of 45 offices around the country and Japan, mainly at the fleet concentration sites. These ISEOs provide localized, cost-effective fleet support and the ISEO personnel, known as In-Service Engineers (ISE), assist in keeping the trainer/training systems current and up-to-date. They also improve trainer/training system's fidelity throughout their usable life, and implement the weapon system trainer/training system's life-cycle management support plan, including hardware, software, documentation, information assurance and configuration management.

Rick Lecky, ISEO Division Deputy, NAWCTSD, said it can be a bit more challenging to hire an ISE, as compared to hiring an engineer in Orlando. "Some sites are considered remote and not everyone desires to live near them," said Lecky. "The key thing is the individuals need to have good technical skills, as well as good people and communication skills, to be successful. They also have to possess a high self-motivation factor because at many of these sites, they are the only person."

For ISE George Scherer, Whidbey Island, Wash., the best part of his position is the freedom that comes along with it. "I have the freedom to do many different jobs and for the most part, decide when I want to do them," he said. "I am never bored because there is always some emergency or a last minute data call to deal with at least two or three times a month."

"But I am not stuck doing it all on my own because I have excellent contractor support," said Scherer. "I have my own spacious lab and office space, and I get to live in one of the most spectacular places in the USA!"

For Mark Peterson, an ISE in San Diego, Calif., he also likes the freedom associated with his job. "We are on-site engineers, so although we need to follow our engineering practices and procedures, we have the freedom to solve problems in our own way as well," he said. "We always have a certain amount of peer support, but in the end, it is up to us to figure out how to keep things running. It's the difference between being a passenger, or being the driver."

Across the Services, these men and women are making a difference away from their 'home' command, and providing important support in remote locations. NAWCTSD's Lecky summed up what he thought about his ISEO group, but certainly this belief is reflected through the work of the FSR's and TLO's as well.

"They are the tip of the spear for NAWCTSD and being located with the Fleet, they hear their concerns and can relay them to the PMs/IPT leads back in Orlando," said Lecky. "They are the face of NAWCTSD to the training commands and their work directly contributes to the readiness of our Warfighters."

Team Orlando Visits Federal Law Enforcement Training Center (FLETC)

Terri Bernhardt
December 17, 2012
Team Orlando News

Team Orlando held their June Board of Directors meeting at FLETC in Glynco, Georgia. The two day trip to FLETC's remarkable facility allowed Team Orlando a first-hand experience of the latest training methods under the direction of the Department of Homeland Security.

The FLETC not only serves as an interagency law enforcement training organization for 90 Federal agencies, but also provides training to state, local and international law enforcement agencies. Although the organization has three domestic sites – Glynco, Ga.; Charleston, S.C.; Artesia, N.M. and Cheltenham, Md., more than 50 percent of their basic training takes place at their headquarters site in Glynco. The 1,600-acre facility has features to include classrooms, dormitories, administrative and logistical support structures and a dining hall that can serve more than 5,000 meals per day. Last fiscal year the FLETC trained almost 70,000 students.

Additionally, FLETC has both indoor and outdoor firearms ranges, driver training ranges, a physical techniques facility, explosives range, fully-functional mock port of entry, international transportation complex, cyber security and forensics lab and various other supporting the entire training effort.

During the tour, FLETC senior leadership acknowledged the value of their partnership with Team Orlando stating that their investment of $4.5 million has allowed them to leverage Team Orlando's overall investment of $174 million dollars through.

"The FLETC has had a productive and positive relationship with TEAM Orlando for the past five years," stated Connie Patrick, Director, FLETC. "We look forward to the fruition of this mutually beneficial partnership for not only our respective organizations, but also future students."

Several examples of Team Orlando shared technology offered to FLETC over the years range from Avatar-based training, driving simulators, NAVAIR's laser beam technology and RDECOM's holograms. "We recognize the value of this partnership," said Bill Hopkinson CTO for Team Orlando. "We (Team Orlando) hope to continue merging technologies in a more seamless environment in way that makes sense for more effective training for FLETC."

NAWCTSD and DoDEA Ignite New STEM Fire for Future Learners

Terri Bernhardt
December 17, 2012
Team Orlando News

On the afternoon of August 1, Team Orlando and the Department of Defense Education Activity (DoDEA) broke the mold with the signing of a Memorandum of Understanding (MOU) between Naval Air Warfare Center Training Systems Division (NAWCTSD) and DoDEA for the benefit of children all over the world. The signing took place in the NAWCTSD board room in the presence of Team Orlando board members and local leadership. The purpose of the MOU is to leverage the strengths of both organizations in the mutual pursuits of advancing Science, Technology, Engineering, and Math (STEM) curriculum within elementary and secondary school systems.

Marilee Fitzgerald, DoDEA Director and NAWCTSD's Commanding Officer, Capt. Steve Nakagawa signed the MOU giving DoDEA a gateway to all the resources of Team Orlando. "Team Orlando has done such great work over the years, for the DoD, blazing the trail in on-line learning developing a national security prowess and now here we are and we have so much to learn from you," stated Marilee Fitzgerald. "In this time of efficiencies, our partnership will highlight ways that we can work within existing resources to harness the most valuable resources we have — the innovation and creativity of our students and employees."

This signed agreement formalizes the relationship for DoDEA to provide strategic vision and guidance and financial resources to enhance STEM efforts via the core curricula, and it officiates the role of NAWCTSD, as an executive member of Team Orlando, to provide Modeling & Simulation (M&S) and acquisition expertise and resources, solely and with the assistance of its Team Orlando team members, to help enact DoDEA's strategic vision as it relates to STEM.

"Young children are great risk takers, emphasized Ms. Fitzgerald. "They are impressionable and fearless but our classroom models have to change. We have done great things in the 20th century but those days are over. We must push for learning environments that use hands-on technology and be the first to really engage this way. Not only in high school but in preschool."

Following the signing of the MOU, DoDEA was briefed on Team Orlando's synergy and the group hosted a tour verifying the M&S expertise within Research Park. NAWCTSD demonstrated the Visual Systems Laboratory, 3D training concepts in "virtual worlds," and "Intelligent Tutoring" software. Following, the team moved to the U.S. Army Simulation and Training Technology Center where they were able to see and touch medical holograms, see the latest expertise in battlefield medicine and browse through blended simulation of virtual worlds in VBS2. The last stop on the tour was at the University of Central Florida Institute for Simulation and Training, otherwise known through Team Orlando's halls as "the Godfather of all M&S."

At the closing of the tour, discussions took place about the promise of this new commitment that will open doors for our younger generations helping them land careers in critical thinking, jobs that require more bandwidth. "Today we reach outside our traditional gates," said Fitzgerald. "Tapping into a world of innovation

that needs to take place to be a competent and vibrant partner in the world at large. We look forward to it and can't wait to begin the creation."

Memorandum of Agreement is Signed Between the Joint Staff and PEO STRI

Terri Bernhardt
December 17, 2012
Team Orlando News

On June 22, Vice Admiral William Gortney, the Director of the Joint Staff, signed a new, overarching Memorandum of Agreement (MOA) with Program Executive Office for Simulation Training and Instrumentation (PEO STRI). The MOA had been previously signed by the PEO, Dr. Jim Blake. This MOA is consistent with the Joint Forces Command (JFCOM) – PEO STRI MOA signed by LTG Bob Wood and Dr. Blake back in June 2008. A new MOA was necessitated by the Disestablishment of JFCOM in August 2011, and the realignment of key ongoing functions like Joint Training and its Modeling & Simulations enablers under the Joint Staff.

The new MOA recognizes key responsibilities and skill sets possessed by each of the parties, and lays out anticipated areas of mutual support and cooperation. These areas include – but are not limited to – material development, contracting & acquisition, and foreign military sales of those key M&S enablers to Joint training, concept development, and experimentation previously referenced.Under the agreement PEO STRI will continue to provide a Field Service Representative (FSR) to the Joint Staff J7 Joint & Coalition Warfighting (JCW) in Suffolk, VA. PEO STRI and the JCW will also support the continuation of the customer funded Joint & Coalition Simulation Services (JCSS) Office to serve as a demand driven focal point for Joint Forces requirements, contracting, and acquisition activities.

The MOA provides the foundation for ongoing and subsequent working level agreements between various segments of the two organizations. It does not have a "sunset" date. It will be reviewed on an annual basis and will remain in effect until modified or terminated.

Progressive Navy ROTC Electronic Classroom Grabs National Attention

Terri Bernhardt
December 17, 2012
Team Orlando News

Automated Electronic Classrooms were launched almost four years ago when Naval Service Training Command (NSTC) began to provide funding to support the development of naval science electronic classrooms at NROTC colleges and universities across the nation. The software – which creates experiential opportunities for students to focus on navigation, ship handling, engineering, weapons systems, and naval operations – is already being used at NROTC units across the nation, according to Captain David Grimland, Naval Air Warfare Training Systems Division, (NAWCTSD). Since June 2007, fifty-nine Naval ROTC units across the county have trained via AEC, which facilitates real-time computer enhanced simulation and modeling.

The AEC classrooms allow NROTC midshipmen to train with the same tools they will be using when they arrive in the fleet. They will be prepared to immediately function in the modern shipboard environment once they receive their commissions as Navy ensigns. These electronic classrooms are key to meeting that goal.

"Navy ships are now paperless navigations," stated CAPT Grimland. "In the past, training was done on paper charts for students to learn direction, speed estimations, arrival times and distance from one port to another. Ships are now electronically based and our students are better off training this way. These classrooms, with electronic white boards and interactive podiums, represent the incorporation of technology to enhance the learning experience of future Navy and Marine Corps officers."

In 2007 NTSC commissioned NAWCTSD to outfit the classrooms at each school with electronic capabilities. These site surveys at selected schools send advance teams to look at space, make sure there is adequate power, the proper lighting conditions and if the equipment and furniture will fit. Every aspect is an essential key part of the students' learning environment. The advance team makes the proper repairs to each classroom from painting, laying carpet, upgrading electrical capabilities, etc. When the classroom is ready, it hosts from 12-24 work stations. Each configured work area is a tall desk you can stand or sit (on stool) with two monitors at each station. The software, specifically designed and developed by NAWCTSD for AEC, leverages time and cost saving efficiencies by providing a help desk.

In a short amount of time, AEC word has reached many about the state-of-the-art training and cost effective program. Schools that don't have it are requesting it. Of the fifty-nine selected NROTC schools, a sampling that have benefited include: Jacksonville University, Auburn University, Savannah University, University of San Diego, and Vanderbilt.

There are currently a minimum of five new programs scheduled to benefit in FY 11. From start to finish it takes two semesters of a four year degree. NAWCTSD plans on staying involved in the program.

Team Orlando Highlights Efforts in Medical Simulation at MT3 Conference

Dolly Rairigh Glass
December 17, 2012
Team Orlando News

Team Orlando members are no strangers when it comes to the benefit of collaboration and partnership, and recently were front and center as presenters at the 2012 Medical Training, Technology and Treatment (MT3) conference in Orlando May 9-12, a conference dedicated to bridging traditional and military medicine while identifying areas of collaboration and partnership. The conference focuses on leading-edge technology and academic trends that change the way healthcare professionals are trained, and brought to the forefront things like computer simulation, training through gaming, and long distance training and treatment using internet technology.

The Army's Current Focus in Medical Training and Simulation Moderating the session, "MT3 Government Growth Opportunities in Healthcare and Medicine," Beth Pettitt, Chief, Medical Simulation Research Branch, US Army Research Laboratory, Human Research and Engineer Division, Simulation Training and Technology Center, began the discussion with a description of her agency's on-going projects, and focused portfolio.

Pettitt highlighted several of the programs she oversees and updated attendees on the status and future of each, pointing out that some of these ideas came to the research lab because someone in the field expressed a need for it. "We work with many academic and industry partners," said Pettitt. "It's extremely important for our success moving forward that we continue to cultivate these great collaboration opportunities."

One of those ideas she referred to was V-Xtract, a training platform developed for the U.S. Army to effectively prepare medics and combat lifesavers for the tasks of extricating and providing care for casualties in the event

of vehicle rollovers. It creates a realistic, measurable training experience leveraging a suite that includes an adjustable vehicle with camera capabilities, and is designed to be integrated with existing low-cost mannequins.

Pettitt also discussed the ARL's focus on a brand new effort of merging virtual patients and virtual worlds, a hot topic of conversation at MT3."The idea with this is that we have lots of things that are really focused on virtual patients, mostly with Post Traumatic Stress Disorder (PTSD) right now," said Pettitt. "But we are starting to broaden into the more traditional medical treatment domain."

"In our opinion you need some sort of combination of these two (virtual worlds and virtual patients) to support that type of treatment paradigm." She added, "Although there are lots of other ways we could do this, they would lack fidelity, and we want the high end virtual patient in the high end virtual world."

(Pictured from left to right): LTC Ariza, Beth Pettitt, Matthew Lineberry, and Harry Robinson were some Team Orlando members taking part in the MT3 conference.

Additionally, Pettitt talked about the continuation of the Multiple Amputation Trauma Trainer (MATT), it's tremendous effort for lower body research, and the development of the upper body/high fidelity chest. It now includes the addition of pain recognition to a mannequin's face, and the ability to simultaneously learn pain management while learning to care for the simulated mannequin or simulated wounded soldiers, all of these totally focused on the top three causes of death in the battlefield.

And of course, when it comes to smells, Pettitt admits the military has been very successful in this area, and are particularly good at producing foul odors. "When you start looking at smells in medicine, it is a little bit different, and perhaps even a little bit trickier," said Pettitt. "The problem is helping our learners connect those smells with what it might be indicating for a medical condition."

These programs help the learners prepare for what smells they can expect, as well as helping them recognize smells that could be indicating some problem they haven't seen yet. This preparation helps them overcome these smells, so when they experience it in the fields, they are not getting sick themselves.

What the research has shown is that typically, the first time the learners smell the odor, it's not a problem. "We want the trainee to have experienced the situation enough times in training to correctly associate the malodor with the incident and still provide proper care in the stress of a combat situation," said Pettitt.

Whether it's game based training systems like the award-winning TC3SIM, using holograms with amazing 3D models for medical training, continuing the work for the most realistic simulated tissues to reduce live tissue use, or even their newest project to develop a repository of training scenarios that could be used at different training locations to try to minimize duplications, the Army Research Lab continues its work toward solutions, partnering and collaborating with those who have the same mission.

"With all simulation technologies, we're never really done," said Pettitt. "The human body is so amazingly complex, there will be new simulation and training challenges for many years."

UCF's Institute for Simulation Training, a Researcher at Heart, but Award Winning Above All Else. Three Decades of National Significant Impact

Terri Bernhardt
December 17, 2012
Team Orlando News

University of Central Florida's (UCF) Institute for Simulation and Training (IST) celebrated thirty years of achievement in simulation training in mid-October by inviting the community, industry and government to explore their labs within Partnership II and Partnership III buildings in Research Park. Although the IST program opened in 1982, seeds were planted in the mid-60′s following the relocation of the Navy and Army. Twenty years later, the need for such a program came to life putting UCF on the map with one of the first ever Modeling and Simulation (M&S) graduate programs in the United States. By the end of this year more than 200 Master's and 50 PhD degrees will have been awarded.

UCF didn't become the "Godfather of academic M&S" overnight nor did IST's M&S research grow without hurdles, bumps in the road and funding challenges. One of IST's biggest obstacles has been the need for more space. Their first headquarters was in a trailer on UCF grounds with research conducted in other campus buildings. Their move to the Research Pavilion in 1988 allowed them room to acquire two Army tank simulators (on loan) and gave IST its first real opportunity to show off its research facility to a larger audience. Since then, the IST departments have established residence in the Partnership buildings, around campus and other business buildings.

Dr. Randy Shumaker became IST's Director in 2002 bringing 30 years of experience in engineering, specifically computer engineering. His leadership elevated the IST program into a truly multidisciplinary institute. Today the program stands proud with over $16.7 million in contracts and grants with a staff of more than 250 covering 80,000 square feet of well utilized space.

The half-day event honoring 30 years of success consisted of live demonstrations in their performance labs with hands-on games and small lectures from experts in the areas of mobile, medical, robotics and multicultural studies. In the METIL (Mixed Emerging Technology Integration Lab), Dr. David Metcalf demonstrated a medical (virtual patient) game that is being used at the UCF College of Medicine that consists of a fictitious family ranging from infant to 64 years old. Each member of the family has a strong medical history. "This family is the sickest family in Central Florida," boasts Dr. Metcalf. "They have every type of medical symptom we can think of on their charts. Our job is to help heal them by going back in their records and taking information we know and documenting it for further exploration." Different scenarios take place during the course of the game. For example, you can set up a phone call to your mobile phone from the virtual patient. "When you answer the call the patient explains what is going on," explains Dr. Metcalf. "You might hear them cough, or the strain in their voice, and you have to look up their record to try and help them." This game can be played on all mobile platforms.

"Robots from Tools to Teammates" allowed visitors a sneak peek at soldier robotics training. It was explained that humans, in general, have unrealistic expectations of a robot's abilities. Humans tend to under or over estimate the capabilities of a robot. This program first demonstrates to the trainee the exact level of intelligence and abilities of these robots. They are not on a human level so the program has named them "working dogs." This allows a more realistic picture of the robots' expectations during training. The future goal of this program is to provide the robot the ability to learn and move toward more human like characteristics.

Other labs worth mentioning are the Interactive Realities Laboratory that include virtual and augmented reality research, Human Systems Integration Research, ACTIVE Lab (Applied Cognition and Training Immersive Virtual Environments — investigating how distributed training systems can be evaluated for effectiveness and usability, Stokes High Performance Computing Center, E2i Creative Studio (Synthetic Reality Lab),

SimMBIOS Lab (Simulations for Mathematical and Biological Inspired Systems), RAPTER, Human performance measurement at the MIT2 Lab, Cognitive Sciences, Medical Emergencies Simulation, and RETRO (digital media working on serious games research).

Moving forward, just as Orlando is recognized as the highest concentration of simulation and training in the nation, UCF's IST continues to lead the way with M&S research for training and education. www.ist.ucf.edu

National Center for Simulation Task Force Holds Workshop

Dolly Rairigh Glass
December 17, 2012
Team Orlando News

The National Center for Simulation (NCS) is working with academia, industry and government to develop a four-year program for high school students in Modeling and Simulation (M&S). In July, a STEM/M&S Task Force met at Hagerty High School in Oviedo to develop a four year framework, course standards and curriculum that will meet the State of Florida requirements and lead to college-ready and workforce-ready graduates.

This initiative, led by Hank Okraski (Retired NAWCTSD Head of Research and Engineering), began about a year ago when the NCS Education and Workforce Development Committee conducted a M&S Symposium for a small group of Florida teachers in Orlando. The simulation industry presented examples of simulation systems and stressed the need for mathematics and science to work in our industry.This meeting resulted in the identification of required industry competencies, sparking the interest of teachers in getting simulation into the classroom.

(Pictured from left to right) Dr. Kim Dahl (SCPS), Phil Tillery (OCPS), Hank Okraski (Okraski and Associates), Clayton Donnan (SCPS), Lyn Higgins (SCPS) and Chas Lynch (SCPS) were some of the participants in the NCS STEM/M&S Task Force curriculum workshop.

Given this information and a model program in M&S developed under the aegis of Old Dominion University (ODU), the Task Force commenced work on identifying industry requirements and corresponding education units for the classroom. The ODU program was modified to include new units for real-time simulators, project management, logistic support, innovation and commercialization. Special emphasis was given to providing hands-on opportunities integral to the instruction. Further, the group allocated the units of instruction over the four-year program, and the resultant program consists of two academic tracks: software development and visual systems. A request for establishing the program in the State of Florida will be initiated by Orange and Seminole Counties.

Introduction of the new program is expected to take place at I/ITSEC and NCS will solicit further review comments from attendees. The information will be accessible on the NCS website for teachers and educators throughout the nation. Orange and Seminole County, government and industry representatives will be at the STEM Pavilion to answer questions. Members of the STEM/M&STask Force are as follows: Dr. Kim Dahl, Clayton Donnan, Kevin Gouvia, Lyn Higgins, Michael Hunter, Charles Lynch and Dr. Dona Poniatowski from Seminole County Public Schools; Mark Hunt, Daniel Martinez, Gary Nelson and Phil Tillery from Orange County Public Schools;Sunny Simmonds (Advisor), Naval Air Warfare Center Training Systems Division; Dr. Charles Hartshorne, University of Central Florida; Hank

Okraski (SES-Ret), Task Force Leader, NCS Board of Directors and Duane Hume (Framework/Standards Guidance), Florida Department of Education.

Team Orlando – Technology, Information and Strengthening Ties with NATO. An Interview with Maj. Gen. Jean Fred Berger, Commander Joint Warfare Centre

Mary Trier
December 17, 2012
Team Orlando News

'Train as you fight' is a common slogan among warfighters. The necessity to put trainees into dangerous environments before they get to theatre is vital – and it becomes even more important as military service members from various nations come together to fight a common enemy. As military members from NATO execute their missions all over the world, the training they receive to prepare them can include various methods of live, virtual and constructive training and simulation, but when achieved in a multi-national/joint environment, the training is even more effective.

In April over 1900 soldiers, sailors, airmen and marines from 27 countries participated in an exercise called Unified Endeavor. The exercise took place from 24 March to 9 April 2012, and brought troops and military leaders together in a single environment, while at the same time being disbursed in eight locations all over the globe, to conduct the training. According to a story by US Army Europe Public Affairs in the Fort Hood Sentinel (http://www.forthoodsentinel.com/story.php?id=8881), this is only the second time that national and international leaders and major headquarter structures, who are scheduled to go into Afghanistan, were being trained at once, allowing an unprecedented ability to weave exercise scenarios throughout national and international leadership.

One of the co-directors of the exercise was French Maj. Gen. Jean Fred Berger, commander of NATO's Joint Warfare Centre. We spoke with Maj. Gen. Berger during ITEC about the exercise, and the importance of training together.

"The necessity of working closely together is very important," he said. "Our friendships, relationships and our training must be focused for mutual benefits. We suffer the same challenges in the need to replace heavy equipment with more agile operational equipment and training for our units to be able to act in an international and very complex and challenging environment, and in high intensity operations. We must rely on, not only highly sophisticated solutions, but a combination – and our training must reflect the same. Simulation and training offers the ability to do that, even as the troops are disconnected (distributed)." He continued, "I believe this exercise was the best ever achieved."

Unified Endeavor provided the platform for almost 2,000 military members (including civilians and contractors) to come together and train. The next time they operate together will be in Afghanistan. Team Orlando members played a supporting role in the work they do by delivering unique and interoperable training systems. Whether during the actual joint training exercise, or working together as part of the team by supporting the training needs and systems of the Joint and Coalition Warfighting Center in Hampton Roads, our thrust to provide the best training and simulation systems in the world for our warfighters (US or NATO) remains paramount. In the words of Maj. Gen. Berger, "to me, it is just common sense."

One Good Tutor Deserves Another

Terri Bernhardt
December 17, 2012
Team Orlando News

There is a new director in the house and things are moving rapidly in innovative directions, good directions that require a 5-10 year vision. Mr. Frank DiGiovanni, a member of the Senior Executive Service and Acting Director, Readiness and Training Policy and Programs, Office of the Deputy Assistant Secretary of Defense (Readiness), The Pentagon, Washington, D.C., takes the reign as Joint ADL Jo-Lab's new leader. Within a few weeks taking the position, Mr. DiGiovanni has started the process to advance ADL to the next level. A level that focuses on experimental learning, enhances performance in adaptive learning environments, one that teaches students to think, by modifying the old framework that has worked so well over the past 10-12 years. The successfully built infrastructure will move from maintenance mode to further expanding interoperability through research and development, while answering these questions: Are we meeting your needs? Would you adopt these concepts? "Our new strategy fits into what the other government agencies in DoD are doing," stated Dr. Kristy Murray, Director, Joint ADL Co-Lab. "What is exciting is the buy-in from the other services. There are many discussions and strategies taking place for short and long term execution. Everyone is in sync and we are fortuitous about the way things are going."

The Joint ADL Co-Lab is splitting into two parts: 1) the Future Learner: breaking down parts as to how they will learn, 2) the Future learning environment: find the most productive way to learn. This new approach, called the "Personal Intelligent Tutor" will allow the system to really know the student. To react before the learner reacts anticipating their needs. Additionally, the new technology not only benefits the warfighter, but other candidates, as young as six years old. For example, 85,000 Department of Defense Educational Activity (DoDea) students will be trained on this system in the next year. These young apprentices will become recipients of state-of-the-art learning in remote places around the world. It has been determined that 20% of these students will end up in DoD jobs someday.

The Joint ADL Co-Lab employees are collaborating with other Team Orlando members such as: Defense Acquisition University (DAU), the Army's Simulation Training & Technology Center (STTC), Army Research Institute (ARI) and the University of Central Florida's Institute for Simulation and Training (UCF IST). Demonstrations and features will be showcased this August at ADL's annual event, Implementation Fest, held in Orlando, Florida.

SGS&C Enjoys Continued Growth; Names Finalists As "Best of the Best"

Dolly Rairigh Glass
December 12, 2012
Team Orlando News

The Serious Games Showcase & Challenge (SGS&C) is the premier venue for recognition of excellence in the field of Serious Games development. The Challenge, in its seventh year, is especially prideful of its continued growth, most impressively, seeing growth from entries throughout the International and Student communities, as well as welcoming the winners from the first Australian SGS&C at SimTecT.

Eighteen finalists, including the Business and Student winners from Australia's inaugural SGS&C, will take their place in the SGS&C booth (#3263) in Orlando, Florida, at the 2012 Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) Dec. 3-6. Each of these 18 finalists may be named as the top

game in their category, but they also have the opportunity to wow and entertain attendees with their games, vying to earn their vote for the People's Choice Award for best game at the Showcase.

The awards will be announced at the SGS&C ceremony on Dec. 6 and will be conferred in the categories of: Best Business Game, Best Government Game, Best Student Game, Best Mobile Game, People's Choice Award and the Best Game in the Special Emphasis Category of Adaptive Force Training.

The Challenge showcases the innovation and creative talents in Serious Games and continues to show how games are a viable medium for imparting training objectives for a range of purposes, whether those are defense-related training, medical training, games that teach math or language, or better communication.

Today, SGS&C involves evaluators from more than 100 experts from across the Globe, who are actively involved in Serious Games within academia, government or industry, and organizers feel it's extremely important for the consistency and credibility of the Challenge, that they utilize expertise from a diverse group of evaluators. Each evaluator, based on their own personal experiences and knowledge, looks at the games from a very different viewpoint, making them an important part of the overall success of the challenge.

A key indicator of positive growth and feedback for the Challenge organizers is seeing individuals who have submitted games in the past, return to submit another game, as well as companies who produced winning games, using their SGS&C win to help promote their company.

John Brooks, CEO, RealTime Immersive, Inc., in Orlando, Florida, submitted a game in 2007, and won the prestigious SGS&C People's Choice Award for his entry, Vigilance, and this year, RealTime Immersive, has been named a finalist for its submission of another CryEngine powered game, Virtual Attain. "Serious Games developers are having a huge impact on the world of training," said Brooks. "This impact has yet to be fully realized and will continue to be molded as this new market space, which we at RealTime call "mass virtual," continues to mature.

Harvard Extension School student Philip Seyfi submitted and won with his first game, NihongoUp, when he was in high school. Two years prior to graduation and learning Japanese, his sixth language at the time, Seyfi wanted to use his knowledge of both programming and modern languages, as well as his design and psychology skills, in a new project. He designed a Serious Game to help students, like himself, learn Japanese.

This year, Seyfi, with his partner, Ollie Capehorn, a student at Oxford, has been chosen as a finalist again for his language game, Lingualift. They have developed a set of interactive textbooks, spaced repetition tools, educational games and print resources for language self-learners. His first time as a finalist in 2009, Seyfi was unable to take part in I/ITSEC, but this year he is excited to be a finalist and will be attending this year in person.

"Our first education is through playing, and to me this is the logical 'grown up' extension to this," said Seyfi. "Studying can be boring and games are an important piece of the puzzle. The situation is slowly improving, but it will probably take years, if not decades, until we, as a society, learn to use and appreciate games, whether Serious or recreational, to their full potential."

Bora Aytun, Co-Founder and CEO of MAVI Interactive, entered SGS&C for the first time in 2009 with his game, Agent Surefire-Infosec, and with valuable feedback from the judges, submitted Agent Surefire: Breach Buster with ESET in 2011. A finalist that year, but not a winner, Aytun returns this year as a finalist with Agent Surefire: Insider Threat, a Cyber Security Awareness training program.

"Serious Games are the engaging, experiential and highly effective alternative in meeting some of the most challenging training objectives," explained Aytun. "Every developer should bring their games to SGS&C!" said Aytun.

When SGS&C first began, many in government were unsure they wanted to invest in gaming, and industry also carried a cautious approach because they were unsure they could support it as a business risk. And students

were not aware of another avenue by which they could apply their talents. But today, with the increasing recognizability of SGS&C, both at home and internationally, one can certainly say that SGS&C has been a contributing factor to the forward motion and growth of Serious Games development.

Each year the games have continued to improve in quality and usability and this year, seven of this year's entries also qualified for the Special Emphasis Category of Adaptive Force Training. Adaptive stance is an individual's ability to repeatedly try new or different strategies to solve problems, while considering feedback with the purpose of improving overall success.

"Serious games can be skills-practice or immersive training environments for honing adaptive stance," explained Elaine Raybourn, Sandia National Laboratories and SGS&C Special Emphasis Award Committee Lead.

Raybourn noted that what is crucial is the understanding that adaptive stance training is one which hones the ability of the trainee to be, or learn to become, adaptive, agile and responsive to people, surroundings and environment.
"For our I/ITSEC community, it is important that some Serious Games have the design mechanics to hone skills indicative of an adaptive stance because that is one of the Military training goals games can address," said Raybourn. "Games allow us to explore how we would address problems and solve problems in relatively safe environments. We learn who we are, and how we'll respond. That's training."

I/ITSEC attendees will have their chance to sample the finalists' games as they will each be featured at the SGS&C booth in the I/ITSEC STEM pavilion. But whichever Serious Games are named as winners on Dec. 6 for each of these awards, SGS&C organizers are excited and encouraged about the growth, including the total number of games with student and international entries, as well as the diversity and quality of each of them, and feel these are the "best of the best."

JTIEC and STTC Teams Look to Combine Work for Future Support to Acquisition

Dolly Rairigh Glass
November12, 2012
Team Orlando News

The training community for Modeling and Simulation receives a great deal of support and for more than 30 years there have been a lot of efforts focused on building computer simulations to teach our Warfighters critical skills, like how to shoot specific weapons or how to fly and maneuver specific aircraft. Complementing the computer simulations have been artificial and operational environments that afford these soldiers as realistic an experience of their jobs as possible.

But in the acquisition community, where people are charged with determining what kind of new equipment to purchase and details surrounding that equipment, there currently isn't the kind of simulation support available as there is within the training community. It's an area that has always been lacking, but one that is very difficult to address.

"With simulations, when you're trying to come up with a design for a new aircraft or a new ship, for example, it's a different set of problems than those associated with teaching a pilot how to fly an aircraft," said Dr. Gary Allen, Project Manager at the Joint Training Integration and Evaluation Center (JTIEC) for OSD's LVC Architecture Roadmap Implementation. "It's not necessarily easier [Training], but we know about it and for instance, with skills, if we are going to teach a soldier how to shoot a weapon, we can identify the steps to learning the sequence, and then build simulation around that."

In the acquisition arena, it's a more challenging task because it has not been addressed as readily as other areas of simulation where the problem set is more defined. But, technology has gotten increasingly better over the years and as the capabilities have improved and the understanding of how different environments work, there seems to be a window of opportunity that could provide the kind of support to acquisition that the training community enjoys.

What Allen envisions, along with his project partners at the US Army Research Laboratory (ARL) Simulation and Training Technology Center (ARL STTC), is an acquisition tool that would combine the prototype work that each of them have developed.

"Just by happenstance, I had a project where we were using SOA (service-oriented architecture), the kind of capability like Amazon uses," said Allen. "The team at STTC was working on another aspect of this same problem where they were trying to get from a layperson's descriptions, what it is they have in mind, and then be able to translate that into a simulation environment."

"If I take this part I'm working on and the part that they're working on, and put them together, we might be able to develop a system the acquisition community could use," said Allen. "So that's where we are today. It's a concept."

The STTC's complementary part of the project and the closest program to what they are envisioning is the Executable Architecture Systems Engineering (EASE) system. EASE is a cloud-based composable Modeling & Simulation (M&S) environment wherein complex simulation environments can be orchestrated per the users' needs to conduct analyses, experimentation and technology trade-offs.

Scott Gallant, System Architect, Effective Applications, is a contractor for the STTC team working with Allen, and was the lead of the team that developed EASE. "Simulation, in general, is really hard," said Gallant. "Within DoD, there are simulations built for many different reasons by many different people with different levels of funding. EASE was our answer in how best to bring all these things together."

The challenge, Gallant noted, is having the ability to have all the pieces work together, so when changes are necessary, breaking down the original project isn't as overwhelming, and the pieces are interchangeable because they do work together. "You want to bring the best of what's out there together in one environment, so you take advantage of the fidelity but they all get to play together in one environment," said Gallant.

"Both are prototypes and we've each had our own successes," said Gallant. "Now we ask, how do we do the wedding and marry up these two projects to come up with this new capability?"

To continue moving forward, at the end of March, the two groups will take the next step and present their paper at the Simulation Interoperability Standards Organization's (SISO) 2012 Spring Simulation MultiConference in Orlando. The plan is to gain interest and momentum heading into their paper presentation in July at a more engineering-oriented test and evaluation acquisition conference. Their hope is the concept will pique the interest of some and they will get funding to develop a combined prototype of a Concept Analysis Simulation Environment (CASE).

"Anytime you can leverage and do things together, reduce costs and have more resources, that's a step in the right direction," said Allen. "Ideally this would be used by the acquisition teams to help communicate their needs and ideas to the engineers building the systems."

Marine Corps News

Marine Firefighters Train to Fight Blazing Fires

Cpl. James A. Sauter - Marine Corps Base Hawaii
November 9, 2012
USMC.mil

MARINE CORPS BASE HAWAII -- As the sun set behind the western horizon, a blanket of pitch darkness covered the sky above the outside training area. Far from the sight of spectators, Aircraft Rescue and Firefighting Marines suited up in their firefighting gear to cordon and control a fire consuming a helicopter.

The team of three Marines approached the burning aircraft with a high-pressure fire hose, swaying it side to side to douse the helicopter in a downpour of cold water. The fire slowly receded as the flames suffocated without any dry material to burn. At the same time, a Marine went inside the aircraft and grabbed a trapped victim inside and rushed him away to receive medical attention.

Marine firefighters from ARFF, MCAS Kaneohe Bay, conducted a night firefighting training exercise using a helicopter simulator across the flightline, Saturday.

During the night simulation, they responded to an emergency call in which a helicopter crashed on the flightline and caught fire with a dummy victim inside. After responding with two fire trucks, the Marines divided into several three-man teams, taking turns extinguishing the fire and rescuing the victim.

“The exercise is meant to teach our Marines the fire’s behavior, the affects of putting water on fire, and employing techniques and procedures when responding to an incident,” said Sgt. Mitchell Koval, an ARFF section leader. “This live fire training helps them know what to do when an actual accident happens on Marine Corps Base Hawaii.”

The simulator used a fixed amount of propane to ignite the training helicopter. Even though a section leader controlled the intensity and size of the fire using a remote, the firefighters still needed to exercise extreme caution. They stayed close to one another and communicated by tapping each other on the shoulder. Lance Cpl. Kevin Rosenkranz, an ARFF handline operator, said getting close to the danger makes the job of being a firefighter worthwhile.

“I like the training because everyone gets a chance to get experience the fire up close,” Rosenkranz said. “I really like the experience and the adrenaline rush of being so close. I remember the first time I did this simulation and it was something I instantly liked and something I want to continue doing in my life.”

Beside emergency responses, ARFF is trained to deal with extraordinary hazards when dealing with crashed aircraft. Koval explained that all ARFF Marines are trained to know the details and components of a wide variety of aircraft. When responding to an emergency, the firefighters bear in mind details such as the type of aircraft involved, fuel used and whether there is any sensitive material or explosive ordnance on board.

“This live-fire training simulation is in a controlled environment without all the dangerous hazards of an actual emergency,” Koval said. “The training is as close to the real thing these firefighters will get without causing more destruction and chaos.”

Washington Technology
The authority for government contractors and partners

Cubic's Defense Business Wins $12.5M Order for Tactical Vehicle Systems

Mark Hoover
December 18, 2012
Washington Technology

System features intuitive improvements like a touch-screen user display

Cubic Defense Applications has won a $12.5 million order to provide its Instrumentable MILES Tactical Vehicle System, or I-MILES TVS, to the U.S. Army.

The order was awarded by the Army's Program Executive Office for Simulation, Training and Instrumentation.

The I-MILES TVS uses Cubic's Multiple Integrated Laser Engagement System technology to provide real-time casualty assessment for MILES tactical engagement training in direct-fire, force-to-force instrumented training scenarios, Cubic said in a release.

The system has weapon simulation and casualty assessment accuracy capabilities for vehicles and fixed structures, adapting to any wheeled or tracked tactical vehicle.

It can also work with buildings, fixed equipment and other structures, Cubic said.

The system also features improvements, such as touch-screen displays with intuitive graphical user interfaces.

Cubic has also completed its first shipments of the I-MILES TVS system to the Army, the first six of which went to Fort Carson, Colo., where they will be used to train end users.

Deliveries will be completed in May 2013, under the first option for a contract that the company won with the program executive office in 2010. The second option includes this $12.5 million order, the company said.

Camber's Latest Deal Builds on Training Capabilities

Nick Wakeman
December 17, 2012
Washington Technology

Acquisition of Novonics brings software, simulation chops

Camber Corp. has made an acquisition that brings tactical systems software and simulation capabilities to the Huntsville, Ala., company.

Terms of the deal for Novonics Corp. were not disclosed. The company is based in Washington, D.C., and provides simulation based learning systems, software/systems design and development and program and strategic planning to the Defense, Homeland Security and State departments.

The company also provides solutions around introducing users to complex technologies, Camber said in a statement.

Novonics uses simulation and distributed networks for training and to support exercises. The approach saves money and increases readiness because it lets users prepare and train in multiple scenarios, Camber said.

Camber said that it sees an opportunity growing for innovative training and simulation work, as the government faces decreased budgets.

“Novonics' experience, customer knowledge and successful project execution is an excellent strategic fit for Camber,” said CEO Walter Batson.

The addition of Novonics builds on Camber’s work in simulation-based training, network test and evaluation, command and control, information management and training architectures, Batson said.

Some of the systems Novonics has worked on include the Navy Battle Force Tactical Training System, the U.S./Singapore Readiness Interoperability Network and the National Institute of Justice Use of Force Trainer with Voice Recognition.

The investment bank Aronson Capital Partners served as an advisor to Novonics.

Larry Davis, a partner at the firm, said the acquisition illustrates several trends in the market, including continued interest among buyers for companies with differentiated software development capabilities in areas not likely to face budget pressures.

He also is seeing increased focus on companies with technologies that can make agencies more efficient and provide more cost-effective solutions. In this case, virtual/constructive training versus live training.

A final trend Davis cited is the resiliency of private equity-back companies to make deals “despite spending headwinds across the sector.”

Camber is owned by New Mountain Capital, a private equity group that has funded several companies in the government space including Deltek and Apptis.

Conferences & Events

January 26-30, 2013
International Meeting on Simulation in Healthcare (IMSH)
Orlando, FL

January 28 - February 1, 2013
2013 Powerplant Simulation Conference (PowerplantSim'13)
Tampa, FL

April 7-10, 2013
2013 Spring Simulation Multi-Conference (SpringSim'13)
San Diego, CA

April 8-12, 2013
2013 Spring Simulation Interoperability Workshop
San Diego, CA

April 17-19, 2013
GameTech 2013
Orlando, FL

February 11, 2013
National Modeling & Simulation Coalition Congress
Chesapeake, VA

February 12, 2013
National Modeling & Simulation Coalition Annual Meeting
Chesapeake, VA

March 12-14, 2013
Behavior Representation in Modeling and Simulation (BRiMS)
San Antonio, TX

April 30 - May 2, 2013
MODSIM World 2013
Hampton Roads, VA

May 22-24, 2013
ITEC
Rome, Italy

June 5, 2013
Capitol Hill M&S Expo 2013
Washington, D.C.

June 12-13, 2013
Training & Simulation Industry Symposium (TSIS)
Orlando, FL

July 7-10, 2013
2013 Summer Simulation Multi-Conference (SummerSim'13)
Toronto, Ontario, Canada

July 30 - August 1, 2013
ADL iFest 2013
Orlando, FL

September 16-20, 2013
2013 Fall Simulation Interoperability Workshop
Orlando, FL

December 2-5, 2013
Interservice/Industry Training, Simulation and Education Conference (I/ITSEC)
Orlando, FL

Links

Newsletter published by the Modeling and Simulation Coordination Office (M&SCO)
http://msco.mil/MSNewsletter.html

NTSA's Training Industry News http://www.trainingsystems.org/publications/Training_Industry_News.cfm

PEOSTRI Inside STRI Newsletter http://www.peostri.army.mil/PAO/InsideSTRI/

Team Orlando 10-4 Newsletter http://www.simulationinformation.com/

M&SCO's quarterly M&S Journal http://www.dod-msiac.org/journals.html

Virginia Modeling, Analysis and Simulation Center (VMASC) Newsletter
http://www.vmasc.odu.edu/news.html

The MOVES Institute is an internationally renowned center of excellence in modeling and simulation. https://www.movesinstitute.org

The Alabama Modeling & Simulation Council (AMSC) encourages the development and growth of modeling and simulation activities within the State of Alabama. http://www.alabamamscouncil.org/

The Society for Simulation in Healthcare (SSH) represents the rapidly growing group of educators and researchers who utilize a variety of simulation techniques for education, testing, and research in health care.

http://ssih.org/

The Simulation Interoperability Standards Organization (SISO) is an international organization dedicated to the promotion of modeling and simulation interoperability and reuse for the benefit of a broad range of M&S communities.

http://www.sisostds.org/Home.aspx

Publication Information

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Selection of Publications Reviewed for Articles on Simulation:

Air Force Times, AFAMS News, Armed Forces Journal, Army Aviation, Army Times, Army Magazine, Army AL&T, AMSO News, AUSA News, Advanced Simulation and Computing, Aerospace and Defense Network, Aviation Week, ASD News, Center for Defense Information, CHIPs – DON IT Magazine, CNET News, Defense ARJ, Defense Daily Network, Defense Industry Daily, Defense Systems, Defense Technology International, Defense World, Defense-Aerospace, Defense News, DOD Live, Equipment Training & Simulation News, Federation of American Scientists, Federal Computer Week, Federal Times, Flagship News, Geospatial Intelligence Forum, Government Computer News, Government Executive, Government Technology, Ground Combat Technology, Institute for Defense and Government, Information Week, Land Warfare International, Digital Battlespace, Military Logistics International, Rotorhub, Leatherneck, Magazine of the Marines, Marine Corps Gazette, Marine Corps Times, Military Advanced Education, Military Information Technology, Military Logistics Forum, Military Medical/CBRN Technology, Military Space and Missile Forum, Military Training Technology, Military Times, MS&T, MSIACs M&S Journal Online, MSIAC Newsletter, National Center for Simulation, National Defense Magazine, National Geospatial Intelligence, Navy All Hands Magazine, Navy News Stand, Navy Times, National Training and Simulation Association, NMSO News, Parameters US Army War College Quarterly, PEO STRI News, Popular Mechanics, Popular Science, Proceedings US Naval Institute, Signal, Society for Modeling and Simulation, Society for Simulation in Healthcare, Simulation Interoperability Standards – Organization, Special Operations Technology, Tactical ISR Technology, Team Orlando News, Training and Simulation Journal, US Coast Guard Forum, and Washington Technology

All articles complied in Simulation Highlights have been obtained from non-subscription websites.

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