

Simulation Highlights

A Compilation of Simulation Articles from Leading Defense and Industry Publications



July 2012

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ARMY Magazine

Using Technology to Train America's Decisive Force

LTG David G. Perkins, COL Robert (Pat) White and CPT Nathan K. Finney

May 2012

Army magazine

As the Army reshapes its force structure and begins consolidating its operational experience after a decade of war, the Army Chief of Staff is focusing on maintaining and then enhancing the quality and readiness of Army forces. An effective way to do this is through integration of our training domains (operational, institutional and self-development) to include lessons learned and by encouraging career and lifelong learning.

Currently available technology and emerging training capabilities support individual and collective training at home station, link to Army Centers of Excellence (CoEs) and institutions, and conduct multi-echelon and concurrent training in relevant scenarios that potentially complement and support live training at the combat training centers. This requires increased collaboration with industry, academia and technology leaders to drive the development of integrated training capabilities as well as provide technology that integrates training and education and addresses innovative ways to provide training in the future.

According to the Army's posture statement for 2012: "Today's Soldiers have achieved a level of professionalism, combat experience and civil and military expertise that is an invaluable national asset." To exploit this experience as well as ensure that the Army retains quality leaders, soldiers and Army civilians, Army leaders must provide realistic and tailored training—from individual soldiers to units, across echelons, and from home station to the combat training centers.

An integrated training system that incorporates every element, including CoEs and the institution, is crucial to the readiness of our forces. The bedrock of the future training system will be scalable and tailorable training support that provides the desired capabilities at the point of need. The key element is a realistic, persistent and challenging replication of the expected operational environment, no matter the source from which soldiers are training—a resource the Army calls the Integrated Training Environment (ITE). When implemented, the ITE provides commanders the ability to manage their unit's training and to conduct training so realistic that they will not be able to tell if the information on their mission command systems is real or simulated. This will allow commanders to train multiple scenarios under various conditions, using a flexible, progressive training methodology.

Essential to the ITE and the future training system is its use of a distributed, blended learning environment with a heavy reliance on live, virtual, constructive and gaming (LVCG) training enablers. Live tools involve humans operating real systems in the live world—think instrumented force-on-force maneuver training at the National Training Center. Virtual tools—such as the Common Driver Trainer or Unit Conduct of Fire Trainer—involve humans operating simulated systems. Constructive tools, such as the wargaming models Warfighters' Simulation or Joint Conflict and Tactical Simulation, involve simulated humans operating simulated systems. Finally, gaming tools involve using desktop computer gaming technology—think first-person shooter or thinker games such as the Army's Virtual Battlespace 2 or UrbanSim. LVCG capabilities will be used to strengthen one of the pillars of the Army's readiness: the integration of our active and reserve components.

There should be little doubt that the reserve component will remain the nation's operational reserve, and we should train them as such. Both the active and reserve components must have the capabilities they need to train their units to the appropriate level of proficiency. One way to get at this is to provide training at U.S. Army Reserve regional training support centers, where there is a smaller density of units. While this works well for the Reserve, these facilities will be available to the active Army and National Guard as well. All components will be able to train their battalion and brigade staffs to proficiency, while also being able to train reserve platoons and active companies to livefire proficiency. To accomplish this, we will integrate multipurpose range complexes, situational training exercise lanes, simulations, gaming, home-station instrumentation training and virtual simulations such as the close combat tactical trainer. All components will eventually be supported by the National Simulation Center at Fort Leavenworth, Kan., or a regional simulation center in Europe or the Pacific. Acquiring these capabilities requires increased support and collaboration with the technology and training industries.

Using technology to integrate and increase the effectiveness of training is not a one-time event. We must use technology to enable training and education throughout a soldier's entire career. Examples of this are the systems we have put in place to manage and move data tied to training management, such as the Army Training Network and Army Training Information Systems.

According to an article by Cassandra Yardeni in the March 2010 NCO Journal, the Army Training Network is a digital, Web-based platform that "blends together doctrine, how-to procedures, training products, training solutions and collaboration tools for the training community." This provides soldiers a one-stop shop where they can find every tool they need to develop, execute and assess training as well as provide feedback. Supporting this, Army Training Information Systems enable soldiers and leaders to employ state-of-the-art information technologies in a fully integrated and networked training support system to provide realistic, timely, user-responsive and cost-effective training for units and individuals. This includes training management support as well as comprehensive, configurable and content-rich training products and media. These systems support the entire training domain—from tools to training development and training methods—throughout a soldier's career.

Technology-based training systems not only make training more accessible but also save both time and money by allowing greater repetitions or cycles of training events that would be otherwise resource-prohibitive. The close collaboration and cooperation of the Army, academia and industry must continue. Developing the leaders, soldiers and Army civilians for the nation's decisive force will take comprehensive training and education balanced with experience. A decade of conflict has provided us the most experienced combat force in generations, and as we move beyond Iraq and Afghanistan we will have to increasingly rely on realistic and challenging training to maintain the skills and knowledge we have gained. The most efficient and effective way to accomplish this is through the integration of live, virtual, constructive and gaming technologies for individual and collective multi-echelon and concurrent training, from squad to division/joint task force levels. Harnessing these technologies will help the Army develop agile, adaptive and versatile leaders for tomorrow.

LTG David G. Perkins is the commander, U.S. Army Combined Arms Center and Fort Leavenworth, Kan. Previously he commanded the 4th Infantry Division and was the U.S. Division-North commander in northern Iraq. COL Robert (Pat) White is the deputy commander for training at the Combined Arms Center. Previously he commanded the 2nd Brigade, 1st Armored Division in Iraq and served as the executive officer for the commander of U.S. Army Training and Doctrine Command. CPT Nathan K. Finney is an Army strategist currently serving at the Combined Arms Center as the commanding general's speechwriter.



No. 2 Civilian Worries Cuts Will Decimate Army

Joe Gould

May 30, 2012

Army times

After years in academia and as a government insider, it's no accident that Undersecretary of the Army Joseph Westphal's portfolio is more fitting for a wonk than a warrior.

The Army's budget, diversity in the ranks, business transformation and energy efficiency are under his authority.

Facing hefty budget cuts amid Congress' brinkmanship over sequestration, Westphal spoke with Army Times about internal efforts to streamline the Army over the past few years and said new cuts would damage the service — and the nation.



*James J. Lee
Staff Undersecretary
of the Army Joseph
Westphal speaks at his
Pentagon office in
Arlington, Va., on
Thursday.*

“When you begin to unravel that, the role of the Guard in our communities, for instance, you begin to say, ‘My God, this is an incredible force to help our country's economic development, its growth and standing in the world,’” he said.

A former chancellor of the University of Maine system, Westphal has served as the Army chief of civil works, and as its acting secretary in 2001. He held a post with the Environmental Protection Agency during the Clinton administration and various jobs in Congress.

Speaking in a jovial — if soft-spoken, even professorial — air, Westphal gave a visitor a brief tour of his vast office at the Pentagon, beaming over a picture of him and then-President Clinton in the Oval Office. He showed off a challenge coin — one of dozens — from the fictitious 23rd Airborne Division, a memento from his upcoming cameo on Lifetime's series “Army Wives.”

But he is proudest of his four children, whose photos face his desk from an end table.

“They watch everything I do,” he said.

Here are excerpts from Westphal's Thursday interview with Army Times.

Q. The Army is launching a task force to review behavioral health diagnoses to 2001, which you and Vice Chief of Staff Gen. Lloyd Austin are going to lead. What does this task force have to do to maintain faith in Army medicine? How will it execute its mission?

A. [Army Secretary John McHugh] was very concerned about many of the things coming out in the news and about what was going on with the evaluation process, and the management of how we deal with PTSD. And so he decided to take a very comprehensive look at it rather than going piecemeal, to look at it here and there. And he decided that the top leadership of the department, the vice and I, are the two people to lead it. The idea was to do a number of things within this framework. Number one was to do a comprehensive review of everything that's happened.

Q. What's the actual process going to look like of conducting the review?

A. We've got in the secretary's direction, very specific tasks with timelines that are given to us. So we have within a certain period of time to organize these surveys and have all these activities going on and reporting through the task force, which is led by [Lt. Gen. David Perkins, the commander of Fort Leavenworth, Kan.]

Then that task force, we will be meeting with the task force on a regular basis, the vice and I. Some will be personal, or through [video teleconference]. And we will be getting reports from them as they are collecting information and gathering what will constitute a plan of action.

Q. Isn't there a report due and some statistical sampling?

A. There is a survey that's going to take place.

Q. Army-wide or of all soldiers who have received behavioral health diagnoses?

A. The latter.

Q. Active duty, or both in an out?

A. In and out. You're going back to 2001 so you're going back through a lot. If we have to do some remediation with those who have left the service, that's something we'll have to report to the secretary and make recommendations of how to take care of those individuals who weren't treated well.

So without making a lot of assumptions as to what happened, there were some things that happened that shouldn't have happened, and we need to correct that.

In addition to that, we have to look at the pattern of things. I think it will also help as we wrestle with [the Integrated Disability Evaluation System] as a program, to make it more effective and faster, and better integrated between us and the [Veterans Administration]. I think this will help us zone in on the issues that are creating the backlog.

Q. How far can you go? What are the implications of the review you're undertaking? If for instance, you found thousands of soldiers whose problems were misdiagnosed or under-diagnosed, what happens then? Are there financial ramifications?

A. We have to fix that, we have to address that for those soldiers; we really do. We owe it to them. The one thing we don't want to do is put economics ahead of that activity. That's precisely what we want to avoid.

We realize, the president understands this, I'm convinced, and the secretary of defense and the secretary of the Army are convinced, we put men and women in harm's way; we asked them to make incredible sacrifices for our country, and when they come back, if they're wounded or ill, or whatever happens to them, we need to take care of them.

If we start putting economics ahead of that—we don't have enough money, we can't afford to hire people, we can't afford to do that—how are we going to count on people in the future to put their lives on the line for us? How are we going to count on a force that will trust that we have their interests in hand?

We're not going to avoid those issues. We're going to deal with them and we'll get those resources.

Q. You're the business guy, the efficiency guy. The well-known RAND study on PTSD and TBI found that it costs more in the long run if people aren't treated, it ultimately costs more.

A. I remember I was here as the assistant secretary for civil works so I wasn't in any way involved, but I heard all the stories about Gulf War Syndrome and all the issues associated with that because we had ignored that issue. I think that's a lesson to be learned, and one that I feel is important.

I think you're right, these problems accrue. They not accrue not only in their financial cost, but in their cost to families, the cost to the Army in terms of readiness and effectiveness. They have an overwhelming impact on our societies as a whole.

Q. If we can we talk about the budget and sequestration, the latest scary number is that there could be a loss of as many as 180,000 troops. At that level, what does the Army become and what can it do?

A. The first thing is, reducing a force isn't something you can do in six months. It takes a considerable amount of time to turn this big ship in whatever direction you need to turn it.

Whether it's members of Congress, or others who think they can just sequester and all of a sudden, we can ratchet down, it just doesn't happen that way. We have contracts, we have agreements and commitments to people that we can't ignore.

We began planning for the current downsizing two years ago. We learned that just to come down to 490,000 — there were different scenarios about how far to come down — it would take this long to do it. Particularly to do it in a way while we were still in combat, to do it in a way that we weren't really, really hurting our soldiers and their families, and without going back on everything we had committed to do.

The second thing is the president's strategy that he, the Joint Chiefs and us all participated in, and it was a very open and very comprehensive review of strategy that we put together.

This reduction in the size of the Army is now aligned to that strategy, and consequently if there is a sequestration of massive numbers of cuts we have to make in equipping, in infrastructure, and obviously in manpower, we can't support that strategy — and neither can the Marine Corps, neither can the Navy, neither can the Air Force. Everybody's going to be in the same boat as to how can we do this.

There's nothing that tells me — and I read Army Times — that the world is getting peaceful, that there is less danger out there, that the threat is less to the United States. The threat is more advanced, it's more sophisticated, and it's more technological.

So we've got a strategy that's trying to align to those changes in the world and we're going to need the forces to do that.

Q. What's your biggest fear about sequestration and the worst-case scenario?

A. The worst-case scenario is not a force that would be smaller, but that it would be very difficult to keep that force trained and ready. We'd suffer significant reductions in the equipping piece. We'd essentially, probably be moving toward a hollow force.

Hopefully for all of us, the economy continues to improve; it will be more difficult to recruit people into the force — particularly if they believe that the leadership of this country can't honor its commitments to them. I think the country suffers some risk. Q. You talked about planning for potential cuts. As these across-the-board cuts loom, can you plan for it? Isn't it responsible to plan for it?

A. It's a really good question, and you could look at it two ways. I can be feisty and say, 'Should we plan for catastrophic effects?' We should really be standing up and saying — and we have been in all our testimony to Congress — that you can't do this, you just can't do this. You're not doing it to an entity; you're doing it to our country. Again, it doesn't just affect the Army.

There are processes in Congress to resolve these issues. They're choosing not to use them, and they have gone to this extreme: sequestration.

My sense of it is, how do you plan for your own demise? How do you plan for something that so significantly undermines everything you stood for [for] 237 years? It's difficult to do that.

Q. Does that mean there is some kind of planning, some kind of work being done?

A. No. We're not doing in any scenarios, we're not doing any budget drills, and we're not doing any analysis. But, given the fact that we began with [former Defense] Secretary [Robert] Gates where each of the services had to cut \$30 billion that was moving \$30 billion from redundancies to meeting the needs of the war-fighter. It wasn't really a cut; it was a shifting of resources. Nevertheless, we had to come up with \$30 billion.

And then you go into trying to reduce your budget to meet the cuts imposed by the budget act. We have gone through this significant amount of planning to get where we are today. We don't have to go through budget drills to teach us what happens if you have to double that. You just know. We've been through it.

We've tried—and the secretary of defense has worked extremely hard to say to Congress, it's not that you can't cut us. Let's find a way to get to the right place. We're trying to do our part in defense to be more effective and efficient—and we haven't by any means reached all the levels of efficiencies or eliminated the redundancies that we could.

Q. As far as reset goes, do you have a sense of what it will cost? As [Congressional overseas contingency operations] funding diminishes, how does the Army pay for reset? Do the budget reductions make that process stretch over time?

A. We know and we've emphasized with the committees in congress—and they are very supportive today—that after combat ceases in Afghanistan, that we will have a couple of years of OCO reset monies.

What those amounts will be, there will be some negotiation on that depending on how we assess how we will retrograde out of Afghanistan and what the condition of equipment is at the end of those two years. We suspect it's about the level that we're at today, maybe a little lower, for the next couple of years to reset.

We realize that we can get it done in that time if we have the resources. If we don't have the resources, we have some problems; we have a lot of equipment that is used, and used pretty hard. That will make it difficult to train on, and that can cause some readiness problems for us.

Q. The Joint Light Tactical Vehicle and the Ground Combat Vehicle — will those be open to full and open competition?

A. I certainly hope so, and we are required to open programs of that size to competition. The GCV, we limited the design development piece so we could move along a lot faster. Once that design is out there, it will be open—and so is JLTV, absolutely.

Q. Given the length of the development time, do you think that will equal cost savings, by putting it out to competition?

A. Absolutely. That's the whole reason for it. On the development piece, we were really trying to limit the requirements that we demanded on the GCV. And I'm sure that as the development piece matures, we'll be able to refine those requirements.

We're trying to — not reduce the requirements — but manage them so they're not all over the place, and we can reduce costs.

I think we're headed in the right direction, and the same with the JLTV. We're working closely with the Marine Corps so that we can capture some economies of scale that we haven't done before. We ought to be doing more of that in my view.

Q. I know something very important to you, as the top-ranked Latino in the Army, is diversity. We're in an Army now that's studying the prospect of sending women to Ranger school, "don't ask, don't tell" has been repealed. Is this a very different Army than it was several years ago?

A. I think it is. I think it's an evolving and very different Army in some ways. But it still has a long ways to go in other areas. The fact that you and I can go to Afghanistan and go right out to where the fight is and see women alongside men in combat operations, regardless of the fact that they're in a support role, is an amazing thing for the Army.

I think the diversity of the [noncommissioned officer] corps is very strong along all dimensions. There, we're in good shape. Where I think we need some work is on the officer corps. As that pyramid of promotions gets more difficult to climb, we need to be much more aggressive in opening opportunities to create more diversity in the officer corps.

Q. Why do you think it's not happening, and how do you jump-start it?

A. This is not a scientific look but a Joe Westphal view. Part of it is minorities that have traditionally been economically disadvantaged in our society will come into the Army and are looking for opportunities to learn and get an education and get some training — and perhaps, and again this is not scientific — they are looking for opportunities that if they leave the force, they'll have a job. They'll have the ability to transfer that learning and training to some kind of opportunity in the future. They're being very realistic and very practical.

The infantry, as an example, doesn't lend you to that. So the infantry is less populated by minorities, but the infantry — and armor would be the same — it would be those combat [military occupational specialties] that are generally the ones that have the greater opportunity to get promoted.

Q. Folks aren't looking at long-term careers in the officer corps? Is something in the system working against them?

A. There are probably some institutional biases, probably some individual biases that take place as decisions are made. So that's something we have to work on. The chief of staff [Gen. Ray Odierno] is very committed to fix that issue across the board.

We have to make it so that if you asked, can a signal officer or a quartermaster officer or an engineer officer move up the ranks as an artilleryman, why not and what's the impediment?

Q: The next frontier is gay, lesbian, bisexual and transgender soldiers. Is it time to extend partner benefits in an Army where family values are important, but what defines them differs from person to person?

A. We can't work on it as an Army alone. We're working as part of a team with the Department of Defense, the Office of Personnel and Readiness. So we are continuing to engage how we move benefits forward. I think everybody realizes we have to move in those directions and address those issues. Like everything else, it's once you sit around the conference table and start peeling the onion, and talking about how you do this, it's not as easy as you think. Q. It's not just a matter of the politics?

A. I've been in tons of meetings; I was in all the meetings about “don't ask, don't tell” [repeal] and it's amazing how people put their personal feelings aside. Not that I know all their personal feelings, but you can sense they are trying very hard to be ethical, to do what is right for the best interests of the country, to try to move our society forward, and not to create more impediments to our society moving forward.

Q. Do you think we may wind up seeing personnel changes that allow quartermasters, say, to move up into positions, that we'll see more senior officers that don't necessarily come from combat arms? Will we see some changes to make it easier for the officer corps to diversify?

A. I personally think we are going to get there, yes. As I said, I have talked to the chief about this and I think he's committed to taking a hard look at how we get more diversity in the officer corps and how we can open up those lanes.

In any profession, including yours, mentoring is a very important factor. For young officers who are minorities or young women, the mentoring that allows them to understand and figure out how to progress is very

important. That mentoring needs to be there, and some times in the past, it hasn't been there. I think we're much more committed.

We're also really ramping up education for the officer corps, and that opens up people's apertures big time. I'm hopeful that will happen.

I'm also very concerned about civilian leadership development. That's another critical element, but less about diversity.

Q. You've been a part of transforming the civilian workforce. How does the Army retain quality people and—as we referenced earlier—weather the fiscal environment we're in? I've seen that civilians feel uncertain about advancement prospects, that they aren't managed as consistently as they could be. What's on the horizon for them?

A. It's really important that you have a career path. When you write a resume, it's important that you put in job titles and responsibilities that will make sense to the people who will read it.

One of the things that happen a lot in our department is that there are a lot of people without a real clear career track. You're called a program manager—what the heck is that? If you're a lawyer or a scientist, it's much more defined.

So we're trying to put people on career paths, and we have pretty much succeeded. We have almost the entire Army and civilian corps logging into a career path. They can see their opportunities for advancement, attend meetings and take courses. If I do this, I get promoted or do this and I end up over here.

Then for the more senior civilians, I want to do the same thing as I do for the military. For that colonel, my executive officer, and that [senior executive service] that's my deputy; same education I want that civilian to have, so that they have the same growth and development opportunities as well.

On the military side, they are very attuned and very accepting of moving around and going from one job to another—here three years and somewhere else three years.

On the civilian side, they don't see themselves as willing to move around, and it's a hindrance because in order to progress, and for us to benefit from their experiences, we need them to move a little bit.

We're trying to create opportunities, and for that we'll need resources, to enable the physical transportation and movement of people that you would have in the private sector or the military.

Q. Sequestration or no, what does the Army absolutely have to do in the coming lean years? Are there sacrifices it will have to make? Will its role change?

A. We do talk about our Army of 2020, and in that Army, I really believe we are shaping a very different force—a very highly educated force, a much more technologically educated force.

Areas like cyber and intel are very important and they're going to require a lot more sophistication from our people. I think we're going to have to also achieve things that allow us to market ourselves better to the American public, that we're not just a ground force to trudge out there but a sophisticated element safeguarding the United States.

Not only are we technologically advanced, but very sophisticated in terms of understanding strategy, tactics and methods. Our training will have to change and adapt to new ways of training—more simulation. Again technology will advance. We may be a smaller, leaner but a very different force.

Q. How do we get to be that smarter force that you're describing?

A. The generations that are coming into the Army and the officer corps are intrinsically much more adaptable to that environment than ever before. They understand the power of the technologies.

We have to get better at analytical thinking in terms of our educational processes. That's the soldier of the future, a soldier who will have to make lots of choices.

For example, one of our top priorities is education, getting the communications right between the soldier and all the way up to brigade. Once you ... link it all up and you're using a little pad this big to look at massive amounts of data and information, you need a soldier who needs to think analytically and critically about what they're doing on the battlefield. Q. What are the Army's technological priorities (and don't say the network)? Everybody says that, but I guess that's true, isn't it?

A. Ten years of war taught us we weren't that sophisticated in that area, that we needed to get there and the power of technology could get us there. But only if we didn't have all these arcane acquisition processes that we had to fix in order to achieve this.

But if you ask me, I think it's in lots of areas. It's in basic science that allows us to advance in areas like medicine. The Army holds a huge number of patents in pharmaceuticals. If you go to [Walter Reed National Military Medical Center in Bethesda, Md.] and look at the collaborations with the Navy in terms of Army medicine and Army science, it's pretty amazing.

One of the risks of sequestration is that we would lose many of these people. If the resources are not there, the facilities are not there, then these great doctors are going to get scooped up by the private sector. We'll lose that capacity, and who loses is the American taxpayer.

Q. As the business transformation guy, what do you think are the key things the Army has to do to get through the fiscally constrained environment?

A. We have to keep pushing something Gen. [George] Casey really pushed hard on when he was here when he was chief of staff—this idea that we have to institute a cost-conscious culture. We have to redefine all of our business processes. We have to change the culture. I'm trying to operate in a more corporate way, though not the old, tired 'we have to run government like a business.'

If you put aside a lot of the things we do like, in Afghanistan, we are a corporation, we employ thousands of people, and we have to pay them every month. (I should say, bi-weekly so they don't think I'm taking away a paycheck.)

You have a personnel system and a financial system that before now have never been synchronized. So if you're an auditor and you go to the financial system and say, why did you pay Sgt. Westphal here as though he was married? Where is the proof he was married? The financial system says they don't have it; it's in the personnel system. The personnel system says Sgt. Westphal comes into the service 50 years ago, I don't know if we can find it.

That's auditability, our ability to be accountable, to made decisions about everything we buy, everything we do for pay and benefits. How do I know we're not paying people more than we're supposed to? You have to synchronize systems—and we're doing that.

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Fort Rucker Provides Virtual Training for Deploying CABs

Capt. Christina Wright

June 21, 2012

Army.mil

Soldiers of the 101st Combat Aviation Brigade participated in an Aviation Training Exercise at Fort Rucker, Ala., in June. The 101st CAB, the Army's first Full-Spectrum CAB, will deploy to Afghanistan in the fall.

FORT RUCKER, Ala. (June 21, 2012) -- When it's time to go to war, the first step into theater for deploying combat aviation brigades is not on foreign soil. It's at Fort Rucker, where the final phase of the brigade training takes place.



Photo Credit: Capt. Christina Wright

The Aviation Training Exercise is an intensive week-long event that brings about 300 members of a brigade team together in one location, and it serves as an important event for combat aviation brigade, or CAB, commanders, thanks to the simulations technology here, said Lt. Col. Craig Unrath, deputy director for the Directorate of Simulation.

"We bring together live, virtual, constructive and gaming into one venue that trains up through the brigade commander level. Very few places in the Army can really integrate all those elements. It's all interactive, it's completely integrated and it provides a training venue like nothing else," Unrath said.

Training and Doctrine Command conducts this final certifying training event for deploying CABs at Fort Rucker on behalf of Forces Command because of the post's tech-savvy ability to train the full spectrum of Aviation combat operations in an integrated training environment.

The training devices include simulators, live tactical operations centers, constructive elements with 2-D screen, and gaming (Virtual Battle Space 2) with first-person-shooter-type games, Unrath said.

In June, the Army's first "Full-Spectrum" CAB, the 101st CAB, 101st Airborne Division (Air Assault), from Fort Campbell, Ky., completed an ATX at Fort Rucker in preparation for deployment this fall.

The Full-Spectrum CAB structure includes manned and unmanned Aviation systems, and is designed to be more flexible and capable across the full range of military operations.

For the 101st CAB commander, Col. Paul Bontrager, one of the major benefits of the exercise was the opportunity to have his Soldiers together as a focused audience prior to deployment.

"From January until about two weeks ago we were scattered across America between here, Colorado, California, Louisiana, and none of us were all together at one time in once place. This is the first time in five months I've had all my battalion commanders together at one time, and we're able to focus and get ready," Bontrager said.

For commanders, an important aspect of the training is the chance to rehearse the tactical operations center, or TOC, command and control prior to battle, Bontrager said.

"Primarily it's the information flow within the brigade, to battalions and down to flight crews. This includes the simulations piece of it here where we actually have crews flying the missions, doing the tactics, talking back to the TOC. The whole information flow down to aircrews and back up is the primary piece of this," Bontrager said.

Part of the exercise for the 101st included their helicopter pilots and Unmanned Aircraft Systems operators learning to communicate with each other as they work together on mission sets for the first time as a team, as UAS are now a brigade asset.

"When you listen to the mission on the radio, sometimes it's difficult to tell if you're listening to manned platform or unmanned platform because they're tracking what's going on, moving the sensor around looking at different things; it's remarkably helpful. There's some pretty significant benefits to having UAS integral to our brigade. It goes back to the human element, part of the team, part of the mission, part of the plan, so it will be value added when the mission actually occurs," Bontrager said.

The pre-deployment exercise is overseen by a retired general officer who serves as senior mentor, includes controllers who critique and evaluate and brings in valuable current information from the battlefield, Unrath said.

"Subject matter experts that have been in theater with the unit the CAB is replacing come back here and watch over their shoulder, and give them tactics, techniques and procedures for how things are going in theater and how they need to be trained to do business," Unrath said.

Multinational, Multiservice Planning at the Core of Exercise Saber Strike 2012

Capt. Robert Sperling, Pennsylvania Air National Guard Public Affairs

June 19, 2012

Army.mil

TAPA, Estonia - Representatives from Estonia, the United States, Canada, and Great Britain have gathered at the Tapa Training facility to build, design and execute an exercise pushing the limits and raising the capabilities of the participating nations' leadership through war game simulation as part of Saber Strike 2012.

Working cooperatively with allied partners, the Estonian forces are exercising a combat action scenario in a fictitious country that is undergoing civil unrest and facing an invasion by neighboring foreign forces sympathetic to the civil unrest. This exercise provides an opportunity for U.S. and allied forces to work hand-in-hand with each other to enhance everyone's overall ability to work together in a combat environment.

"I have been working with the Estonians since November," said Lt. Col. Adam Schlang, Exercise Planner, Joint Multinational Training and Simulation Center. "Throughout the entire process the Estonians have been very proactive, forward leaning, and willing to demonstrate their capabilities from planning and development through execution of this exercise."

This exercise focuses on the command and control, planning and coordination aspects of military operations, specifically the coordination and reporting activities of forces in the field through the various higher headquarters elements.

The international partnerships and relationships developed throughout Saber Strike 2012 will continue to grow and develop as the plans and established coordination channels are tested during week two of the command post portion of this exercise.

Week two of Saber Strike 2012 will feature the execution of the plans that have been in coordination since the initial planning conference in November to test the Estonian brigade's ability to coordinate and execute the developed plans cooperatively in a multinational environment.

Saber Strike 2012 is a multinational, tactical field training and command post exercise that involves more than 2,000 personnel from the U.S. Army's 2nd Cavalry Regiment, Pennsylvania National Guard, 21st Theater Sustainment Command, the 4th U.S. Marine Division, the 127th Wing of the Michigan Air National Guard, Estonian, Latvian, and Lithuanian armed forces, with contingents from Canada, Finland, France and the U.K. The exercise, led by U.S. Army Europe, is designed to enhance joint and combined interoperability between the U.S. and partner nations, and will help prepare participants to operate successfully in a joint, multinational, interagency, integrated environment.

Corps-Level Exercise Tests Unified Land Operations Capabilities for First Time in Decade

Dave Larsen, III Corps and Fort Hood Public Affairs

June 18, 2012

Army.mil

FORT HOOD, Texas (June 18, 2012) -- More than 5,500 service members and civilians are taking part in the Army's first corps-level, full-spectrum unified land operations training exercise in 10 years, at Fort Hood.

The III Corps Warfighter Exercise, which began June 11, is designed to exercise III Corps' mission command functions and systems and help set the conditions for the execution of future operations.

"It ranges from anything from peacekeeping all the way to major combat operations," said Col. Todd Buchs, III Corps operations officer. "The last ten years, we've been fighting counterinsurgency-centric, stability operations in Iraq and Afghanistan. Unified land operations entail fighting in those different environments simultaneously."

Buchs said as III Corps is replicating an Army forces command for the exercise, inter-service cooperation and coordination occurs throughout the simulated scenarios.

"We're working under a joint task force and alongside coalition forces," he said. "This exercise has allowed us to develop ourselves as a staff to learn how to fight in a coalition environment and the complexities associated with that, but also how to fight with our joint enablers, and more importantly, fight effectively."

The exercise scenario itself, generated by the Mission Command Training Program at Fort Leavenworth, Kan., took III Corps and its subordinate units to a fictional country which was invaded by a neighbor. Following requests for assistance, U.S. and allied forces began offensive operations to expel the simulated enemy.

Though III Corps has many veterans of previous combat tours, fighting at the corps level is new to many of them.

"It's demanding," said Maj. Julia Harvey, operations officer with the III Corps Engineers. "Much of my experience is at division level and below. Here, you have to quickly access the situation in order to provide your best staff estimate in support of on-going operations."

Buchs agreed.

"There is a difference, and that's why we do exercises like this. Many officers and noncommissioned officers spend the majority of their careers at the tactical level," Buchs said. "That's why it's important to understand our

doctrine. Leading up to this, we held more than 30 'brown-bag' lunches and leader development programs so our staff understands how to do operations as a staff at this level."

Harvey said that though the exercise has been demanding, the training benefit is important.

"The systems we're using here in this simulation," she said, "are the same ones we'd use to prosecute a real war."

Her commanding general, Lt. Gen. Don Campbell Jr., of III Corps and Fort Hood, told Central Texas media members at a press briefing June 18 that he's been pleased with his staff's capabilities during the Warfighter Exercise.

"If we had to go to war tomorrow," he said, "we're ready."

One division commanding general echoed that sentiment.

"The III Corps Warfighter Exercise over the last two weeks gave us a great opportunity to work with our higher headquarters and practice the art and science of mission command," said Maj. Gen. James C. McConville, commanding general of the 101st Airborne Division out of Fort Campbell, Ky. "The exercise allowed us to refine our staff processes and improve our ability to synchronize our battlefield operating systems. Overall, it was extremely helpful in getting us ready for our next rendezvous with destiny."

The 101st brought 149 troops to Texas from Kentucky. The division set up its tactical operation center in tents across the street from a construction site for the installation's new hospital. While more than 5,500 troops are taking part in the exercise, it takes a small Army of role-players, evaluators and trainers to manage the on-going simulation.

"It's very realistic," Buchs said of the simulation scenarios his staff faces around the clock.

Col. Charles E.A. Sexton, commander of MCTP at Fort Leavenworth, is in charge of directing the exercise.

"We run about 45 different exercises each year," he said at a press briefing June 18 in III Corps headquarters, noting that his organization trains units from brigade level and higher to prepare for their wartime missions. "This is the largest one of its kind."

Sexton said by running this full-spectrum training exercise with III Corps, the Army is able to evaluate the changes it has made regarding personnel, logistics and doctrine over the past 10 years.

"Over the past 10 years, we've changed from a division-centric organization to a brigade-centric organization. We've changed how many people we have in units, or whether units exist anymore," Sexton said. "We've made all these changes, but we've never had to chance to exercise them at this higher echelon, more complex environment."



Photo Credit: Master Sgt. Brian Sipp, 101st Airborne Division (Air Assault) Public Affairs. Soldiers from the 101st Airborne Division, Fort Campbell, Ky., enter their division's tactical operations center at Fort Hood, Texas, June 15, 2012. The 101st Airborne Division (Air Assault) sent 149 troops from Kentucky to Texas to participate in the III Corps Warfighter Exercise, part of more than 5,500 Soldiers from 17 units conducting commuter-based simulation-driven event

Other units, like the 504th Battlefield Surveillance Brigade, didn't exist 10 years ago. Buchs said this exercise validates to the Army how to use units like the 504th in unified land operations, making this exercise even more important.

"This isn't just for III Corps or the units conducting this exercise with us," he said, "but it's also about informing the Army about things they haven't been informed on in the last 10 years because of the fight we've been in, a very specific kind of fight in Iraq and Afghanistan."

But as with any fight, the combatants are there to win. Is III Corps winning?

"Yes, we are," Buchs said. "But I think the real win is: did we grow as a staff? Did we inform the Army? Did we get great training value out of this? Those three things are happening, plus we're kicking (the enemy's) butt."

ECBC Engineering's ADM Cuts Costs for Warfighter Training

June 14, 2012

Army.mil

The United States Army Edgewood Chemical Biological Center's Advanced Design and Manufacturing Division (ADM) embarked on a small training project a year and a half ago that has since expanded and amounted to dollars saved for the U.S. Army and the possibility of a new certification for the Warfighter.

It started when ADM was tasked by the Joint Improvised Explosive Device Defeat Organization's (JIEDDO) training arm, Joint Center of Excellence (JCOE) in January 2012 to provide a solution to a recurring issue: what is a cost-effective approach to training Warfighters on expensive equipment, eliminating the risk of damaging the equipment during training?

The issue came to a head during Husky Mounted Detection System (HMDS) training. The damage caused to the system during the training period had become more expensive than the cost to build the original system.

The HMDS is a kit that attaches to the Husky vehicle, and has four Ground Penetrating Radar (GPR) panels, each costing \$40,000. The panels detect metallic and nonmetallic explosive hazards, pressure plates, and antitank mines. These panels were often damaged during training periods. The total system with the four panels initially cost \$500,000 per upgrade to the base vehicle.

"Warfighters would train with these systems and since they were new to them, a lot of damage would get incurred to the detector in the training process," said Peter Bryant, a Project Specialist working in ADM's Technology and Systems Integration Branch. Student drivers were doing roughly \$2 million worth of damage per month learning to operate the HMDS. "It just was not a reasonable option, so we were tasked to create a training system that would not total as much in repairs."

HuskyBryant, along with others from across ADM were able to create the Husky Mounted Detection System Surrogate (HMDSS), a trainer that was created with Aluminum panels and plastic nose cones, and used radio waves to simulate detecting an item. A buried 'tag' indicates the threat type of the material found. The system cost is one quarter that of the original. The panels only cost \$1000 for a complete replacement, but generally, only the nose cones suffer damage, which total \$100 to replace.



“We were asked to just create and test a potential training product. We did and that turned out to be a success,” said Kevin Wallace, Technology and Systems Integration Branch Chief. “From there we ended up building 26 systems for JIEDDO, currently we are building 29 systems and we’ve been tasked to build more, so it’s certainly taken off.”

Since the initial 26 HMDSS Kits were shipped to JIEDDO in January 2011, the ECBC engineers have continued to work on enhancements to the systems, such as a timing mode, Global Positioning System (GPS) mode, and a buried mode which uses Radio Frequency Identification (RFID) tags to simulate events that play images of real threats.

“The initial direction was pretty narrow, but as the project has evolved, we have been asked to add more and more elements that the real system has,” said Mark Colgan, an engineer in the Electronic Design and Integration Branch. “Next we are adding additional targets to the HMDSS. Now the HMDSS looks more like the HMDS and has the same functions.”



“The end goal now is not to just have a training item that can be kicked around during practice, but to actually create a training item that Warfighters can become certified in before they go to theater. That is a very different end goal than the initial one,” Bryant said. Wallace said as this project started to grow, the initial group needed to enlist the help of all the branches within ADM as well as some from outside the Division.

“From helping us gather tech data, to technical writers and the Chemical Biological Applications & Risk Reduction Division over in the Directorate of Program Integration, it has been a team effort,” Wallace said.

The group expects to be involved with this project even after the additional HMDSS are fielded, providing logistics support as well as any additional enhancements. Additional partners for the HMDSS include the Letterkenny and Tobyhanna Army Depots. “This was certainly a collaborative effort not only to create the initial product, but also to improve and sustain it in the future,” Wallace said. “I would call this a Division-wide effort, but we have also had help from others within ECBC, several conglomerates and industry partners.”

So far, the HMDSS is already fielded at 17 different locations, including three locations outside of the Continental United States, with the current project to go to 11 others. In addition to creating the physical training detector for the vehicle, the project was taken a step further with the development of an iPad application. The application brings all the same features of driving with the HMDSS to the iPad screen. The user simulates driving a vehicle and receiving alerts of potential threats. From there, the driver must determine a course of action to ensure safety. Additionally, the HMDSS application allows the user to go on virtual route clearance missions, and includes a full user manual for the vehicle. The iPad application enlisted the help of ADM’s Conceptual Modeling and Animation Branch as well as the Electronic Drawing and Development Branch.

The iPad application will include an installation manual as well as simulations that are based on events that could actually happen. The manual allows Warfighters to have something light and easy to carry and refer to for questions while in theater as well as having the ability to do refresher training on their own time on an iPad.

iPad In addition to the HMDSS iPad interactive installation guide the group is also working with Program Executive Office for Simulation, Training, & Instrumentation (PEO STRI) to add the threat detection simulation software to the Virtual Clearance Training System (VCTS), which is an interactive trailer where Warfighters

rotate in to do interactive training. This potential addition could expand the HMDSS training to the surrogate system, and possibly two interactive training systems.

“The fact that we could do more than just create the initial driver trainer mainly with the resources here is a big deal,” Colgan said. “Since 2010, we’ve been able to make several enhancements to the HMDSS, create the iPad app and the VCTS collaboration.”

Wallace said although the original intent was to create a training possibility, having the capabilities within ECBC, allowed the group to explore additional options the project ultimately expanding the purpose.

“We’ve just been fortunate enough to have the means to expand more and more,” Wallace said.

One third of the fabrication was performed at ECBC in the Product Development Facility, all the software for both the HMDSS and the interactive trainings were written in house as well. The new products will help Warfighters get the training they need without the concern of running up a high bill in the process.

“These projects will end up saving the taxpayer a lot of money,” Bryant said. “Also, Warfighters could learn thorough training on this equipment before going into theater, ensuring success on the battlefield.”

U.S. Army Geospatial Center Provides Free Modeling & Simulation Terrain Databases

Jamal B. Beck

May 10, 2012

Army.mil

ALEXANDRIA, Va. – The U.S. Army Geospatial Center (AGC) is now distributing Modeling and Simulation (M&S) terrain databases along with operational geospatial products on its Common Map Background (CMB) website with the goal of providing a single repository for all geospatial products. There are 161 free synthetic terrain databases that support Live, Virtual, & Constructive (L/V/C) simulations used in training, testing and experimentation hosted on CMB. These M&S terrain databases are available in multiple formats suitable for use in Joint Semi-Automated Forces (JSAF), One Semi-Automated Forces (OneSAF), Virtual Battle Space 2 (VBS2) and other Department of Defense simulations. Available terrain databases include selected Army training areas as well as areas of recent Army deployments.

The terrain databases are available for download for free to the Department of Defense users with Common Access Cards at https://agcwfs.agc.army.mil/cmb_online/Default.aspx. CMB’s graphical interface is easy to use and users can select M&S terrain databases using a simple map interface. The site also provides contact information to request new M&S terrain databases. Other M&S terrain database producers who wish to use CMB to redistribute their databases should contact the AGC’s Geospatial Acquisition Support Directorate using the contact information on the site.



German Eurofighter Typhoons in 'Red Flag - Alaska 2012'

June 27, 2012

ASD News

Eight Eurofighter Typhoon aircraft from German Air Force Jagdgeschwader 74 (JG 74) took part in a two week 'Red Flag' exercise in Alaska alongside American, Polish, Japanese and Australian air forces. Eurofighter Typhoons were deployed from their home base in Neuburg, Southern Germany, to Eielson Air Force Base to participate in the internationally renowned exercise.

Red Flag, which lasted from 11th until June 22nd, provided an opportunity for the participating nations to gain invaluable experience in tactical missions, collective defence and conflict management. Fighter Wing JG 74 took part in the exercise in readiness for its assignment to the NATO reaction force this year, assuring the unit has the right level of interoperability and capabilities for such a role.

Marc Grüne, Lt. Col. of Fighter Wing 74, said: "The German Air Force's decision to take part in exercise Red Flag - Alaska offered a great opportunity for Fighter Wing 74 to train, test and improve personal skills and aircraft capabilities. We wanted to see if the Eurofighter is capable of everything we think it is. And the aircraft is definitely capable. The challenging tasks and tough working days have brought the best out of everyone because of the spirit and passion of the people."



Red Flag participants are organised into "Red" aggressor forces and "Blue" coalition forces. The Red force included air-to-air fighters, ground-control intercept, and surface-to-air defence forces to simulate threats posed by potentially hostile nations. These forces employed defensive counter-air tactics directed by ground-control intercept sites. Range threat emitters - electronic devices which send out signals simulating anti-aircraft artillery and surface-to-air missile launches - provide valuable surface-to-air training. The Blue force - of which the JG 74 Eurofighter Typhoons were part - included the full spectrum of U.S. and allied tactical and support units.

During the two-week employment phase of the exercise, the JG 74 Typhoons flew 98 of the planned 102 sorties. Aircrews were subjected to every conceivable combat threat. Scenarios were shaped to meet each exercise's specific training objectives. Typically about 70-90 jets are flying at the same time in one of the two daily so called waves. The exercise has a building block approach, where mission difficulty will increase to a point where up to about eighteen threat aircraft will present a highly capable, modern opponent.

The commander of Fighter Wing 74, Col. Andreas Pfeiffer, said of the exercise: "If you put all of the factors together, this is probably the highest quality training you could possibly get in modern air combat."

The deployment of the eight Neuburg based Eurofighter Typhoons to Eielson Air Force Base set a new milestone in the history of the German Air Force with the 8,000 kilometre, ten hour Atlantic crossing to the Alaskan base, located 42 kilometres south east of Fairbanks. The Eurofighter Typhoons made the trip in groups over two days, supported by two German MRTT A310 tankers and demonstrated again the ease of deployability over long distances.

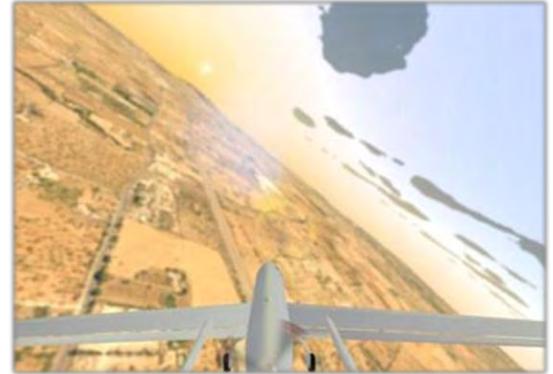
Simlat to Provide Saint Louis University with Turnkey UAS Training System

June 20, 2012

ASD News

Simlat was recently awarded contract to provide Saint Louis University with a full-crew UAS Trainer, the C-STAR, including generic as well as customized simulation to Williams Aerospace's Taurus UAS.

Simlat announces a recently awarded contract to provide a highly advanced UAS training system to Saint Louis University's Center for Aviation Safety Research (CASR). Simlat's full-crew trainer, the C-STAR, includes high-fidelity flight simulation for pilot training, as well as realistic and diverse mission simulation for payload operator training. The C-STAR includes advanced scenario generation tools incorporating Hartech's SSG. The C-STAR's configuration enables both generic and platform-specific training, customized to the Williams Aerospace Taurus UAS.



"We are excited to take part in Saint Louis University's cutting-edge training and research programs that contribute to aviation safety" Says Yuval Peshin, Simlat President.

CAE to Open New Training Centre in Seoul, Korea

June 19, 2012

ASD News

Centre to initially offer training for Boeing 737-800 pilots

CAE today announced that it will open a new training centre in Seoul, Republic of Korea, to train pilots for the Boeing 737-800 aircraft. The CAE Seoul centre will be located near Gimpo International Airport and will be ready for training by Fall 2012.

CAE currently offers training services at 42 locations worldwide for operators of commercial aircraft, business aircraft and civil helicopters.

"CAE has been providing simulation products to airlines in Korea for three decades, and we are pleased to expand our presence with this new training facility focused on the rapidly growing regional carrier market in North East Asia," said Jeff Roberts, CAE Group President, Civil Simulation Products, Training and Services. "CAE's extensive presence in Asia and around the globe, together with our unwavering commitment to quality, assures our customers of the highest fidelity and reliability for their training programs."

CAE Seoul will initially feature a Boeing 737-800 full-flight simulator and Integrated Procedures Trainer. Additional training capability will be added as needed to serve carriers in Korea and Japan.

This will be CAE's second civil aviation training location in Korea and 14th deployed or announced in Asia and Australia. CAE offers third-party training capability in Seoul on an A330 FFS in the Asiana Airlines training centre.

Indra to Present its Army Solutions at Eurosatory

June 10, 2012

ASD News

The company will attend the Paris event as the leader in the development of helicopter simulators for airmobile forces. Satellite communications, electronic defence, air defence systems, and CBRNe solutions complete its range. The company's stand will also show reproductions of its Pelicano and Mantis UAVs.

Indra will attend the Defence and Security international exhibition, Eurosatory 2012, which opens on Monday 11 June, to promote its training systems and showcase its experience in the establishment of simulation centres. Indra will also present its electronic defence, air defence, CBRNe and satellite communications solutions and its Unmanned Aircraft Systems (UAS).

Indra is one of the world's leading manufacturers of simulators and has supplied 200 systems to 51 customers in 19 countries. The company has set up the Spanish Army Airmobile Forces (FAMET) centre for Chinook, Cougar and Tiger helicopter pilots. It has also developed training systems for the most advanced air platforms in the market. It played a leading role in the development of the Eurofighter and A400M military transport aircraft simulators.

Moreover, it has developed the simulators for the Harrier AV-8B II used by American, Italian and Spanish pilots. Indra is currently collaborating with AgustaWestland in the development of simulators for its new AW159 Lynx Wildcat helicopters for the British Ministry of Defence and it is one of the main suppliers of Eurocopter helicopter simulators.

Furthermore, Indra has simulators for the Leopard tank and has also provided the Spanish army with around ten international operations and target shooting practice simulators.

Counteracting Threats

The protection of deployed forces is one of the growing concerns of all armed forces. At Eurosatory, Indra will present its SIMBA self-protection suite for aircraft. This system integrates the ALR-400 radar warning system, a missile launch warning, laser systems detection and Chaff & Flare countermeasure management system. Indra has implemented the ALR-400 radar warning system, as an individual unit and as part of the full SIMBA suite, in platforms such as the F-18, the A400M and the C295 and in helicopters such as the Tiger, the NH90, CH53, the Cougar and the Chinook.

Full information will also be provided about its Anti Aircraft Artillery Semiautomatic Operations Centre, COAAAS. This system is used by the Spanish and New Zealand armies and is distinguished by its capacity for detection and identification, its low probability of intercept, its versatility and operational simplicity, in addition to its mobility and easy transportation.

At the Paris event, the company will also showcase its portfolio of solutions to respond to CBRN and Improvised Explosive Device (IED) threats. The multinational will publicise the Counter-IED forensic laboratory it has developed for the European Defence Agency (EDA). It will also explain its in-situ evidence collection and analysis capacities and its treatment of samples on various levels. Additionally, it will provide information about its light reconnaissance vehicle, which provides monitoring, detection, signalling and sampling capabilities in civil and/or military CBRN scenarios, and its mobile CBRN laboratory.

Indra will also convey its experience in the commissioning of military communications networks and the development of terminals. The company's terminals include the Fly Away, the Satcom On The Move (SOTM) and the one known within the Atlantic Alliance as the At-The-Quick-Halt (ATQH) terminal. It has also developed units adapted to the needs of boats and submarines.

The company has supplied, for example, terminals for the French Syracuse network, and is collaborating with the Spanish and Brazilian armies in the implementation of their respective military communications networks. Indra has also supplied NATO with systems.

Finally, Indra's stand will include a display of reproductions of its unmanned Pelicano helicopter and its Mantis mini-UAV, both of which are fully commissioned. The Pelicano has a flight capacity of 6 hours with a full payload within a 150-km radius, performing intelligence, surveillance and piracy control tasks. Its Mantis Mini-UAV is a system that is easy to transport, assemble and operate and provides the capacity to observe what lies within a 30-km radius.

Systematic and MASA Group Investigate Using NATO's C-BML in C2 Systems Integrated with Constructive Simulations

June 7, 2012

ASD News

The project partners are set to establish a generic methodology to enable Multilateral Interoperability Programme (MIP)-based Command and Control (C2) systems to drive simulation systems using digitised orders and NATO's Coalition Battle Management Language (C-BML).

Systematic's SitaWare Headquarters C2 software will be integrated with MASA SWORD automated, aggregated constructive simulation through a prototype C-BML interface.

This 18-months project involving the Danish Defence, Systematic and MASA Group will assess the current C-BML standard and propose recommendations to NATO's Modelling & Simulation Group 085 for enabling a more powerful integration between C2 systems and simulators.

A basic integration of the two COTS products, SWORD and SitaWare Headquarters, was shown at ITEC in London last month and can be seen during Eurosatory (June 11-15, 2012) at Systematic's stand (Hall 6, stand #C57) and MASA Group's stand (Hall 5, stand #J108). It demonstrates how non-manned units can be commanded in the training scenario and test different courses of action against each other.

SWORD is empowered by a doctrine-compliant intelligent automation that allows the set-up of small to large scale exercises. The units are driven by customizable adaptive behaviours, ensuring maximum realism while requiring less human controllers, now fully focused on the core training job.

The C-BML project will deliver its first demonstrator at I/ITSEC in December 2012 and will have the final demonstrator ready in 2013.

NGC Awarded Regional Joint Intelligence Training Facility Contract

June 10, 2012

ASD News

The Virginia Contracting Activity has awarded Northrop Grumman Corporation (NYSE:NOC) a five-year contract to support the Regional Joint Intelligence Training Facility (RJITF). The RJITF provides training and education opportunities to U.S., NATO and partner nation militaries throughout Europe and Africa.

The \$52 million contract consists of one base year and four one-year options with work performed throughout the United Kingdom, Europe and Africa.

"Northrop Grumman's demonstrated performance in this type of training ensures that our customers receive trusted and affordable results," said Greg Schmidt, vice president and general manager, training solutions division, Northrop Grumman Technical Services. "Our innovative approach to staffing training requirements results in a smooth, quick transition allowing for less down time and higher quality training for service members."

Northrop Grumman has more than a decade of experience working with the RJITF program and will provide full-spectrum training solutions from design and development to live instruction. The team will support various outreach programs and ensure that training opportunities are offered to even the most remotely located forces using the latest technologies available.

"Our reputation is founded on delivering innovative training solutions that meet or exceed our customer's expectations while raising the level of performance," said Dave Cromes, outside of contiguous U.S. operations business manager, Northrop Grumman training solutions division. "We are honored to be selected to support the RJITF both in Europe and on the African continent."

The Airbus A320 Simulator Developed by Indra is now "Flying" in China

June 7, 2012

ASD News

The training system is now operational at the Hainan Airlines pilot training centre, one of the most important in Asia.

The Chinese Aeronautical Authority (CAAC) has certified the simulator as Level D, which recognises maximum accuracy with the actual aircraft

Indra will deliver a second A320 simulator to the airline that will enter into service this year.

Indra has delivered the first of two Airbus A320 simulators purchased by Hainan Airlines. The system is already providing service at the airline's flight training centre in the city of Sanya on the island of Hainan. Indra will supply the second system later this year.



The Indra simulator has entered into service after successfully passing its certification tests with a Level D, which is the maximum for civil simulators. Indra is one of the leading flight simulator manufacturers in the world and the company has already delivered 200 systems in 19 countries for 51 customers.

In April the simulator underwent the CAAC Chinese Aeronautical Authority's tests established by the CCAR60 regulation. The system successfully passed the exam and stood out thanks to its high level of engineering.

The Level D certification guarantees that the simulator reproduces with a maximum accuracy the aircraft's actual behaviour and therefore is suitable for the basic training required to fly a specific aircraft model as well as recurrent or refresher training.

The Hainan Airlines centre is one of the most important in Asia and offers training for the airline's own pilots as well as those from others that include this aircraft in their fleet.

Competing with innovation

Indra has relied on CDTI's support in the development of new technologies included in the A320 simulator. This training system is one of the first on the market that virtually reproduces the communications environment between the pilot and air traffic control centres. It also stands out because of its advanced visual system.

These abilities to innovate and develop proprietary solutions allow Indra to compete globally. In China, the contract signed with Hainan Airlines to develop these two A320 simulators is accompanied by training systems developed for Air China. In addition, in 2011, Indra signed a Letter of Intent with Eurocopter to promote helicopter pilot training in this country. The company is working on developing what will be the first helicopter simulator that will enter into service in China.

Indra is a leader in simulation and has launched training centres for aircraft pilots, air traffic controllers, vehicle drivers and machinery operators, among other solutions. Indra's simulators have covered more than 700,000 of training hours.

Indra in China

Indra has been actively present in China since 1997, and it has had an office in Beijing since 2002 from where it manages its expansion in the Asia-Pacific region. The company has completed projects in China in the areas of air traffic control, simulation, traffic control systems for motorways and tunnels, railway access control and safety systems.

In the transport and traffic market, which has been key in allowing Indra to enter the Chinese market, the company is developing urban traffic control systems for cities such as Guilin and Chongqing.

In the field of air traffic control, it is rolling out the radar surveillance system that will control nearly 60% of China's airspace. It is also implementing the technology that the Xian and Chengdu centres will use to organise the upper airspace of eight Chinese regions, covering an area comparable to Western Europe. It has also rolled out the maritime surveillance system in the Hong Kong region that controls vessel traffic in those waters.

Elbit Presents: New Cyber Simulator

June 5, 2012

ASD News

Elbit Systems announced that it has completed the development of a new cyber security simulator. Elbit Systems' cyber simulator was developed specifically for the training of government, military and critical civilian infrastructure cyber defense agencies, to enable personal and group training of the different users in locating, handling and managing various cyber warfare events and attacks. The simulator also offers training in prevention of cyber warfare events, by simulating network protection scenarios. It includes various network protection scenarios and allows debriefing and evaluation sessions in order to draw conclusions from the trainees' training performance.

Bez halel (Butzi) Machlis, General Manager- Elbit Systems Land and C4I Division, noted that various versions of the cyber simulator have already been supplied to an international customer of Elbit Systems. According to Machlis, Elbit Systems has significantly invested in recent years in the development of new cyber technologies and has been active in the fields of network and system protection, cyber command & control systems, cyber protection of critical civilian infrastructure and the development of special algorithms designed to identify various cyber warfare attacks.

The cyber simulator is but one of the number of products developed based upon Elbit Systems' accumulated know-how and experience in the field. It has attracted much attention from various customers in Israel and abroad, as a result of Elbit Systems' extensive experience in land and airborne training and simulating systems and its technological leadership and achievements in the cyber security field.

CAE to Develop C-130J Simulators and Training Devices for LM and USAF

June 4, 2012

ASD News

CAE (NYSE:CAE)(TSX:CAE) today announced that Lockheed Martin Corporation has awarded the company contracts to design and manufacture four C-130J weapons systems trainers and a range of other C-130J training devices for the U.S. Air Force.

The order was booked in CAE's fourth quarter ending March 31, 2012 and included in the value of military contracts announced by CAE on April 16, 2012.

As part of the C-130J Maintenance and Aircrew Training System Phase II program, prime contractor Lockheed Martin and CAE will design 16 training devices including weapons systems, enhanced integrated cockpit systems, loadmaster fuselage and loadmaster part-task trainers.

CAE will manufacture the simulators and training devices at its Tampa, Fla., USA and Montreal, Canada facilities.

"The C-130J program in the United States is a great example of how the U.S. military is executing its plan to increase synthetic training as part of the overall aircrew training curriculum," said John Lenyo, President and General Manager, CAE USA. "The high-fidelity training devices we produce, including the Level D-equivalent weapons systems trainers, will enable C-130J aircrews to maintain proficiency and readiness at a significantly lower cost."

Lockheed Martin will integrate and deliver the trainers to the U.S. Air Force Air Combat Command, Air Mobility Command and Special Operations Command for C-130J initial qualification and refresher training. The trainers will be delivered by 2016 to Cannon Air Force Base, N.M.; Dyess Air Force Base, Texas; Hurlburt Field, Fla.; Kirtland Air Force Base, N.M.; Moody Air Force Base, Ga.; in the United States and Ramstein Air Base, Germany.

"The technology now available with our training devices offers incredible training flexibility, increased realism and a fully networked system capable of distributed mission operations," said Jim Weitzel, vice president of Training Solutions in Lockheed Martin's Global Training and Logistics business. "The new integrated cockpit systems trainers, for example, allow both aircrew and maintenance training on the same device, offering increased training capability to our customers while adding tremendous value."

Eurocopter's EC135 Simulator Receives FFS Level B Certification

May 31, 2012

ASD News

The EC135 simulator operated by Eurocopter's Training Academy in Germany has obtained Full Flight Simulator (FFS) Level B certification from Luftfahrtbundesamt, the German Aviation Administration. The simulator provides a multitude of training possibilities to international customers and is the first EC135 FFS in Europe to obtain this certification.

The EC135 simulator, located at Eurocopter's site in Donauwörth, became operational at the end of 2009 as a full-motion Level 3 Flight Training Device (FTD). Every year more than 250 pilots from around the world attend courses for a wide array of mission training, and so far, over 2,500 flight hours have been clocked up on the simulator.

The FFS allows operators to perform initial and recurrent type training as well as specific training on emergency procedures, instrument flight rules (IFR), offshore, night flights, night vision goggles (NVG) and Cat A operations. With FFS Level B certification, Eurocopter is now able to administer skill tests and proficiency checks.

“Developing training capabilities is a major step towards fulfilling Eurocopter's commitment to improving overall flight safety. This new Level B certification allows us to complete our training offer in Donauwörth and to better meet our customers' requests for comprehensive and specialized Full Flight Simulator services,” said Charles Hebeka, senior accountable manager of the Training Academy.



To provide a highly realistic representation of EC135 flight operations, the simulator incorporates an extensive EC135 OEM level D data package from Eurocopter and its suppliers – including real software and parts, ensuring full simulated functionality for the helicopter, its engines, autopilot and all other systems. In addition, all of them are tuned, controlled and validated by the company's design office experts, flight test engineers and flight test pilots that contributed to the EC135 helicopter development, as part of the validation process.

Around the world, Eurocopter's 21 training centers provide a complete range of services for civilian and military pilots, technicians and aeronautics experts. Courses offered include ab-initio and recurrent training, type rating and mission training via a variety of flexible training solutions, including web-based training, Computer Aided Instruction (CAI), Virtual Cockpit Procedure Trainers (VCPT), Avionics Trainers (AVT), Flight Training Devices (FTD) and Full Flight Simulators (FFS). As part of its commitment to improve overall fleet safety, Eurocopter is deploying FFS all over the world in close proximity to customers to enhance the quantity, quality and cost-effectiveness of the training solutions available to them. Eurocopter will reach 20 FFS by the end of 2012, where Eurocopter was at 4 by mid-2008.

DND Selects NGRAIN Simulations to Support Maintenance for Counter-IED Vehicles and Devices

May 30, 2012

ASD News

New series of Virtual Task Trainer solutions designed to reduce maintainer skill fade on force protection equipment

NGRAIN®, the leading provider of interactive 3D simulation software and solutions for maintenance training and support, today announced that the Department of National Defence (DND) has selected a series of NGRAIN Virtual Task Trainer™ (VTT™) solutions to enhance maintenance training and operations for Expedient Route Operating Capability (EROC) vehicles and Electronic Counter Measures (ECM) devices. The VTT solutions will enable Canadian Forces personnel to acquire and retain maintenance skills for equipment designed to protect soldiers against the threat of Improvised Explosive Devices (IEDs).

"When I travelled to Afghanistan in 2008 and 2009, I saw firsthand the risk and costs associated with IEDs – the number one cause of casualties among coalition forces deployed in the region. It is crucial to effectively operate and maintain equipment that is designed to neutralize this threat. But fortress-like vehicles and small, intricate devices can be complicated to maintain. By using NGRAIN interactive simulations to visualize complex systems and procedures, members of the Canadian Forces have a cost-effective way to sharpen and retain the maintenance skills they need to use in the field," says Gabe Batstone, Chief Executive Officer, NGRAIN.

The new series of force protection VTTs includes interactive simulations for the following types of EROC vehicles:

The Buffalo Vehicle: This mine-protected clearance vehicle uncovers IEDs and other threats with its extensible crane and large, claw-like "spork". Because the vehicle is designed to maximize protection of its crew, disassembling its various components for maintenance is complex and labour intensive. The Buffalo Power Pack Removal Virtual Task Trainer and the Buffalo Transfer Case Virtual Task Trainer will allow soldiers to better visualize maintenance procedures and ultimately perform critical tasks more quickly. The VTTs will be used in the schoolhouse environment as well as by Combat Engineer units to keep the vehicles in serviceable condition. Both VTT solutions can be used as job aids to ensure soldiers continue following proper procedures while they are deployed.

The Husky: The Husky is a mine detection vehicle equipped with large Ground Penetration Radar (GPR) panels used to locate IEDs hidden by insurgents. The removal and installation of the GPR on the vehicle is a complex procedure that is both difficult to learn and practice. The Husky and the Ground Penetration Radar (GPR) Virtual Task Trainer allows vehicle operators and technicians to acquire the skills required to safely and efficiently remove and install the Husky GPR. Specifically, the VTT will allow for system overviews, animations, and interactive models for exploration, observation and virtual practice. The solution will be used in a classroom by students for practical exercises and as an instructional aid.

DND has also selected NGRAIN's Portable Counter Measures (PCM) Virtual Task Trainer and the Mobile Counter Measures (MCM) Virtual Task Trainer to enhance force protection equipment maintenance. The PCM (worn by soldiers on patrol) and the MCM (a vehicle-mounted device) are jammers that negate radio frequencies used to detonate IEDs. The solutions will be used at the Canadian Forces School of Communications and Electronics (CFSCE), in field units and during deployment to help operators and maintainers better understand the operations and maintenance of the equipment.

This series of force protection Virtual Task Trainer solutions is a part of a recent roster of VTTs acquired by the Canadian Forces. Another recent DND contract awarded to NGRain includes the Air Brakes System Virtual Task Trainer, which will be used by the Canadian Forces School of Administration and Logistics (CFSAL) to train operators on the 31 steps necessary to safely operate an air brakes equipped vehicle.

Motion Picture Virtual Reality Technology to Be Demonstrated as a Public Safety Training System

May 24, 2012

ASD News

VIRTSIM(tm), similar to technology used in "The Avengers," improves how law enforcement agencies train for emergencies

DALLAS, May 24, 2012 /PRNewswire/ -- More than 500 public and private law enforcement and border security officials in the Dallas-Fort Worth area will be on hand to see how virtual reality technology from Raytheon Company (NYSE: RTN) and Motion Reality Inc. improves training methods with a variety of lifelike scenarios.

VIRTSIM™ employs licensed motion-capture technology similar to that used in movies such as "Lord of the Rings," "Avatar" and, most recently, "The Avengers." It is being offered to the law enforcement community as an affordable, 21st century alternative to outdated training practices that do little to replicate real-life situations.

Personnel from federal, state and county agencies, including the Texas Rangers and the U.S. Marshals Service, will attend daylong demonstrations of VIRTSIM June 4-22 at a Raytheon facility in Plano, Texas. This is an invitation-only event.

The system works with reflective markers placed on users' bodies that track their movements along a basketball court-sized "field." Wearing lightweight goggles, participants are completely immersed in a highly realistic virtual scenario, such as a hostage rescue or a variety of other incidents. The goal is to re-create on-the-job, realistic challenges so that officers can be better prepared and equipped to deal with them.

"The same efficiencies that soldiers gain from training with VIRTSIM are readily applied to law enforcement," said Glynn Raymer, vice president of Combat and Sensing Systems for Raytheon's Network Centric Systems business. "We don't have people training with joysticks in their hands, but with realistic weapons in a full, tactical movement environment. They come out sweating and with their hearts pounding."

The VIRTSIM system applies Motion Reality's patented motion capture technology to allow a tactical team of up to 13 individuals to interactively train with complete freedom of motion. Unencumbered by wires or cables in a 360-degree virtual environment, trainees experience realistic sensory feedback as they interact with live people or avatars. The fully immersive technology can also be networked to allow for larger, simultaneous interactions.

Cubic to Introduce High-Fidelity After-Action Review Tools at ITEC Conference

May 22, 2012

ASD News

After-action reviews, or AARs, are an integral part of ground combat training events because they allow exercise participants to thoroughly assess and critique individual and group performance to ensure operational success on the battlefield. Cubic Defense Applications, the defense systems segment of Cubic Corporation (NYSE: CUB), will demonstrate powerful new AAR technologies at the ITEC 2012 conference, 22-24 May at ExCel London on the Royal Victoria Dock.

Cubic will also highlight advanced laser engagement simulation systems for dismounted soldiers and vehicles that make use of commercial wireless technologies in Booth J130 at the conference.

Cubic is a global leader in ground combat training center instrumentation and its systems are used to train thousands of military personnel each year. The company has joined with the U.S. firms Aptima and RhinoCorps and Sweden-based 4C Strategies to combine cutting edge innovation with a state of the art constructive simulation to create a High Fidelity AAR. This “system of systems” solution is a collection of easy to use tablet or laptop-based software tools that make it simple to meta-tag specific performance measures associated with live, virtual and constructive training events. When “tagged “ by the Observer Controller or the constructive simulation, the tools work together to integrate task and behavior based assessments with supporting media to enrich the learning process.

The training assessments incorporate fused data such as replays, video clips, audio clips and written and voice observer controller assessments with supporting graphics of unit and leader locations to create a near-real time High Fidelity AAR.

“The tools we have developed streamline and enrich the AAR process, which results in time savings when preparing exercises and training scenarios as well as conducting small-unit AARs for platoons and squads. They allow trainers to ensure that training is up to the correct standard and to create high fidelity AARs with fewer resources,” said John Lewis, director of Live, Virtual and Constructive Training at the Cubic Innovation and Technology Center in Orlando.

Cubic will also promote its Tactical Vehicle System (TVS), an easy-to-use laser-based combat training system for tactical vehicles. TVS uses advanced wireless devices with embedded laser detectors instead of traditional cables and includes an intuitive iPod Touch system installation feature that significantly improves set-up times. TVS is designed with a modular, open architecture to ensure adaptability to multiple vehicle types.

Cubic’s Wireless Personal Area Network (PAN) is the latest generation of the MILES manworn laser engagement system. Featuring independent, small, lightweight components, it requires no harness and will work with any tactical equipment. Major features include: an industry standard wireless link which replaces the traditional harness, the elimination of cables, connectors and fabrics; and full integration of both fixed Combat Training Centres and deployable training systems. It also features convenient battery recharge and transportation capabilities.

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UAV Flight Training and Simulation Market worth \$451.9m in 2012

May 21, 2012

ASD News

A new analysis indicates that the UAV flight training and simulation market will reach a value of \$451.9m in 2012, as increasing demands for UAVs around the world drives the creation of formalised pilot and sensor operator training and simulation apparatus.

An analyst commented that: 'Growing requirements for UAVs will lead to continued demand for more immersive operator training. This will result in spending on UAV flight training and simulation products and services continuing to grow over the coming decade'.



The report contains 102 tables, charts and figures that quantify and forecast the UAV flight training and simulation market. It provides forecasts for the period 2012-2022 in terms of value (US\$) for the UAV flight training and simulation market. In addition, the report quantifies, analyses and forecasts 15 leading national UAV flight training and simulation markets from 2012-2022 in addition to providing rest of the world figures. The report profiles 20 leading companies operating within the market, and includes interviews with L-3 Link Simulation and Training, a major US technical systems and service provider to both the

public and private sector, CAE Inc, a Canadian company specialising in the provision of modelling, simulation and training, and Israeli Aerospace Industries (IAI) MALAT Division, the UAV division of major Israeli defence and security firm, Israeli Aerospace Industries(IAI), providing expert insight alongside this new analysis.

The UAV Flight Training and Simulation Market 2012-2022 report will be of value to current and future potential investors into the UAV flight training and simulation market, as well as companies and research centres who wish to broaden their knowledge of the market.

The UAV Flight Training and Simulation Market 2012-2022 report is available on May 31st, you can pre order now at ASDReports.com!

CAE Opening New Business Aviation Training Locations in Australia, Brazil, China and Mexico in 2012

May 14, 2012

ASD News

Shanghai Eastern Flight Training Centre announced as Asia location for Gulfstream G450 / G550 training beginning this fall

CAE (NYSE:CAE)(TSX:CAE) announced today on the eve of the European Business Aviation Conference & Exhibition (EBACE) that it will begin training pilots and maintenance technicians this summer for Gulfstream G450 and G550 business aircraft operators in Asia at the Shanghai Eastern Flight Training Centre (SEFTC), located in Shanghai Pudong Waigaoqiao Free Trade Zone. Shanghai is CAE's first business aviation training location in Asia and the eighth in its global network.

CAE recently opened a new training centre in Toluca, Mexico (near Mexico City) and will launch its ninth and 10th business aviation training locations later this year in Sao Paulo, Brazil and Melbourne, Australia. Pilot and maintenance technician training is also delivered in Amsterdam, The Netherlands; Dallas, New York and Phoenix, USA; London, UK; and Dubai, UAE.

"The new locations being rolled out in Mexico City / Toluca, Shanghai, Sao Paulo and Melbourne are all in emerging markets with high business aviation growth. CAE's 10 locations represent the broadest international training network for business aircraft operators," said Jeff Roberts, CAE Group President, Civil Simulation Products, Training and Services. "CAE is committed to delivering the highest-quality training for our global customers in easily accessible regional locations to optimise their pilot and maintenance technician training programs."

In Mexico, CAE began delivering Bombardier Learjet 40/45 and Bell 412 helicopter training at the beginning of 2012. In Sao Paulo, training for Embraer Phenom 100 and 300 pilots and technicians will be available by early fall. And in Melbourne, training will begin by year end for the Hawker Beechcraft King Air 350 with Pro Line 21 avionics.

SEFTC is the training centre for China Eastern Airlines, which was recently approved by the Civil Aviation Administration of China (CAAC) to launch a business aviation company. Shanghai Eastern Flight Training Centre currently operates 11 CAE-built FFSs for Airbus and Boeing aircraft types. In addition to a new CAE 5000 Series full-flight simulator with a third-generation Tropos-6000(TM) visual system, the G450 / G550 pilot and maintenance training programs will feature standard CAE courseware in Mandarin as well as English.

CAE also previously announced it will offer training in Asia for the Bombardier(i) Global 5000, Global Express and Global Express XRS business aircraft in early 2013 at a location to be announced, and training for the Dassault Falcon 7X aircraft at a date to be prescribed by market conditions. Training for the Sikorsky S-76C++ helicopter will also be offered later this year at the Zhuhai Flight Training Centre, a joint venture of China Southern Airlines and CAE which also offers training for Airbus, Boeing and Embraer commercial aircraft types.

CSC Wins Navy Contract for Training Systems Solutions

May 8, 2012

ASD News

The U.S. Naval Air Warfare Center Training Systems Division (NAWCTSD) has awarded CSC (NYSE: CSC) a Multiple Award Contract (MAC). With a base ordering period of five years and two one-year ordering period options, the Training Systems Contract III (TSC III) has a potential ceiling value of \$2 billion. It was awarded in the third quarter of CSC's 2012 fiscal year.

"Every day, we're helping the Navy achieve mission-critical requirements, enhance warfighter readiness, improve citizen services and, most importantly, save lives," said Alan B. Weakley, president of CSC's North American Public Sector Defense Group. "We've been developing and enhancing complex training systems for the Navy and other agencies for decades, and this new vehicle will further expedite our customers' ability to access additional critical offerings."

Under the terms of the contract, CSC will compete for delivery orders to design, develop, produce, test and evaluate, deliver, modify and support training systems.

NGC Awarded Naval Education Training Command Contract

May 7, 2012

ASD News

The U.S. Navy has awarded Northrop Grumman Corporation (NYSE:NOC) a three-year, \$84 million indefinite delivery, indefinite quantity contract to support the Naval Education Training Command (NETC).

"The Navy continues to do exciting things in the training arena, and we are proud to support their training missions," said Greg Schmidt, vice president and general manager, Training Solutions division, Northrop Grumman Technical Services. "Our expanding capabilities, coupled with the Navy's commitment to superior education, make this a tremendous opportunity."

Northrop Grumman will provide planning and assessment, curriculum development, and computer-based modeling and simulation training solutions. The team will also be responsible for providing program management and staff support.

"As one of the leading providers of creative and technology-based training products and services to the military, Northrop Grumman is proud to partner with the Navy as they proceed toward more innovative and technology-based training solutions," said Mike O'Neill, department manager of Navy Training Support for Northrop Grumman's Training Solutions division. "Our passion for education and pioneering approach to training development are critical to providing our sailors with the most effective, affordable and best value training available."

USMC F/A-18 Simulator Hits the Road in Japan

May 4, 2012

ASD News

With the evolution of the virtual-training environment, the Marine Corps recently relocated an F/A-18C Hornet Tactical Operational Flight Trainer (TOFT) to Marine Corps Air Station Iwakuni, Japan.

"The Marines at Iwakuni had only one TOFT, which limited pilots' abilities to hone skills crucial to multiple plane tactics," said Capt. John Feeney, Naval Aviation Training Systems (PMA-205) program manager, whose office oversaw the effort. "With the additional simulator, pilots can link the devices and transition from single plane training to multiple-plane tactical training exercises instantaneously."

The TOFT was originally located at Naval Air Station Atsugi, Japan. Military and civilian personnel from PMA-205 and industry partner L-3 Communications in Arlington, Texas, began dismantling the device Jan. 15. The team packaged and transported the trainer 500 miles away to its new home, completing the process in only 90 days. Both PMA-205 and L-3 were instrumental in the original design and development of the simulator, Feeney said.

"Relocating a simulator is relatively unheard of, especially on international soil," said Lt. Cmdr. Brian Baller, PMA-205 F/A-18 integrated product team lead. "We relied on engineering acumen and logistics specialists to make the move successful. Due to the hard work and dedication of many, Marine pilots can effectively train with their wingman in a virtual arena."



After assembly, the trainer received several hardware upgrades and software updates. One such upgrade was the sensor video-recording system that provides communication access and networking capability with other simulators, making air-to-air and air-to-ground tactical mission training a reality.

The TOFT was designed to support the entire strike-fighter training continuum, to include radar intercept, imagery and warning system operation; weapons delivery; high-speed, anti-radiation missile-system operation; and electronic attack.

“During real-world operations, whether land or sea-based, pilots depend on each other’s performance at all times,” Baller said. “Having both TOFTs together and interoperable, instructors can train aircrew in a wider variety of mission areas. Because of this ability, our pilots are able to maintain high levels of mission readiness.”

HMS Dauntless Impresses in Atlantic Exercise

May 2, 2012

ASD News

HMS Dauntless impressed the members of other navies during a multinational exercise in the Atlantic last week to practise improving security at sea.

Exercise Saharan Express, which took place off the coast of Senegal, saw military personnel from 11 nations, including France, Gambia, Senegal and Morocco, training to deal with people-trafficking, piracy, drug-smuggling and illegal fishing.

HMS Dauntless, in her first operational deployment, was the most modern ship at Saharan Express, dwarfing the patrol vessels used by West African nations to tackle crime off their shores, and she opened her doors to some of the personnel from other countries.

Lieutenant Simon Mendy, from the Gambian Navy, led his boarding team around the quarterdeck and futuristic bridge of the 8,000-tonne Royal Navy ship.

Lieutenant Mendy, from Gambia's capital Banjul, said:

"We've really learned from visiting Dauntless and carrying out boarding work. The ship's crew has been very helpful; this is a rare chance for us to see a warship of this size."

The Type 45 warship, which is taking part in the 'Auriga 12' deployment, was praised by other visiting officers.

French Lieutenant Guillaume Eudeline, from the helicopter carrier Tonnerre (meaning 'thunder'), said:

"It has been a great experience seeing this ship and the technology it has - the radar is very impressive.

"I believe that the French and British navies will work together increasingly closely in the future, which can only be a good thing for both of us."

Dauntless is the size of a cruiser rather than a destroyer, but can still reach speeds of up to 30 knots (56km/h) from a standing start in four times her length.



Source: Ministry of Defence (United Kingdom)

She is the first warship in the world with an entirely electric propulsion system, a design which aims to make her 45 per cent more efficient than the ships she replaces.

Captain William Warrender, Dauntless' Commanding Officer (CO), said the exercise had shown the versatility of the ship:

"We have here a tremendously powerful warship but also one that can fulfil a range of tasks.

"This exercise is exactly what Auriga 12 is about; we are meeting other navies, working with them to improve their capacity to work effectively, and at the same time continuing to learn more about what this class of ship can do."

From Dauntless' CO down to her newest arrival, Able Seaman Ryan Skipper, there is a learning curve.

Able Seaman Skipper, aged 18, from Gosport, is finding his way around the ship after just a few weeks onboard.

He said:

"For the first few days you don't really know where you're going, but it has improved, and people have been nice and helpful.

"I keep getting people explaining that there is a lot more space on this ship than the older ones and I've visited a Type 23 frigate, so I feel pretty lucky to be here."

HMS Dauntless is 152m long and is the second of six Daring Class Type 45 destroyers that are replacing the Type 42 class of ship.

She is also the second Type 45 to go on operational patrols - having left for the Gulf region in January.

LM to Deliver New C-130J Training Technology under \$156 Million Award

May 1, 2012

ASD News

The U.S. Air Force awarded Lockheed Martin [NYSE: LMT] a \$156 million contract to provide new training devices to accommodate the growing pipeline of C-130J aircrews and maintainers.

Lockheed Martin will develop 24 new training devices and provide program management and engineering services under the U.S. Air Force's C-130J Maintenance and Aircrew Training System II, referred to as JMATS II. The devices include weapons systems, enhanced integrated cockpit systems, loadmaster fuselage and loadmaster part-task trainers along with enhanced cargo handling system training aids.

"These new devices will support multiple C-130J communities as they receive their new aircraft," said Col. Peter Eide, Simulators Division Chief for Aeronautical Systems Center at Wright-Patterson Air Force Base, Ohio. "High fidelity simulator systems provide safe, affordable training alternatives that can free up critical C-130J resources to fly airlift missions."

"The technology that is available now offers incredible flexibility, realism and networking capabilities for distributed mission operations," said Jim Weitzel, vice president of training solutions in Lockheed Martin's Global Training and Logistics business. "The new integrated cockpit systems trainers, for example, allow both aircrews and maintainers to train on the same device for the first time. We're able to deliver more capability with unprecedented value."

The U.S. Air Force Air Combat Command, Air Mobility Command and Special Operations Command will use the devices for C-130J initial qualification and refresher training. The trainers will be delivered by 2016 to Cannon Air Force Base, N.M.; Davis-Monthan Air Force Base, Ariz.; Dyess Air Force Base, Texas; Hurlburt Field, Fla.; Kirtland Air Force Base, N.M.; Little Rock Air Force Base, Ark.; Moody Air Force Base, Ga.; and Ramstein Air Base, Germany.

The work will be managed at Lockheed Martin's Marietta, Ga. and Orlando, Fla., businesses.

Lockheed Martin has managed the C-130J Maintenance and Aircrew Training System since 2000 to provide a comprehensive range of training devices and support services, including aircrew and maintenance personnel instruction, program operations and engineering services. In August 2011, the Air Force awarded Lockheed Martin the first phase of the JMATS II program to provide weapons systems training devices.

New Simulator Pushes Afghan Pilots' Capabilities

Tech. Sgt. Jeremy Larlee

438th Air Expeditionary Wing Public Affairs

April 24, 2012

ASD News

Afghan pilots now have a state-of-the-art MI-17 simulator here to hone their aviation skills in a safe environment.

"In 21 years I don't think I have flown in a better simulator. Afghanistan has an extremely challenging environment for helicopters," he said. "The high altitudes in Afghanistan push the performance envelope of the MI-17."

The colonel said the simulator provides a remarkable reproduction of the Afghanistan air space. He said it is important that the aviators are able to practice their craft in a low-risk environment.

Instructors are able to recreate numerous types of challenging weather conditions through the simulator. Aviators are also able to train on night operations using night vision goggles and formation flying. Tacheny said they are also able to practice brownouts during landings which are one of the biggest risks to aviators in Afghanistan. The dusty climate here can cause these dust storms to kick up with no notice and often blind pilots to all of their visual reference points.

These situations have been the cause of a few helicopter crashes in Afghanistan, explained Tacheny, who said being able to practice dealing with a stressful situation in a simulator is invaluable.

"In our history in Afghanistan we have gotten a lot of experience dealing with difficult situations," he said. "We can put before the Afghans those challenging scenarios and not have to worry about hurting personnel and damaging aircraft. We can repeatedly do this to further develop their capabilities."

Tacheny said a certain percentage of the flight deck had to contain original equipment that is in the actual MI-17 helicopters. He said this level of realism will provide positive benefits as well.

"The Afghans are touching the actual controls," he said. "So when they go to fly the aircraft there is not a habit transfer issue because it is the same material."



Afghan air force 1st Lt. Nasrullah Khosti said he has enjoyed his time in the new simulator and he feels it is an important step for his country.

"Every air force has to have simulators," he said. "This helps us fix our problems before we get in the aircraft." He said the training he has gotten from advisors has been crucial to his development as an aviator.

"The advisers are very kind people and they help us a lot," he said "They have motivated us and shown us how to be the best pilots possible for our country."

Afghan air Force 1st Lt. Waheed Sediqe was impressed with his time in the simulator as well. He said it felt just like he was in the helicopter. He is excited to use it help him accomplish his life-long dream.

"I'm very excited to be a pilot for my country, it has been my wish since I was a child," he said. "Every day when I wake up and I put on my uniform I'm proud. Because today is a day I can help my country."



Virtual reality vs. PTSD: Helping combat vets heal

Daniel Terdiman

July 2, 2012

Cnet News

Researchers in the university's Institute for Creative Technologies are using virtual reality systems to help combat post-traumatic stress disorder. CNET Road Trip 2012 stopped by to learn more.

LOS ANGELES--I'm sitting across from a soldier named Garza, trying to get him to open up about why he got caught drinking and driving.

This is a serious offense in the military, and Garza could lose his rank, if not get kicked out of the Army altogether. And it's my job as his superior officer to try to understand that Garza -- who used to be among the best in his unit -- may be struggling with the effects of post-traumatic stress disorder.

This, of course, is a simulation. I'm not in the military, and Garza doesn't even exist. But the idea is very real: training young officers to deal with subordinates who are struggling with undiagnosed issues that might be related to PTSD -- something that has become an epidemic among Iraq and Afghanistan combat veterans.

As part of Road Trip 2012, I've stopped in at the University of California's Institute for Creative Technologies, a series of labs that together create compelling "stories, characters and special effects [and apply] this winning Hollywood formula to benefit service members, students and society at large."

During the course of a whirlwind tour of ICT -- which was founded in 1999 with multiple-year contract from the U.S. Army -- I've gotten a primer in a number of different technologies, many of which either are already, or could soon be, used to help combat veterans or their families handle the growing problem that is PTSD in the military. As has been well chronicled, PTSD is the likely culprit behind an increasing amount of violence, bad behavior, and suicide among veterans. Yet despite a great deal of discussion on the matter, there is still a sense in the military that talking about having PTSD is a sign of weakness. As a result, many service members suffering its effects aren't getting help.

That's where a lot of research is coming into play, and at ICT, much of it is employing virtual reality as a means of developing systems that could eventually inspire veterans to open up about what's plaguing them. At the same time, ICT researchers are also working on technologies that could help those suffering with other serious combat-related maladies, such as traumatic brain injury.

ELITE

The system that tasks young officers with learning how to handle struggling subordinates is called ELITE, or the Emergent Leader Immersion Training Environment. The idea is that new officers may not yet have the trust of their squad, yet must deal with disciplining them when they get in trouble.

ELITE utilizes a virtual human and a system that runs trainees through a series of scenarios where they have to question a subordinate who has gotten in some kind of trouble that may well stem from an undiagnosed case of PTSD. The goal is for the young officers to learn how to steer their charges in the right direction when trouble like this arises. And the system utilizes virtual reality because it's an ideal way for the young leaders to practice scenarios over and over again -- each time trying to get a little better at handling a difficult situation with a level of sensitivity that someone struggling with a serious, but untreated, ailment deserves.

Virtual Iraq/Afghanistan

ICT researcher Skip Rizzo knows that PTSD is a serious problem in the military, and he knows that one of the keys to helping sufferers is to get them to confront the events or issues at the root of the malady.

That's the idea behind Rizzo's Virtual Iraq/Afghanistan system. Designed to be used in conjunction with slow and methodical therapy, the technology gives therapists a way to take combat veterans through actual events. To be sure, there's no way to go back in time, but if the patient is able to open up enough to the therapist about what helped lead to the PTSD, the therapist can use the software to develop a virtual run-through that re-creates -- often with a great deal of specificity -- what happened.

And to make the system even more helpful, Rizzo's team has seeded it with tools that can add certain kinds of triggers -- such as the smell of rotting garbage, burning cordite, or diesel fuel -- that might get the troubled service member to open up.

It might seem that making a combat veteran relive, say, a roadside bombing, or friends getting killed in front of them, is cruel. But in fact, if done properly, and repeated carefully, it can be a key to helping a veteran process what is plaguing him or her, and potentially escape the constant anxiety that comes with PTSD. Rizzo has stats that back up the assertion. Of the first 20 veterans who went through the system, he said, 16 no longer met the definition of having PTSD after the treatment.

Sim Coach

While the combat veterans are the ones struggling most directly with the effects of PTSD -- or in some cases, traumatic brain injury -- their families and friends are right there with them. Families, once a cornerstone of military life, are falling apart at record levels. So researchers at ICT have come up with another system that aims to help loved ones get some of the help they need, all without jeopardizing the veteran's privacy.

One system is called Sim Coach. Utilizing a Web-based virtual human programmed to ask a number of questions that can help loved ones understand how to navigate what's happening to their family.

One key component is that the virtual therapist makes it clear he -- or she -- doesn't represent the military. Instead, he or she is there to act as an advocate for the loved one, and to potentially guide them to more in-depth local assistance. In order to achieve that, the Sim Coach asks a number of questions to try to figure out the right approach for getting help. And ultimately, one powerful result is that these people often start to get used to confiding in someone else about what's happening to them -- even if it's just a virtual character.

Light Stage and Digital Emily

Given that ICT is in Los Angeles, it shouldn't surprise you that there is a fair bit of Hollywood in the lab. That's true nowhere more than in the graphics lab, home to the Light Stage. This full sphere contains dozens of special cameras, as well as a unique LED lighting system that, put together, is capable of creating a facial scan that can give animators or virtual reality programmers access to a virtual face far more realistic than what has come before.

The system has been used in several Hollywood films -- including "Avatar" -- but it is also useful at creating faces that can be used by virtual humans for therapeutic purposes. Researchers have concluded that the more realistic the face is, the more likely a service member will respond as desired, especially when the face is joined by realistic scenario programming.

A showpiece for Light Stage is the Digital Emily project. For this, researchers scanned actress Emily O'Brien and using the special lighting system inside Light Stage, were able to generate 32 specific animated facial expressions of hers. Those expressions, it turns out, are enough to give an animator all they need to make a realistic animated Emily.

Mixed reality lab

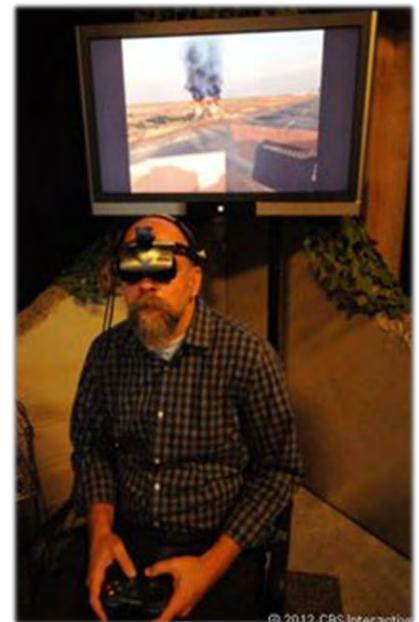
Though not clearly related to helping the military tackle PTSD, the work being done in ICT's Mixed Reality Lab is no less impressive. There, researcher Mark Bolas is working on virtual reality tools that could soon give the military ways to train service members in combat scenarios with higher fidelity than ever before.

The showpiece of this research is a system called Redirected Walking. By putting a head-mounted display on someone, the researchers can then usher that person through what they think is a long walk down a gravel path hundreds of feet long, all the while looking out into a desert scene with a 140-degree view that changes in real time, and with the wearer's movements and turns of his or her head, far more than anything else available, Bolas claimed.

The trick is making the wearer believe they're going into a room and walking around inside looking for something. What really happens is that the wearer returns to the original starting point on the lab's 30-foot-long gravel path. But they don't know that. Instead, they return to what they believe is the same spot on the path that they left to go into the room, and pick right up where they left off. The point is to get service members comfortable with running scenarios with a head-mounted virtual display.

That was very cool, of course: I had definitely never experienced anything like it. But I wanted to know when there were be a version that utilized a more realistic sized set of goggles or the like. Bolas said "I could hug you," and walked me over to a table with some, yes, goggles. Here, he showed me a set of smartphone apps that he and his team designed to approximate the larger work they've done on an every day device. It's not the same, of course, but when I put on my goggles, wrapped around my iPhone, I was inside a virtual space, and wherever I moved my head or my eyes, my view in the virtual room reflected the move.

It was one of the coolest things I've ever seen done with an iPhone. And coming before too long, I'm sure, the real technology Bolas and his team created will be reduced in size from a giant, unwieldy helmet to something as stealthy as a pair of glasses. I can't wait.



*With Virtual Iraq/Afghanistan, combat veterans can gradually relive the events that led to their PTSD, such as experiencing a road-side bombing.
(Credit: Daniel Terdiman/CNET)*

Drone Dogfights by 2015? U.S. Navy Preps for Futuristic Combat

Daniel Terdiman

June 21, 2012

Cnet News

Researchers at the Naval Postgraduate School are trying to figure out how to develop a system that pits two huge teams of autonomous drones against each other. CNET Road Trip 2012 investigates.

MONTEREY, Calif.--Imagine an aerial dogfight of epic proportions: Fifty aircraft on a side, each prowling the sky for advantage over dozens of adversaries.

If Timothy Chung has his way, such a battle could take place over Southern California by 2015. But before you worry that war is coming to American soil, you should know that Chung's vision is really about a high-tech game of Capture the Flag played by as many as a hundred small, lightweight unmanned aerial vehicles playing their role in a grand challenge of an experiment.



Chung is an assistant professor in the Systems Engineering department at the Naval Postgraduate School here, and one of his long-term projects is figuring out ways to help the U.S. military maintain an advantage in a world where aerial drones have dropped so much in price and complexity that there is substantial concern our enemies could soon have the ability to use them as weapons against us in combat.

That's why Chung's Advanced Robotics Systems Engineering Lab -- ARSENL for short -- has been working for some time now on developing a swarm of low-cost, lightweight autonomous flying vehicles known as Aerial Battle Bots (see video below) that are designed to work together against a common foe. That's particularly true, he explained to me when I visited his lab yesterday as part of my CNET Road Trip 2012 project, because there is no reason to think that America's enemies might not also be able to field their own swarm of 50 UAVs.

Already, Chung and his interns and master's students -- have pieced together a small swarm of about a dozen UAVs -- essentially commodity radio-controlled flying machines called Unicorn that have been retrofitted with onboard computers and other gear in order to take their places in the larger group. He hopes that by this August, he and his team will be able to get the vehicles flying and be able to start experimenting with getting them working together, as well as facing off.

And while Chung and his charges are a long way from the Navy's actual battlefields, his role at the Naval Postgraduate School is to immerse his students -- currently a group of nine from departments as diverse as physics, information sciences, operations research, and systems engineering -- in the kind of new technologies that they can eventually use to influence their own commanders or other decision makers.

As Chung puts it, "One of the key challenges [the Navy faces] is having its technology keep up with the pace of progress. The goal is having students be able to anticipate that pace of progress."

More astronauts than any other university

Tucked away in Monterey, on California's gorgeous central coast about two hours south of San Francisco, the Naval Postgraduate School isn't on every military aficionado's radar. But there's some good arguments for why it should be.

For one, the school has graduated more astronauts than any other American university. Each year, it awards about 1,200 degrees, the vast majority of which are master's. Students come from throughout the American military, as well as from dozens of other countries.

Founded as the School of Marine Engineering at the Naval Academy in Annapolis, Md. in 1909, it moved to Monterey in 1949 and opened its doors as the Naval Postgraduate School in 1951. Today, it operates four schools -- The Graduate School of Business and Public Policy; the Graduate School of Engineering and Applied Sciences; the Graduate School of Operational and Information Sciences; and the School of International Graduate Studies. It also runs four research institutes -- The MOVES Institute for Defense Modeling and Simulation; the Wayne E. Meyer Institute of Systems Engineering; the Cebrowski Institute for Innovation and Information Superiority; and the National Security Institute. All work on "military-related priority projects for the Navy and the Department of Defense," according to an official brochure.

Back in Chung's lab, he explained that as he and his students work toward his eventual goal of putting opposing swarms of battling UAVs in the skies, they've realized that though the Unicorns can be launched by hand, it's wouldn't be at all practical to require a team to get 50 of them up in the air that way.

That's because the vehicles have short-lived batteries, and by the time the 50th was airborne, the first would probably already be ready to fall back to Earth.

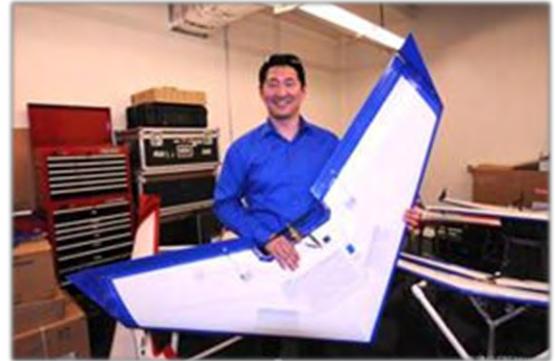
But that's no problem. One of his students, it turns out, has devised a launching mechanism made out of PVC pipe and bungee cords that could be set up in advance and used to quickly get dozens of the UAVs up and flying.

And in fact, he added, even DARPA is grappling with the question of the right ratio of personnel to devices like this. Clearly, it's not efficient to require one person for each UAV, but neither can you ask one person to tackle dozens. Chung has a theory that the best way might be to have one commander running all logistics, and about a dozen people to man all other tasks. But then again, maybe the way to go is to have five people each responsible for ten UAVs. The idea is to find the right balance and see if it is scalable.

So far, though, no one has yet figured out how to apportion resources. Still, by calling them "Battle Bots," Chung hopes he can get a lot of people interested in attacking -- and solving -- these problems. "If you put 'battle' in the title," he grinned, "people get fired up."

Naturally, the school isn't the only one that is addressing problems like these. In fact, Chung imagines that students at the Air Force Institute of Technology are also trying to figure out the best way to develop swarming UAVs and may have altogether different approaches. But rather than work in a vacuum, he envisions eventual duels between his swarms and their swarms that can teach both sides the advantages of each others' algorithms and platforms. That way, they can develop a cooperative library of knowledge.

By 2015, then, he's hoping that all comers will congregate at the California Army National Guard's Camp Roberts in Paso Robles, Calif., a huge facility with closed airspace, for a bracket-style tournament to see whose UAV army is the best. "We can challenge other schools," Chung said, "but what we're really providing is a test bed where people can come and innovate."



Timothy Chung, an assistant professor at the Naval Postgraduate School, envisions pitting dueling armies of up to 50 UAVs against each other.

(Credit: Daniel Terdiman/CNET)



White House Aims to Boost U.S.-Made High-Tech Materials

Daniel Terdiman

May 14, 2012

Cnet News

At a ceremony, the Obama administration, along with dozens of corporate, academic, and research partners, touts the Materials Genome Initiative.

"Made in USA." That's a designation that President Barack Obama and dozens of American companies, universities, and research labs want to apply to a new generation of high-tech materials, the White House said today.

As part of its Materials Genome Initiative, the Obama administration and partners in business, academia, and national labs are pushing the fast and efficient development and utilization of a wide range of new advanced, American-made materials. The goal is to cut the time it takes to discover, develop, and deploy these new materials in half, the White House said.

The theory behind the initiative is that American business needs an influx of new, high-tech materials that can affect fields from auto manufacturing to food packaging to the development of bullet-proof vests for police, but can't afford to wait decades for these innovations to come along, as has often been the case in the past. Instead, action is required by the major stakeholders in the material science development ecosystem to change how things are done, the administration argued.

As part of this overall effort, 60 companies and universities have signed on to promote the Materials Genome Initiative through their various work. At the same time, Lawrence Berkeley, Argonne, and Oak Ridge National Labs have come together to create the new Joint Materials Genome Institute, and Harvard is employing both IBM's World Community Grid and a relationship with Wolfram Research to "openly disclose the properties of 7 million newly discovered molecules."

Also, in a boost to education, Autodesk said it would open up a proprietary library of 8,000 materials to universities, "which will complement their open access education modules in advanced materials."

And finally, 10 federal agencies taking part in the National Nanotechnology Initiative have rolled out what the White House termed a "signature" system meant to "stimulate the development of models, simulation tools, and databases that will enable the prediction of specific characteristics of nanoscale materials."

"Today, it can take 20 years or more for a newly discovered material to be incorporated into commercial products," the White House said in a Materials Genome Initiative fact sheet. "This pace is far too slow given the range of urgent challenges that high-tech materials can help address, including making vehicles safer and lighter; creating packaging that keeps food fresher and more nutritious; and producing lightweight, bullet-proof vests for law enforcement officers and soldiers. New materials are also a major part of the American manufacturing enterprise -- a central feature of the Nation's economy that generates innovation, opportunities, and jobs."

Clearly, the administration is hoping that an effort like this will be seen as a sincere attempt at drumming up new American business and employment, something it obviously needs more of during a presidential election that will almost certainly be decided on the electorate's perception of the state of the economy and the Obama's record of job creation.

Pentagon Eyes Augmented Reality Displays

DARPA orders prototypes of Innovega's iOptik displays that use special contact lenses so a person can focus both on images shown on the lenses and far-away objects for augmented reality.

Martin LaMonica

April 13, 2012

Cnet News

Startup Innovega will supply augmented-reality contact lenses and glasses to DARPA.

The Defense Department has reportedly ordered augmented-reality displays from startup Innovega, only a week after Google disclosed its own augmented-reality project.

Bellevue, Wash.-based Innovega has signed a contract to supply the Defense Advanced Research Projects Agency (DARPA) with a prototype of its iOptik spectacles and accompanying contact lenses, Innovega's CEO Steve Willey told the BBC. The augmented-reality system could improve the awareness of soldiers in the field, he said.

The contact lenses have a filter that allows a person to focus on images at a very close distance and focus on far-away objects at the same time. That means people can see both images projected on the inside of the spectacle's lenses and whatever is in front of them. The contact lens-based system also provides a wider field of view than other heads-up displays, according to Innovega.

The augmented-reality system could be used for immersive games or to have mobile 3-D television, since it could show two separate images on both lenses.

In the military, it could be used for simulation and training, covert operations, or to perhaps show images from remote drones to a soldier in the field.

The company's business plan is to license its technology to different display and contact lens manufacturers, Chief Technology Officer Randall Sprague said at CES last year.

DARPA didn't immediately respond to a request for comment.

Google's Project Glass, a set of augmented-reality glasses, caused a stir last week when the company showed designs for the wrap-around glasses equipped with a small lens for displaying images. A demonstration video showed a person wearing the lenses to use location-based services and communicate with friends, but pundits expect it to take a couple of years before any product would be released.

Innovega's lenses are going through the FDA approval process, but Willey told the BBC that he expected the technology will be available by the end of 2014.



Training Hercules: The USA's JMATS Contracts

May 6, 2012

Defense Industry Daily

One of the most important components of Lockheed Martin's C-130J medium transport planes never leaves the ground. The best equipment is useless if people aren't trained to operate and maintain it, which is why the MATS (Maintenance and Aircrew Training System) set of trainers and simulators are so essential. When the Pentagon assesses "operational suitability" for an aircraft, a strong training structure is one of the things they look for.



MATS complements the existing ATS system for previous-generation C-130s, and provides a comprehensive range of training devices and training support services to aircrews. The USA's JMATS contracts include aircrew instruction, operations, contractor logistics support and engineering services.

C-130J MATS

C-130J MATS features classroom learning, as well as advanced simulation technology including an electronic motion platform, improved simulator displays, and distributed mission operations networking that allows aircrews to train with remote and virtual participants. The training extends to all aspects of the plane's operation, including loadmaster fuselage trainers, loadmaster part-task trainers, and enhanced cargo handling system training aids.

The C-130J schoolhouse at Little Rock AFB, AR, is the USAF's Formal Training Unit (FTU) for C-130J aircrew and maintenance personnel. Graduates of the FTU are mission-qualified, and can report immediately to operational units in the Air Mobility Command (AMC), Air Force Reserve Command (AFRC), and Air National Guard (ANG). C-130J MATS is supported by the Main Operating Base (MOB) at Keesler AFB, MS, where C-130J continuation and refresher training is provided for all US military C-130J aircrews.

A full Training Systems Support Center (TSSC) provides operations and maintenance (O&M), revision and maintenance (R&M) engineering tasks, a security program, a student publications library and learning center operation training.

The C-130J MATS program also provides full training systems for US Special Forces HC/MC-130Js, and the US Marines' KC-130J cargo & aerial refueling planes, including one year of interim Contractor Logistics Support (CLS) for each delivered trainer.

C-130J training support for international customers is handled outside of the JMATS framework, which is USA-only.

Lockheed Martin Simulator, Training and Support in Orlando, FL is the lead contractor for MATS/JMATS contracts, but there's also an industrial team behind them. Major sub-contractors include:

CAE USA in Tampa, FL worked with Lockheed Martin to design the MATS simulators etc., and then CAE, Inc. in Montreal, Canada performs the initial assembly.

FlightSafety International provides their Vital X visual systems.

QinetiQ produces the training debrief systems.

Rockwell Collins provides some visual components and simulated parts.

All devices are shipped to the USA, and Lockheed Martin integrates and tests the training devices before delivering them to the U.S. government. Some are integrated at the firm's Global Training and Logistics division in Orlando, FL, while others may be integrated at the air base they're being delivered to.

DefenseNews

Budget Cuts Force U.S. Army to Use 'Low Overhead' Alternatives

Michael Peck

June 13, 2012

Defense News

The Warfighters' Simulation trains and provides mission-rehearsal capabilities for military commanders and their staffs. Even sims are facing budget as the U.S. Army makes drastic changes in how it trains soldiers. (Lockheed Martin)

Simulations are supposed to be the cheaper alternative to live training. But even sims won't be spared the budget ax as funding cuts force drastic changes in how the U.S. Army trains commanders and staffs.

Army simulations managers aren't thrilled with the changes but say lack of money leaves them no choice.

"We are telling commanders that this is not necessarily a better way to train, but it is more affordable," said Col. Tony Krogh, head of the National Simulations Center (NSC) at Fort Leavenworth, Kan.

For example, the Army has slashed the number of technicians who run simulations at the mission training complexes (MTCs) at numerous installations. Krogh estimates that the total number of support personnel has been reduced by one-third.

Combined Arms Center-Training (CAC-T), which includes the NSC, declined to provide figures on the number of simulation technicians or changes in funding levels on the grounds that they had not been cleared by Army leadership.

"A large number of camps, posts and stations have a resident simulation technical staff in their mission training complexes. And that has just become more and more unaffordable to maintain that level of manpower," said Mike Black, Training and Doctrine Command's capability manager for constructive training environments.

In particular, the technicians who run the computer systems at home stations "are some of the most expensive contractors we have," Krogh said. Moreover, he said, "In many places, especially in lower-density areas, they were not necessarily used the whole year."

But those simulation technicians are key to the Joint Land Component Constructive Training Capability (JLCCTC), the Army's system of constructive simulations. Without those specialists on the job, staffs can't run JLCCTC simulations at their home stations.



MATS WST for SOCOM HC/MC-130J

“The key issue with manpower at the mission training complexes is the trade-off between having expensive simulation technicians versus having less expensive — but very important — trainers in the MTCs,” said Lt. Col. Jeff Allen, a spokesman for the Combined Arms Center.

Two-tier Training

So the Army is switching to a bifurcated system tied to the standard crawl-walk-run training model. For the crawl and walk stages for basic staff training, units will use a new suite of simple simulations, called ALOTT (Army Low Overhead Training Toolkit), which will be located at their home stations.

When staffs progress to the “run” stage — more advanced training that requires more sophisticated simulations such as Warsim — those exercises won’t be run at home station. Instead, the simulations will be hosted by newly designated regional simulation centers. Users will connect remotely over a new Global Simulation Capability network, which is scheduled for initial operational capability in mid-2013.

“ALOTT capabilities are adequate for basic command-staff team-building and training in the Military Decision Making Process,” Black said. “But as the command-staff team becomes more skilled and sophisticated, they will find ALOTT insufficient for many of their desired training conditions and will coordinate for GSC support, employing the JLCCTC, to obtain more realistic, stressful training.”

There will be three regional simulation centers. For the continental United States, it will be Fort Leavenworth. There will also be two overseas facilities that are redesignations of existing simulation centers: the Joint Multinational Simulation Center at Grafenwoehr, Germany, for the European region, and Korea Battle Simulation Center, at Yongsan, South Korea, for Pacific Command.

The regional centers will be augmented by “hubs” at major bases such as Fort Hood, Texas, and Fort Bragg, N.C., which will provide additional simulation support.

“The money saved by consolidating the simulations and technicians at the regional simulation centers and hubs will be used to provide valuable trainers and training developers at the MTCs, while keeping a minimal number of technicians to maintain the servers,” Allen said.

The goal is to prepare Army constructive simulations for the next decade. “The constructive environment will change by 2020 because we know we will need to distribute the simulation from schoolhouses to home station to the CTC [combat training centers],” Krogh said. “They will need to provide the operational environment ‘wrap around’ for most of the training the Army conducts in 2020.”

There are 17 JLCCTC suites, six for division-and-above training and 11 for brigade-and-below. The heart of JLCCTC is Warsim, the Army’s \$300 million constructive simulation, which is designed for distributed operations.

Distributed simulations over a global network is a powerful capability, and one that is inevitable given advances in networking and live-virtual-constructive training where exercise participants can be continents apart.

“Digits don’t know distance,” Krogh is fond of saying. He pointed to a May exercise where the Korean simulation center will support an exercise at Fort Hood. It is a sign of things to come when an overseas simulation center runs simulations for a stateside unit.

Yet it’s the remote simulation part that’s certain to upset commanders and staffs accustomed to scheduling their own exercises at their own convenience and using their local facilities and personnel to run them.

“We are going to have to centrally scheduled exercises, whereas before, when I was at Fort Hood or Drum, I would be managing all the assets on my post,” Krogh said. “With the new approach, we are relying on FORSCOM [Forces Command] to set the priority for that support.”

Centralized scheduling is also necessary to allow overseas simulation centers to continue their dual role of supporting training in the continental U.S. without affecting training for their respective theater commands.

It takes six to eight months to develop a database for a brigade-level exercise. Users accustomed to tailoring their own exercises will be forced to use generic databases while JLCCTC and Warsim accumulate enough data to create more geospecific scenarios. “Using generic, non-unit-specific databases requires much less time and labor to prepare, which allows the support of a far greater number of exercises per year,” said Col. Chris Ballard, chief of the Global Simulation Capability division at the NSC.

The Army is considering several fixes, including easing fidelity requirements for generic databases and developing faster database development tools for Warsim.

Lower-End ALOTT

If there’s a sort of consolation prize for users, it’s ALOTT. “We can’t totally strip them of the ability to do localized home station training,” Black said. “So ALOTT is what is going to be provided to them for at least the lower end of training.”

ALOTT is a suite of four simulations for home station training. They are fairly simple, can run on a single computer, and can simulate or stimulate more than a dozen of the Army’s potpourri of battle command systems, such as Maneuver Control System, Command Post of the Future, and Force XXI Battle Command Brigade and Below (FBCB2). ALOTT can work the front end of simulation by creating exercises and the back end by providing capabilities such as after-action review. It is expected to reach initial deployment in 12 to 18 months.

ALOTT is centered on six “use cases” across the spectrum of military operations. The Helix simulation is for staff exercises in Use Case 1 (brigade-and-higher major combat operations), Case 2 (battalion-and-below major combat operations) and Case 3 (brigade-and-higher stability and civil support). DXTRS (Division Exercise Training and Readiness System) is for Case 4: individuals and small groups conducting schoolhouse or division-and-below training in major combat operations. UrbanSim is for Case 5: battalion-and-above stability and civil support. The Metis simulation is for Case 6: battalion-and-below training in attacking enemy IED networks.

The ALOTT simulations were chosen partly because the government has control over them, Black said.

“Some things we looked at had baggage like licensing fees or they would not give up the source code,” he said. “We did not want to be tied to a particular vendor or provider. Even a government provider can sometimes be problematic if they are not willing to give you the source code. We wanted things we could freely own so we could make decisions, try to continue to evolve a particular set of software, or simply throw it out and go to something new.”

An important feature of ALOTT is that it lets home station users practice on their real mission command systems.

“That’s what’s been missing,” Krogh said. “One of the most perishable skills we have in the Army is mission command systems, because they don’t sit on our desks. We don’t use them every day. It allows them to pull their mission command systems out of the conex [container], bring them into the classroom, and train with them using ALOTT.”

ALOTT is designed to be used by non-geeks. But computer experts will still be needed to run the large-scale simulations at the regional simulation centers, and there will still be a need for “pucksters” to control computer-generated forces because the simulation’s artificial intelligence isn’t smart enough to send a column of tanks across a bridge without a traffic jam.

“No sim provider wants to stand in front of a commanding general and say, ‘Sir, your attack failed because automated unit X decided to turn left rather than right,’” Black said.

One pitfall of distributed training is that it is only as good as its network connectivity. GSC will use the Joint Training and Experimentation Network (JTEN).

“Right now, from our initial look, it looks like there is plenty of bandwidth for us to push our sims,” said Krogh. But JTEN is downsizing, so the National Simulations Center is working with Network Technology Command to explore connectivity via the classified SIPRNet and non-secure NIPRNet networks. But thanks to the movie “WarGames,” there is a bit of apprehension about using the Pentagon’s regular operational networks for simulated exercises.

“There is really no policy, regulation or law that prohibits us from doing this,” Krogh said. “It really goes back to the 1980s and the movie ‘WarGames,’ where they were concerned about a computer starting thermonuclear war. There has always been this constant fear of simulation data running on our standard command and control network.”

Because of how much money the government has invested, Krogh doesn’t expect existing home station simulation centers to close. Instead of focusing on higher-level constructive exercises, they will likely spend time on tasks such as using training games or practicing using their mission command systems.

Some people expect a rocky ride. Two Army simulations experts contacted by TSJ said the matter was too politically sensitive for them to comment.

“What they [local users] would like to have is to keep what they have right now,” Black said. “They will tell you they want the maximum amount of local flexibility to meet their local demand. You can’t help but sympathize with that argument.”

NATO Uses Games to Promote Civil-Military Understanding

*Michael Peck
June 19, 2012
Defense News*

In the Village Survey simulation, a player assumes the role of either a soldier or civilian who is part of a NATO joint military-civilian assessment team sent to an Afghan village. (Engineering and Computer Simulations)

When it comes to modeling and simulation, NATO members such as the U.S. and Britain tend to get the lion’s share of attention. But the alliance as a whole is also pursuing its own M&S efforts.

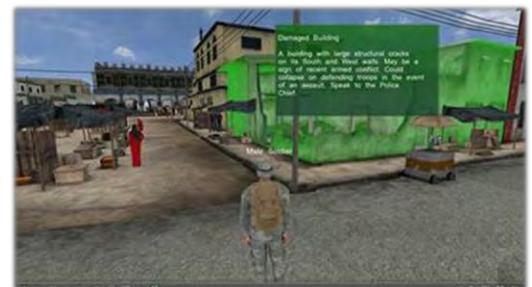
One project that has borne fruit is a computer game to teach boarding parties how to board vessels. In the works now is a virtual world that trains soldiers and civilians to understand each other’s points of view during civil support operations.

The boarding game, called “Boarders Ahoy!” is a first-person-perspective game that is being used by the NATO Maritime Interdiction and Operational Training Center. Players learn proper boarding procedures as they inspect various ships that may or may not be carrying contraband, and whose crews may or may not be cooperative.

“Boarders Ahoy!” won the People’s Choice award for serious games at the 2010 I/ITSEC conference. Originally designed for the PC, it is now available for Android smartphones.

The PC version uses the Nexus virtual world from Engineering and Computer Simulations (ECS), Orlando, Fla. The Android version, downloadable as an app, uses the VBSWorlds mobile platform from Bohemia Interactive.

In “Boarders Ahoy!” players are confronted by the challenge of examining a cargo vessel with lots of nooks and crannies, and hundreds of crates that may contain weapons of mass destruction and other contraband. In



addition to teaching boarding parties about the physical difficulties of searching a ship, the game teaches diplomatic skills in dealing with ship crews who, even if innocent, may not be pleased about being boarded.

From the waters of the Mediterranean or the Horn of Africa, NATO is moving to the mountains of Afghanistan in “Village Survey,” a virtual world designed to foster cooperation and understanding between NATO military and civilian personnel in assessing Afghan villages, as well as questioning the villagers.

“When we work operations now, which is a military and civilian mix in many circumstances, there tends to be friction between the military and civilian sides,” said Wayne Buck, a modeling and simulation analyst for NATO Allied Command Transformation (ACT), which focuses on long-range improvements to the organization’s capabilities.

“ACT has been doing a lot of work on the civilian-military interaction,” said Buck, who is based in Norfolk, Va. “We built a beta version of a virtual world where you, as a soldier, go into a village and survey it. You ask what’s happening, complete your checklist, and so on. When you are in there and in the military mode, every animate and inanimate object you interact with treats you as if you were military.”

But a military player can click a button so that the villagers treat him as a civilian (and vice versa for civilians who want to see how villagers treat a NATO soldier) and offer different responses.

“You can toggle a switch, and now everybody treats you as if you were a civilian,” Buck said. “If you see rubble along the road, you’ll think there’s a sanitation problem in the village instead of an IED.”

Role-playing

TSJ had a chance to sit down with an alpha version of “Village Survey.” Players can assume the role of a NATO soldier or a civilian from a nongovernmental organization (NGO), private voluntary organization, or the United Nations. They are part of a NATO joint military-civilian assessment team sent to an Afghan village.

The background situation is as follows: There has been an earthquake in a neighboring region, there is a horde of refugees on their way to the village, and it is up to the joint assessment team to determine how well the village can absorb them and complete an assessment form.

The background briefings make clear that the soldiers and civilians may be on the same team, but they don’t have the same goals. Civilian players are told that they must determine if there is sufficient food, water, transportation and electricity for the refugees, and the impact of a flood of newcomers on the village.

The briefing for military players tasks them with determining the current threat level at the village, and whether the refugees pose a threat to village security.

The Afghan village comes completely furnished with a mosque, NGO camp, market, main road, police headquarters, water wells, and the obligatory checkpoint and village guards.

The game begins with the player in the street of an Afghan village. The player (who could be a he or a she — an important feature in an Afghanistan simulation) clicks on a villager and picks from a menu of questions, which for a military character include, “What can you tell me about the crime and security here?” and “other than the two gates, are there any other ways to get into the village?” In the alpha version, the villagers offer answers such as, “I feel very safe in this village. We protect our gates and allow only good people to come in.”

As the player’s avatar walks through the village streets, pop-up screens offer information, such as one stating that the village is a sanctuary that cannot be entered, but has been known to hide weapons in the past.

“Village Survey” currently can accommodate 14 or more military and civilian players. It uses the Nexus virtual world also found in the PC version of “Borders Ahoy!” though it might be ported to VBSWorlds.

Player assessment and scoring will be added later, and “Village Survey” can be linked to a learning management system, said Matt Spruill, chief technologist of ECS. Other features to be added include non-player characters who walk around for extra realism.

“Village Survey” was built as a proof of concept to test whether it is possible to have a civilian view a situation through a soldier’s eyes, and vice versa.

The goal was “to determine if there was value in the idea of gaining insights while the objects around you responded as if you were someone else,” Buck said. “While the accuracy of those responses is important, in this version, they are not as critical as testing the hypothesis. If the idea is accepted, the answers will be refined through working with subject matter experts.”

“Village Survey” was designed with the help of former NGO workers at NATO’s Civil-Military Fusion Center, “who are big fans of the concept,” Buck said. “The CFC maintains a working relationship with the U.N. and several NGOs, and they are keen to share this idea.”

Buck estimated the cost of developing “Village Survey” at about \$100,000.

Command Decisions

Buck also is working on a project to examine whether games can teach commanders to make better decisions.

“We recognized a gap in our training,” he said. “At the operational and higher levels, we don’t train commanders very well. We don’t put them under a lot of stress. We put their staffs under a lot of stress.”

The study, called “Strategic Decision Making Training through Serious Games,” is being conducted by Headquarters Supreme Allied Commander Transformation, the University of Genoa, and the NATO Modeling and Simulation Center of Excellence.

Erdal Cayirci, head of the CAX (Computer-Assisted Exercise) Support Branch at NATO’s Joint Warfare Center in Stavanger, Norway, points to several NATO M&S initiatives underway, such as inter-cloud computing among multiple clouds. Another interesting angle is modeling how cyber attacks affect human behavior.

“Headquarters and commanders should continue making rational decisions even under cyber attacks,” Cayirci said. “We modeled human behavior effects of cyber attacks to analyze this issue. Trust in available information and information systems seems a very important parameter. We try to simulate similar effects.”

Games and virtual worlds may turn out to be important tools for NATO, which finds itself dealing with a smorgasbord of new member states with rusty militaries and small defense budgets, even as NATO’s budget is itself limited.

“NATO has no money to bring to the table,” said Paul Thurkettle, an education and training technologies specialist. “But what we do have is the ability to bring nations like the U.S. and U.K. that have spent millions on serious games and virtual worlds, and bring them to the likes of Albania, Croatia and those other new nations. And say, ‘Here is some of this research, guys, and here’s capability.’ It’s sharing ideas and technology.”

Experts Hopeful Budget Cuts Will Only Graze Sim Industry

*Lauren Biron
May 25, 2012
Defense News*

LONDON — “The simulation industry will be a survivor,” said Tom Baptiste, president of the National Center for Simulation and a retired U.S. Air Force lieutenant general. “What’s the alternative?”

Despite defense cuts worth billions of dollars by the U.S. and other countries, leaders in both industry and the military were confident that these cuts would drive more spending on simulations, as well as acceptance that these can prepare troops as effectively as live training.

One example was how many forces must complete simulations before they can participate in live-fire training, where they either take up valuable time on weapons and vehicles or use up expensive ammunition. Dennis Thompson, a retired U.S. Marine colonel who is now deputy director of the training and education capabilities division of the training and education command, suggested that Marines go through a similar rifle simulation exercise before they ever start firing live rounds for even the most basic elements, such as marksmanship training.

“That’s the culture change we brought up,” Thompson said.

Many members of the military still believe that one can only train through warm hands on cold steel, though a generation of digital natives is increasingly capable of using simulations to learn.

Baptiste said that smaller budgets will put pressure on ways to train the warfighter at home station, but it would be hard to cut the same percentage from modeling and simulation as from the top line of the defense budget.

“You don’t get a pass from the American people ... to allow readiness to slide” because of budget cuts, Baptiste said. Simulation, regarded widely as a cheaper yet effective alternative to live training, will be forced to step in and make up the deficit.

Despite the move toward more simulation that Baptiste and Thompson are predicting, both admitted that simulation was likely to see some reduction or consolidation. Baptiste noted that big companies might get excited about smaller value contracts as the military attempts to scale back. But he also saw possible benefits.

It’s a “potential opportunity for small companies” that are specialized and can compete to deliver what the military needs, he said. “All in all, I’m optimistic.”

The robust turnout at this year’s ITEC — 73 senior officers attended — bodes well for the simulation industry, with members of the military praising the benefits of and need for simulation.

Army Wants Quick Virtual Terrain

*Michael Peck
May 22, 2012
Defense News*

With so much hard labor needed to create virtual terrain for simulations, the U.S. Army is hoping that someone can come up with a quickie terrain generator for its land-attack missile simulations. Though simulations are often billed as a fast and low-cost method of training and mission planning, generating the underlying terrain

models is a process built upon brute-force computing and copious amounts of human sweat, which eats up time and dollars.

The Small Business Innovation Research project, titled “Rapid Scene Creation for Multispectral Terrain Signature Models and Simulations,” calls for an automated technique or system that can quickly create earthen background terrain databases for integration into missile flight simulations.

Quick, high-fidelity terrain generation could also help with mission planning, unmanned aircraft approach routing, and civilian applications such as natural resource monitoring and border control. Scene sizes range from 0.5-by-0.5 kilometers to 10-by-10 kilometers, with terrain characterized by topography, features such as trees and roads, and EO/IR characteristics.

However, the Army faces a tough challenge, said Nick Giannis, vice president of research and technology for Presagis, makers of the Terra Vista terrain software.

“The difficulty lies in the fact that they are trying to simulate infrared and optical sensors like FLIR [forward looking infrared] and NVG [night vision goggles], and to do this properly, you need to know the kind of material the terrain is made of, not just how it looks,” Giannis said.

When using those types of sensors, the way the scene appears depends on the material, which reflects light or stores heat in different ways.

“For example, in order to properly simulate the appearance of a road crossing the desert as seen through the eyes of a helicopter pilot using FLIR, the simulated terrain must store the fact that the road is made of tar and the desert is made of sand,” Giannis said. “It’s not enough to have it look right using the naked eye.”

Automating this process will be a particular hurdle, he said.

“Having computers recognize roads automatically is hard enough. Adding the complexity of being able to tell what material that road is made of is even more difficult.”

ITEC Keeps Focus on ‘Leading Edge’ Tech

Lauren Biron
May 31, 2012
Defense News

“Quality, not quantity,” could be ITEC organizers’ new motto. The number of visitors to Europe’s largest training and simulation technologies conference was “broadly similar to last year,” according to spokeswoman Georgia Langdon, though “the quality threshold has greatly improved, with more engagement with senior and influential leaders.”

Overall, some 3,000 visitors to London filed through the hall of 140 exhibitors, of which nearly a third were first-timers at ITEC. There were 55 VIPs in attendance, up 22 percent from last year.

“One positive surprise was the attendance by senior officers and members of defense,” said retired Rear Adm. Fred Lewis, head of the National Training and Simulation Association. “Their attendance was key to the realization that there are going to be great demands for simulation and training kinds of technology and equipment. So that’s good news.”

Themes from the show included training in a climate of change, cybersecurity, interoperability and recovery from war. Lewis said he was pleased to see cyber training emphasized during a special two-day workshop.

“Cyber training is an area where we have recognized that we are severely deficient in the U.S.,” he said. “The more we talk about it at forums like ITEC, the more we pay attention to it, the more we’ll get folks into the workforce for it as a career.”

The Simulation Interoperability Standards Organization also held a workshop to encourage sharing and reuse of simulation technology. As agencies and military branches attempt to cut costs, technological interoperability will likely become more important and sought after.

“Seeing these standards organizations aligning themselves with ITEC after so many years, I think that’s a really good sign of people trying to partner more, rather than doing things independently,” Lewis said. “More collaboration is better in order to move the state of the art forward.”

Overall, Lewis said he thought ITEC 2012 was one of the best in the last five years, partially because the technology demonstrated was “leading edge.”

Visitors will expect more cutting-edge technology at ITEC 2013, which will be held in Rome on May 22-24. Langdon said advance confirmations for those attending next year indicate a sense of optimism in the industry.

San Diego Island to Become ‘Battle Lab’

*Lauren Biron
June 27, 2012
Defense News*

Hosting a five-day conference about counter-terrorism training? Why not take over a private 44-acre island in Mission Bay, San Diego, and blow parts of it up?

The HALO Corp., which is hosting its sixth annual Counter-Terrorism Summit at the end of October, announced June 27 that it plans to do just that to Paradise Point Resort & Spa — though the explosions will be simulated.

Strategic Operations, which has trained hundreds of thousands of service members with immersive scenarios and “hyper-realistic” training, will help conduct tactical training exercises on the island. This should include a recreated Middle Eastern village, battlefield effects, combat wounds and medical simulations. Participants can also expect a simulated Somali pirate invasion to grace the resort’s shores.

To maximize involvement, there will also be observation areas around the island and large monitors showing the action. Unmanned aerial vehicles are likely to be floating overhead as well.

The summit will have the typical conference staples, such as keynote speakers (Mexico’s secretary of the interior, the commanding officer of the Los Angeles Police Department, and retired U.S. Air Force Gen. Michael Hayden, who served as director of the National Security Agency and the Central Intelligence Agency) and classes (30 courses “ranging from border and maritime security to cyber terrorism and modern warfare,” according to a release).

The conference aims to attract homeland security, military and law enforcement personnel who can network and teach one another. It runs from Oct. 28 to Nov. 2.

Hemostatic Simulator Makes Training a Little Bloodier

*Lauren Biron
May 24, 2012
Defense News*

LONDON — Kforce Government Systems has begun taking orders for the new hemostatic patient simulator developed with the Army Research Laboratory's Simulation and Training Technology Center. The trainer allow soldiers to practice treating deep wounds, something the mannequins could not previously provide.

"It's filling a gap in the training," said Carolyn Hollander, vice president of KGS.

She said that the military requested such a trainer about a year ago.

The mannequin requires realistic pressure to stop bleeding, can simulate wounds caused by improvised explosive devices and can thrash around via signals from a remote control.

The hemostatic agent trainer will be announced formally on the company's website next week and can be ordered now, though it will begin shipping in late September or early October. It will join the ranks of many other bloody parts used for military and clinical training.

On display at the ITEC exhibition here was KGS's MATT, the Multiple Amputation Trauma Trainer that has kicking, blood-spurting legs in need of tourniquets, self-sealing skin that can be repeatedly punctured with needles to teach lung reinflation, and a replaceable throat segment that can be used to train for tracheotomies.

There are a variety of options for the trainers, such as different faces that respond to body sensors and degrade from healthy-looking pasty, changeable torsos that allow for chest compressions during CPR practice, and fake blood that doesn't stain and can simulate clotting.

Hundreds of the trainers have been fielded since the program launched. The overall system is known as TraumaFX, while MATT technically only describes the lower part of the trainer — something that can be traded out for a single leg amputee or crushed leg trainer or the new hemostatic patient simulator. The upper body can be traded from a normal chest to an abdominal evisceration version.

"They're swappable," said Hollander, describing the mixing and matching capabilities. "They're like Garanimals," the mix-and-match children's clothing.

The trainers are designed to be rugged. The MATT on display had been in the field since 2009, had had some 5,000 tourniquets placed on him and at one point fell off of a helicopter when someone failed to properly secure his litter.

Lynx Radar Sim Offers Portable Training

*Michael Peck
June 8, 2012
Defense News*

General Atomics Aeronautical Systems has developed a simulator for operators controlling Lynx Multi-mode Radars on unmanned and manned aircraft.

The Tactical Airborne Reconnaissance Simulator (TARS) is software that can run on a laptop.

“TARS is unique because it is highly transportable but still replicates the actions that a sensor operator would take inside of a ground control station [for UAVs] or manned aircraft,” said General Atomics spokeswoman Kimberly Kasitz.

TARS is designed to train Lynx operators in synthetic aperture radar (SAR) and ground moving target indicator (GMTI) operations. The software combines synthetic electro-optical and infrared (EO/IR) video, satellite imagery and 3-D models to create simulated SAR imagery.

“Its key feature is the ability to mission plan for a difficult target area, and then run that plan and see how the aircraft and sensors respond,” Kasitz said. “Feedback is seen immediately by how well the simulated SAR imagery covers the training target.”

Additionally, “the student can cross-cue from a point of interest on the ground identified by SAR to the EO/IR camera, which also displays simulated full-motion video,” he said. “TARS also can simulate GMTI and utilizes actual moving targets such as trucks and tanks.”

TARS was developed by General Atomics to meet the company’s internal training requirements (the Lynx radar is also made by General Atomics), but it also is suitable for military schoolhouses. Kasitz said there have been no orders yet for it, but there has been interest by both U.S. and foreign customers.

The Lynx radar is used by the U.S. Air Force, Army, and Department of Homeland Security; the U.K. Royal Air Force; the Italian Air Force; and the Iraqi Air Force. It equips the MQ-9 Reaper, I-GNAT ER/Sky Warrior Alpha and MQ-1C Gray Eagle unmanned aircraft, which are manufactured by General Atomics, and the King Air 200, King Air 350ER, DH-6 Twin Otter, and C-130 manned aircraft.

At ITEC, Defense Leaders Call for Interoperability

Lauren Biron
May 22, 2012
Defense News

LONDON — Military leaders urged members of the training and simulation industry to work together at the opening panel of ITEC 2012 in London on May 22. Officials from the U.K., Germany and Italy said they are seeking technologies that are both reusable and interoperable both across agencies and across governments, providing more cost-efficient training amid slashed military budgets.

Proprietary data for each simulator is not efficient and “makes interoperability next to impossible,” said Lt. Gen. Peter Schelzig, who leads the German Air Force Command. He said that the Luftwaffe’s restructuring, which will reduce air force personnel by about 30 percent, means an increased need for sustainability and efficiency.

Schelzig envisions a future with a secure IT network that links all virtual simulators and constructive simulation systems. The German military is now encouraging industry designs to be linkable and for companies to develop a standardized data format.

Italy’s Brig. Gen. Giovanni Fungo similarly touted common standards that would apply across NATO countries as the organization restructures education and training, something Fungo said is a main effort.

ITEC’s keynote speaker, Lt. Gen. Sir William Rollo, said that the British military needs “a common framework that allows individual elements of the whole to work together.” The U.K. spends 7.8 billion pounds (\$12.3 billion) per year on training and wants training and simulation devices that can work across the various branches.

“Joined up — that’s how we’re going to fight” and how they should train, Rollo said. He asked the industry to help the militaries exploit interoperability to support a greater range of training.

“Focus on assisting us,” he said. “Stop trying to sell us stuff.”

Monica Shephard, the U.S. vice deputy director of joint and coalition warfighting for the Joint Staff, praised the virtual world framework, a precursor of the 3-D Internet that allows developers to collaborate and share information and relies on interoperability of common development tools such as JavaScript and HTML5.

Shephard said that she is “convinced that it is a crucial technology” for delivering training.

Government Gets Unreal Game Engine

Michael Peck

May 30, 2012

Defense News

Unreal Engine 3, the game engine that provides the visuals and physics behind popular shooter games such as “America’s Army 3” and “Mass Effect 3,” is being licensed to government customers. UE3 designer Epic Games will license the game engine to Applied Research Associates (ARA). The Virtual Heroes division of ARA will then license UE3 to government users through the Unreal Government Network (UGN).

“There was not previously a complete ecosystem in place to support the government user,” said Jerry Heneghan, product development director for ARA’s HumanSim medical simulation. UGN is intended to provide government developers with training, technical support, custom content development and access to Virtual Heroes UE3 add-ons.

One project using the engine is a sedation and airway trainer for the U.S. Army’s Telemedicine & Advanced Technology Research Center. The simulation is an anesthesia trainer that includes 10 complex learning modules to teach medical and critical decision-making skills to general practitioner Army physicians preparing for deployment. The scenarios could be “dramatic situations” of intubating or sedating patients under conditions found at combat surgical hospitals, Heneghan said. “Did you use the right anesthetic? Did you overdose or underdose the patient?”

The project, a collaboration between Virtual Heroes and the Duke University Human Simulation and Patient Safety Center, is funded by the Defense Health Program for Medical Research and the Joint Program Committee for Medical Education & Training Systems.

Another, more hush-hush project is Sirius, the Intelligence Advanced Research Projects Agency (IARPA) effort to develop serious games to train intelligence analysts to recognize and diminish their own biases and thus produce more accurate analyses. ARA, along with other contractors such as Raytheon, has received a \$10 million IARPA award to fund research.

Heneghan said he could not give details of ARA’s approach toward Sirius, but he said that the UE3 game “provides a mechanism to directly test and train debiasing strategies in a variety of contexts, and focuses the student’s attention on the cognitive training.” ARA has also developed a UE3-based crime scene trainer for trainees at the FBI Academy, while a major defense contractor and national laboratory — whom ARA did not identify — also use UE3 modules.

At this stage, the UGN modules do not have authoring tools, meaning users can’t modify them. Allowing users to mod the anesthesia trainer presented problems such as medical responsibility, according to Heneghan. “The

question is, if someone gets hurt three years from now, and they use some scenario that Joe Sixpack made, who is liable?”

Heneghan believes UGN will be a useful one-stop-shopping site for government customers. “We think that the UGN will be a success multiplier for the government user by providing resources and support to cut learning curves, promote best practices, and accelerate development of projects needing must-have features like AAR [after-action review] by making them available as modules to be licensed.”

ARA will also provide government clients with UE3-based training modules through Web browsers, leaving a minimal footprint on users’ computers. “Most of the customers in this space [government] want a simulation for learning, a virtual world or a serious game that can be delivered through a Web browser that can be linked through a learning management system on the back end, and they want it to be DIACAP [DoD Information Assurance Certification and Accreditation Process] secure,” Heneghan said.

Interview: James A. Robb and Fred L. Lewis, the Incoming and Outgoing Leaders of NTSA

*Lauren Biron
May 31, 2012
Defense News*

On June 1, the National Training and Simulation Association will welcome a new president: retired Rear Adm. James A. Robb. As retired Rear Adm. Fred L. Lewis prepares to leave the nonprofit organization, which represents the interests of the simulation, training and support services industries, TSJ sat down with the association’s outgoing and incoming heads for a retrospective on the industry and NTSA — and a look into the future.

TSJ: What are NTSA’s roots, and where is it heading?

Lewis: This used to be called the National Training Systems Association. About five years after I joined it, I changed the title to National Training and Simulation Association to more accurately reflect our portfolio, not wholly exclusive to training systems, but simulation overall. We built systems to the limit of whatever computer processing power gave us in that era. Moore’s Law — that computer processing power doubles every 18 months — is still with us; it’s going to continue. That has been a significant enabler for us to do the things that we’ve been able to do from 1995 to today, which is to expand in a number of different domains in terms of utilization of these technologies.

Our focus in 1995 was exclusively on defense. We dabbled in the commercial airline world, but not to any great success or effect. Now, today, we see this explosion in the use of these technologies in the health care field. It seems there’s a great race amongst the medical schools and the hospitals of this nation to build and develop and outfit their own sim centers, to the greater good of mankind.

TSJ: What are the other upcoming trends?

Lewis: It’s an explosion in the health care field, for sure. We’re seeing utilization of the technologies in the manufacturing field, in financial, in any sort of design work that you might conceive of — aircraft design,



architectural design, communications. Modeling and sim technology will be used in training cyber warriors, disaster preparedness, meteorological forecasting.

Wherever there's a man-machine interface of any sort, these machines can be used to train individuals. There are a vast number of applications of the technology.

TSJ: Does an advance in a certain kind of modeling translate to breakthroughs in modeling elsewhere?

Lewis: Military utilization of lots of other things in the past has led to civilian applications of the same technology. The simulations that they use in NASA are a civilian application of the technology. Certainly, in the airline industry or training people to operate trains. There are a vast number of ways you can use the technology in financial cases to look at analysis of alternatives and changing the variables to see what the outcome might be.

Robb: A lot of that is going back and forth between the industry and government. The part that I've seen in the last 10 years is trying to bring the business transformation into the government. The whole trend is toward understanding the cost of training and what the effect is on the troops, all the way down to justifying new weapons systems. In many cases, I think that business sector has been better at understanding precise investment and returns.

Today there's a lot more scrutiny. When I was running the budgets in the Navy, there was a huge cry for modeling and simulation of our entity — whether it was readiness or acquisition programs or to try to explain and justify each dollar. What are the hidden costs? What are the downrange costs? These things are not well understood. There's hidden costs to everything that looks like a solution. There's a big cry to figure out how these things are connected.

TSJ: Where do you find the most resistance to modeling and simulation?

Robb: Mainly, the availability of the cross-government data is a problem. In many cases, you have depots that are vertically separated from each other. They are operating within their own stovepipe of efficiency, so they're being efficient within their own silo [but not across sectors].

Lewis: Whether we like it or not, modeling and simulation is pervasive in our society. There's not a single product today that has been conceived of that somewhere across its life cycle has not been touched by modeling and simulation. In fact, the Congress of the United States recognized the criticality of modeling and simulation by declaring it a National Critical Technology in 2007. There's a modeling and simulation caucus in the House of Representatives. We have voices on Capitol Hill that understand.

TSJ: How do you see military training technology changing?

Lewis: That's been the beauty of technology in the United States: We've been technological leaders for many, many years. And we sort of assume that it's going to continue — that we'll continue to be in the lead around the globe. But our competitors in the market are doing pretty well in terms of graduating engineering students as compared to the U.S. But where do we need to go? What's the art of the possible? Where do we need to spend our R&D dollars and in particular, the DoD money?

As the troops return home from Iraq and Afghanistan, they're going to go back to home bases. The Army's going to get smaller. The Marine Corps is going to get smaller. The Navy and Air Force will be about the same, with some changes on the margins. But what is going to be the effect on the readiness of our forces globally? The Navy and Air Force will continue to maintain high readiness levels, because they will continue to operate forward. It's different with the Army and the Marine Corps. They're going to train at home station. That's the espoused new policy of fewer deployments overseas and fewer deployments to national training centers. If you're going to train at home station, then how do you maintain readiness levels that you need to maintain in order to be able to react to the next crisis? There's only one answer. And that's to use modeling and simulation.

TSJ: What is that training going to look like?

Lewis: Is it the capability we have today? No, it's going to be something different. It has to be the kind of virtual world wherein thousands of players can interact with one another at the same time. We don't have that capability right now. That's something that DARPA needs to get on with their research dollars and really focus on. It's the kind of capability that all services and research establishments need to focus on and try to move forward.

TSJ: Where are we now?

Lewis: We're at the crawl stage. We need to create virtual worlds that are true virtual worlds. We can do it today to some extent, in that you may have seen the photographs or displays of the capabilities available today — with the goggles and the virtual world that can be projected. It's not too far-fetched to extend that virtual reality all the way out to the walls. In my view, that's where we need to go. We need to go to that kind of virtual space.

We need to have the long-haul networks available, the communications and the security apparatus. It needs to have this very large capability in order to bring in not just a thousand but thousands of players and actors and entities that are going to operate in that space. We don't need just home station training, but go even beyond that. We need to be able to conduct large battlespace operations.

Immersive training is virtual in a sense that the scenes and the targets and the equipment that are displayed to the trainee are either replicas or video representations. The suspension of disbelief that you are in a training environment and not in the real world — that is what we strive to achieve. We have the capability, we just need the commitment to it, and that's the direction we need to head. It has to become a very high priority in everyone's expenditures of R&D dollars. It's going to take dollars to make it happen.

Robb: It's happening in design, obviously. Airplanes are designed within a virtual environment and tested before they're flown. Those things are moving forward because the reality is good enough and it's believable. It's not only credible, but the test point accuracy, safety-wise, is OK. So anywhere you find industry going to that level of expense to remove expense from acquisition, that's pretty dramatic. When you go away from that, you find inefficiency almost everywhere.

The demand for capability and training and effectiveness is going to continue. The money becomes a key driver, and the expense of the systems is ever-increasing. You are driven to simulation inside of the things you are buying.

TSJ: How do you balance live training with virtual or immersive?

Robb: It's been a tension between how much you can do live and how much you can do in simulation. You can do some things in simulation really well, especially for procedural types of things. [Sometimes] you cannot fire a weapon because it's a nuclear weapon, so you can't do a live-fire exercise. Simulation is absolutely critical there.

There are real-world people at one end who absolutely want to sustain live training, who think you can't feel it unless you're out there flying, pulling Gs. And I think there's some truth in that. But they're coming together to where there are elements of it that can be simulated as well as embedded in the live fire. You actually enhance the quality of the training dramatically. We saw this in aviation. We used to fire one missile every year. Now we fire a missile every time we go flying — virtually. And you get all that positive feedback and training. It's immense compared to what it used to be.

TSJ: Is there a generational divide that influences who is more willing to use simulation?

Lewis: If you're talking to a group of operators, there isn't a big generational divide. Pilots all like to fly all the time and not spend an hour in the simulator. But that's not possible if you're going to maintain readiness levels.

As we see these planes grow more and more expensive, we're going to see flying-hour programs continue to be reduced.

The services are driven to come up with a number of flight hours per annum for a pilot in order just to be safe. If that's the minimum just to be safe, what about your weapon system efficiency? How do you ensure that you can actually fire a missile or a gun, or drop a bomb? We say the delta has to be made up by simulation. Every infantry commander you could talk to would love to take his battalion to the National Training Center every six months if it were possible. But you can't do that because of resources and availability. You need to match it with some other kind of capability — and that capability is simulation.

TSJ: What are the priority projects?

Robb: The main goals are to sustain the activities that are ongoing. Central to that is the I/ITSEC convention down in Orlando, which is a grand meeting of the government and the industry. You can bring the stakeholders to an exposition that helps demonstrate the new technologies and makes them interested, and it helps build credibility that these are viable. You see a sort of festival of mind-melding and how we can spend money on these types of things and be confident that they are going to be effective in terms of the outcome on the defense side. It's comforting for the industry to know that the government is interested. You want to make this thing cook.

Lewis: Another significant goal for us this coming year will be the solidification of the organization that we are calling the National Modeling and Simulation Coalition. It began life a couple years ago as a discussion about how we, in harness with the Modeling and Simulation Caucus, can move the state of the art forward. Through discussions with representatives from all three of the domains (government, industry and academia), we came to the conclusion that we needed to stand up this nonprofit, volunteer organization.

With representation from manufacturing, first responders, gas and oil exploration, electrical power distribution, communications, transportation and so on, we will have a great capability to cooperate, to share technology and ideas from one domain to the next, to de-conflict so we aren't stepping on one another. It gives us a forum to bring together this vast array of like-minded people, wherein we can talk about the issues of the day and objectives of the future.

U.S. Army Develops Howitzer Simulator

Michael Peck

July 5, 2012

Defense News

The epicenters of Army simulation are in Orlando, Fla., and Leavenworth, Kan., but the Army's Research, Development, and Engineering Center (ARDEC) at Picatinny Arsenal, N.J., is putting some skin in the virtual game. Over the last 18 months, the center has doubled the size of its Gaming, Interactive Technologies and Multimedia Branch to about 25 staff and contractors, according to branch chief Brad Drake.

Its flagship project is a virtual simulator for the M777A2 towed 155-millimeter howitzer, which is used by the Army and U.S. Marine Corps. The elaborately named M777A2 Computer Based Trainer/Computer Aided Instruction (CBT/CAI) Interactive Multimedia Instruction (IMI) is a team-based trainer for crew training. Users control up to four crew positions while AI handles another four.

There are four levels of instruction, according to Jessica Francois, training aids manager for Product Manager Towed Artillery Systems: passive instruction, which presents a slide show; limited participation, where the user makes simple decisions such as moving his avatar to the correct position on the howitzer; complex

participation, where the user can consult an interactive technical manual as he navigates the simulation; and real-time participation mode, where he can network with three other users. A player's results are recorded for after-action review.

The software can run on laptops, though a more sophisticated Lightweight Desktop Trainer-Institutional will allow networking with desktops and an instructor station. "Our hope is to create a fully dynamic set of training products that all reinforce one another and can be beneficial in multiple environments," Francois said.

The M777A2 simulator uses the Unity game engine, chosen because of its low price tag, digital footprint and maintainability, according to Drake. The simulator is scheduled for release in FY2014. The M777 howitzer, manufactured by BAE Systems, is also used by the Canadian Army and has seen service in Afghanistan.

One advantage of ARDEC maintaining an in-house game design shop is that it put its game designers in close contact with both customers and subject matter experts.

"Having the development capability co-located with our customers is definitely a benefit for communication and logistical reasons," Drake said. "More importantly, having the development team and subject matter experts for the systems being simulated on the same installation is a great benefit. ARDEC's experienced engineers coupled with the customer's resources allow for a smoother, more efficient development pipeline."



U.S. Department of Defense
Office of the Assistant Secretary of Defense (Public Affairs)
News Releases

Eucom Exercises Adapt to Operational, Fiscal Environment

Donna Miles, American Forces Press Service

May 9, 2012

Defense.gov

STUTTGART, Germany , May 9, 2012 – Budget tightening won't mean an end to U.S. European Command's robust exercise program, but it could bring big changes to the program that keeps U.S. and allied forces at the top of their game, Eucom officials here said.

In fact, as operations wind down in Afghanistan, Navy Vice Adm. Charles Martoglio, Eucom's deputy commander, told American Forces Press Service he expects an increase in U.S. exercises with NATO allies and other partners.

U.S. participation dropped measurably over the past decade because forces were tied up in real-world events in the Middle East, he said. But as those forces return, he said, the exercise program will become key to maintaining their combat edge and the interoperability developed working on the ground, in the air and at sea.

"We do not want to lose this muscle that we have built with our partners," agreed Navy Rear Adm. Mark Montgomery, Eucom's deputy director of plans, policy and strategy.

Building on those hard-earned skills will be critical to sustaining NATO into the future, Martoglio said. "So we have to look toward ensuring interoperability of those forces and routinely training together so that if we have to conduct high-end operations, we have the ability to work together from a technical perspective, and the skills to work together from a training perspective," he said.

Throughout its history, Eucom has aligned its exercise program to changing geopolitical conditions and challenges, said Marine Corps Col. Edward Bligh, chief of the command's joint training, readiness and exercise division.

During the Cold War, exercises focused on a land battle in the Fulda Gap. After the Berlin Wall fell, they shifted toward building partnerships with new Eastern European democracies.

Then, after the 9/11 terror attacks, exercise planners moved into high gear to prepare U.S. and coalition forces for deployments to Afghanistan and Iraq.

"The people who fight with us downrange are coming from our [combatant command area of responsibility]," Bligh said. "So to ensure they are capable and ready to go, our exercise program has been highly focused on International Security Assistance Force preparation."

Now, as Eucom continues to support that training mission, Bligh and his fellow planners are looking toward the next challenge. "How can we sustain that partnership capacity and build on it and go to that next tier, whatever that may be?" he said.

It's a question being asked within the context of looming budget cuts that will have a direct impact on the exercise program.

The simple answer would be to eliminate or scale back some of the command's 20-plus annual exercises. But Bligh said he sees another trend: more targeted engagements focused on specific capabilities and partners and directly in line with contingency plans.

That, he said, means basing scenarios not just on current threats, but also on emerging ones ranging from ballistic missiles to cyber-attacks.

Bligh also projected that some exercises will be combined, he said. This year, for example, Austere Challenge, an annual senior-level decision-making exercise, is being combined with Juniper Cobra, a combined air defense exercise between the United States and Israel.

Although doing so is a significant challenge for exercise planners -- who must build enough into the scenarios to keep all players engaged at both the tactical and strategic levels -- it stands to reduce costs and streamline planning efforts, the colonel explained.

Bligh said he also anticipates more regionally focused exercises and increased engagement with Turkey, Poland, Russia and Israel, nations specifically identified in the command's theater engagement plan.

The recent Anatolian Falcon 2012 exercise between U.S. and Turkish air forces, for example, was designed to test the two countries' military interoperability as they conducted a variety of air missions.

A new exercise for fiscal 2013, Saber Guardian, will bring together about 150 U.S. Army Europe soldiers and their Romanian counterparts as part of a broader effort to build partnerships in the Black Sea region.

Although the United States traditionally has sponsored exercises and invited other allies and partners to participate, Bligh said, U.S. forces will increasingly participate in other countries' exercises. This year, for example, U.S. Army Europe plans to send troops to a land-forces exercise hosted by Poland. As that program matures, Bligh envisions that U.S. Air Forces Europe also could participate.

"We are attending another nation's exercise at a fraction of the cost of us hosting our own," he said.

In another promising development, more partner nations are beginning to exercise together, independent of the United States. Bulgaria, for example, now hosts its own regional energy security exercise, Energy Flame, for its Balkan neighbors, using simulation capabilities the United States spent the past 10 to 15 years helping the Bulgarians build.

“They run it and do the whole show,” Bligh said. “Not only do they have the capability to run a very sophisticated exercise out of their own simulation center, but they have graduated to a degree that they are able to share that capability in constructive ways with their Balkan neighbors. So that, to us, is a real success story.”

Although sustaining partner-nation capacity will remain a command priority, Air Force Lt. Col. Phil Everitte, Eucom’s exercise branch chief, said he expects the exercise program to also put increasing emphasis on putting contingency plans to practice.

“Since money is tight, we want to do things more smartly,” he said. “That means being more focused on contingencies – basically our wartime tasking and our core missions. So we are trying to lead our program in that direction.”



Army Hosts MOSES Open-Source Virtual World

Alice Lipowicz

May 18, 2012

Federal Computer Week

Secure environment allowing multiple agencies to experiment with 3D environments.

Federal agencies are experimenting with virtual worlds for training, analysis and team-building in a secure and open source environment, courtesy of the U.S. Army.

The Army’s Research Lab Simulation and Training Technology Center in Orlando is hosting an open source training platform behind a secure firewall, allowing about 400 use cases to be tested, Douglas Maxwell, science and technology manager at the lab, said at a conference of the Federal Consortium for Virtual Worlds on May 18.

The lab created the Military Open Simulator Enterprise Strategy (MOSES) last year to test the stability and reliability of open source virtual worlds. Previously, many of the agencies had been using the commercial Second Life platform, but Maxwell said he and others decided to migrate to a more customizable platform that offered options for information assurance and security.

MOSES is an experimental platform and the Army does not intend for it to be a permanent provider of virtual training services, Maxwell said. For now, about 400 projects from military and civilian agencies and partners have been approved for testing in MOSES, he said.

For example, Stephen Aguiar, virtual worlds project lead at the Naval Undersea Warfare Center, said his center is using 3-D virtual environments in MOSES for design, analysis, command and control and experimentation.

The virtual world is being used to test scenarios based on real-life situations, and participants can move, interact and access systems as they do in real life, he said.

“We support team dynamics and access to tactical displays,” Aguiar said.

A strong advantage of the virtual environment is that it allows for “rapid prototyping” and the ability to make changes in real time, he added.

Kay McLennan, professor of practice at Tulane University, said she initially migrated her 3-D learning courses to MOSES after an educators' discount expired at the commercial Second Life platform. She uses virtual platforms for teaching economics courses to college students.

One of the great benefits of virtual learning is that it can be simultaneously remedial, for students lagging behind, and also enriching, for more advanced students who want to move more quickly on the course material, she said.

As a teacher, she benefits from the collective feedback from the students generated in the virtual environment. The students' learning contributes to a "network effect" by generating crowdsourced information, she said.

Robert Daniel, president of BlueGrid Virtualization Security and adjunct professor at George Washington University, appeared at the conference wearing an Emotiv Neuro Headset on his head.

The headset reads the user's brainwaves and transmits information about the user's emotions—including excitement, relaxation, engagement or boredom—to an avatar in a virtual world, Daniel said. The brainwaves are used to direct an avatar's actions in the virtual world, and the emotions are shown on the avatar's facial expressions, he said.

In the future, the emotions may generate activity and interactions with other users in the virtual world, he said.



TTGL Celebrates 32 Years of Success

Lt. Cmdr. Timothy Kunkel, Tactical Training Group Atlantic Public Affairs Officer

May 16, 2012

The Flagship

Tactical Training Group Atlantic (TTGL) celebrated its 32nd anniversary May 1. Established in May 1980, TTGL leads all of the Navy's FST (Fleet Synthetic Training) exercises on the East Coast, simulating real-world situations in a tactical, decision-making environment for strike groups preparing to deploy overseas.

From its modest beginning with a cadre of six instructors in the Atlantic Fleet Combat Training Center, TTGL dedicated Adm. Train Hall in 1986 and has since grown to a staff of 35 officers, 70 enlisted Sailors and 65 civilian personnel.

"We continued to add new training capabilities here at TTGL and cannot do this without the incredible team of professionals that work here at Dam Neck," said TTGL Commanding Officer Capt. Robert Lineberry.

TTGL conducts more than 300 training events and courses for more than 6,000 personnel each year, ranging from a two-week Joint Maritime Tactics Course and shorter, mission-specific courses, such as Tomahawk, Maritime Supremacy Operations, Ballistic Missile Defense, and Common Tactical Picture Management, to extended FST events involving multiple strike groups with joint and coalition participants.

TTGL's mission is to provide valued training to carrier strike groups, amphibious ready groups, Marine expeditionary units and independent deployers in order to conduct maritime missions across the range of military operations. TTGL leverages its training and mentoring team to conduct simulation and live training to

provide ready warfighters to plan and execute naval missions to support joint force commanders and fleet commanders.

TTGL Holds Change of Command

*Lt. Cmdr. Timothy Kunkel, Tactical Training Group Atlantic Public Affairs Officer
April 12, 2012
The Flagship*

Tactical Training Group Atlantic (TTGL) held a change of command ceremony in their auditorium at Dam Neck Annex on 22 March. Capt. Robert Lineberry relieved Capt. John “Chuck” Nygaard, who will report to Commander, 4th Fleet as chief of staff.

Among the guests were Adm. John C. Harvey, commander, U.S. Fleet Forces Command; Rear Adm. David Thomas, commander, Naval Surface Force Atlantic, and Rear Adm. Dennis FitzPatrick, commander, Strike Force Training Atlantic.

“[Nygaard] understands the essence of our challenge. [He] has the fantastic ability to see opportunity and change, amid chaos. And the courage to act; to move forward boldly and decisively into new and uncharted territory. When a command like TACTRAGRULANT combines with an extraordinary officer and innovative leader like Capt. Chuck Nygaard, it is truly magic,” said Thomas, referring to Nygaard’s tenure as TTGL commanding officer.

Before presenting Nygaard’s end of tour award, Harvey said, “It’s not just this organization and what this organization means and is, it is what this organization does for the sea-going forces of the United States Navy. The focus of this organization [TTGL] is not here. It is in our ships, our squadrons, our submarines that go forward. I’m also here to say that I believe in what Capt. Lineberry is going to bring to this organization and how he’ll build upon what Capt. Nygaard has done.”

Lineberry, a naval aviator, brings a wealth of experience to TTGL, having previously served as commanding officer of Helicopter Anti-Submarine Squadron 6; commander, Amphibious Squadron 6, and commander, Mine Countermeasures Squadron 7.

Lineberry explained TTGL’s role in preparing naval forces for deployment. “While nothing can replace underway training, TTGL’s simulation capability pays huge dividends for the Navy by maximizing readiness for those live events, while incurring none of the inherent risks or expenditures. And we can do this 365 days a year, with customized training events, ranging from the unit level to multi-strike group, joint service and coalition exercises, spanning the full range of military operations.”

“I’m proud of what we do here at TTGL and honored to serve as commanding officer,” Lineberry continued. TTGL’s new executive officer, Capt. Sam Howard, reporting from U.S. Fleet Forces Command, is a surface warfare officer and former commanding officer of USS Bataan (LHD 5).



US Reclaims Supercomputing Lead with (Relatively) Low-Power Sequoia

Kathleen Hickey

June 19, 2012

Government Computer News

After two and a half years, the United States once again holds the title of having the world's fastest supercomputer, according to the Top500 list released June 18 at the International Supercomputing Conference (ISC12) in Hamburg, Germany.

The Energy Department's Sequoia beat out Japan's K Computer, which held the top spot on the previous two lists, produced biannually.

Sequoia, an IBM BlueGene/Q system installed at Lawrence Livermore National Laboratory, uses 1,572,864 cores to achieve a sustained speed of 16.32 petaflops (a petaflop is a quadrillion floating-point operations/sec). Japan's K Computer operates at a sustained speed of 10.51 petaflops. Sequoia is also one of the most energy-efficient supercomputers, with a power usage rate of around 2 gigaflops/watt.

Sequoia is used to manage the nation's stockpile of nuclear weapons without underground testing, National Nuclear Security Administration Administrator Thomas D'Agostino said in a release.

More specifically, "Sequoia will provide a more complete understanding of weapons performance, notably hydrodynamics and properties of materials at extreme pressures and temperatures. In particular, the system will enable suites of highly resolved uncertainty quantification calculations to support the effort to extend the life of aging weapons systems; what we call a life extension program," said Bob Meisner, NNSA director of the Advanced Simulation and Computing program.

Three other Energy supercomputers also ranked in the top 20, the department announced. Mira at Argonne National Laboratory in Argonne, Ill., ranked third (8.15 petaflops); Jaguar at Oak Ridge National Laboratory in Oak Ridge, Tenn., ranked sixth (1.94 petaflops); and Cielo, jointly operated by Sandia National Laboratory in Albuquerque, N.M., and Los Alamos National Laboratory in Los Alamos, N.M., ranked fifteenth (1.11 petaflops).

Oak Ridge is currently in the process of upgrading Jaguar, which could potentially oust Sequoia from its top seat. The final upgrade is scheduled for late 2012, and when it's completed, the name of the machine will change from Jaguar to Titan. The final system is expected to have a processor speed in the range of 10 to 20 petaflops. Last November Jaguar was ranked third at 1.75 petaflops, after Japan's K Computer (10.51 petaflops) and China's Tianhe-1A system (2.57 petaflops).

Several other U.S. supercomputers made the list as well. In fact, 252 of the top 500 systems are in the United States, reported IDG News Service.

Petascale computers are becoming fairly common, and the technology is available now to scale up much higher, reported Ars Technica. The hurdle? Cost.

“We could get another order of magnitude with this technology if someone would write a check,” Dave Turek, vice president of high-performance computing at IBM, said in the article. “But no one would want to write that check.”

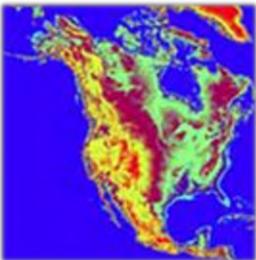
However, as Zack Whittaker pointed out in his ZDNet blog, what really matters is the people who use the computers. “At the end of the day, supercomputers are just tools,” he said.

Rapid Refresh Sharpens NOAA's Weather Forecasts

William Jackson

May 2, 2012

Government Computer News



The National Oceanic and Atmospheric Administration has put into production a new computer model for quickly updating near-term weather forecasts, improving accuracy and extending the range of the forecasts over the entire continent.

Rapid Refresh updates the 18-hour forecast for North America every hour. The Federal Aviation Administration and the aviation industry rely heavily on the forecasts, which also are important to the energy industry for forecasting power consumption and increasingly for predicting conditions for new energy sources such as solar and wind generation, said Stan Benjamin, lead developer of the new model and a research meteorologist at NOAA's Earth System Research Laboratory.

Rapid Refresh on May 1 replaced a similar program for producing hourly forecast updates at the National Weather Service's National Centers for Environmental Prediction in Camp Springs, Md. It was developed by NCEP and the Earth System Research Lab in Boulder, Colo.

The advances are the result of greater computing power available to NCEP forecasters and steady improvements in software made over the past decade, Benjamin said.

“One of the efforts of Rapid Refresh was to take advantage of the Weather Research and Forecast Model to help in the hourly updates,” he said. WRF is a numerical, community-developed weather prediction system created by NOAA, the National Center for Atmospheric Research, the FAA, the Air Force, the Naval Research Laboratory and a number of universities.

A second important element in the new model is improved data simulation, which estimates data points on the geographical grid used to produce the forecasts.

“We're also using satellite data more effectively now, along with radar data,” Benjamin said.

Rapid Refresh was tested for 22 months before being put into production. During testing it gave more accurate forecasts of heavy rain in the Midwest during June 2011 and better predictions of near-surface winds and low pressures during Hurricane Irene in August.

In addition to better accuracy, the new model now provides updated forecasts for all of North America, including Alaska, Canada, the Caribbean and even parts of Greenland.

The only production version of the Rapid Refresh model is being used in the NCEP in Camp Springs, Md., but an experimental version of the next release is under development at the Boulder lab.

“There is a lot more to be done in this area,” Benjamin said.

GOVERNMENT TECHNOLOGY

Big Data Is a ‘New Natural Resource,’ IBM Says

Sarah Rich

June 27, 2012

Government Technology

“Big Data” is quickly becoming a part of the public sector’s lexicon. This catch-all phrase — shorthand for data that’s collected through different channels: sensors, social media feeds, photos, video and cellphone GPS signals — accounts for 2.5 quintillion bytes of data created each day. According to whatsabyte.com, that’s equal to 2.5 billion gigabytes daily.

Public-sector IT leaders and private-sector experts are talking about how they can better integrate this big data into work processes. On Wednesday, June 27, government executives and members of the IBM Watson supercomputer research team gathered for a conference in Washington, D.C., to address how Congress and the federal administration can start utilizing big data cohesively.

The company’s work with the Charleston, S.C., Police Department is one of the examples being highlighted at the conference. The police department is in the early stages of using big data with IBM’s help. The department



for years utilized hot spot policing to reduce crime. Earlier this month, IBM announced that the Charleston Police Department is now using the company’s predictive analytics software to evaluate and predict future crime.

Prior to Wednesday’s conference on big data, the police department’s Deputy Chief Anthony Elder (a panelist at the event) said that searching through multiple databases used to be cumbersome and couldn’t be done in real time.

“It takes a lot of time and resources to be able to go through [data]. And you need it now,” Elder said. “So we need a way to be able to get into that big data storage — things that we can already get to. Because that’s what this is — it’s things we can already get to but takes a lot of staff hours to [do so].”

Elder said the police department’s solution allows for an expanded, federated search through multiple databases — information that’s typically siloed. If, for example, the Charleston Police Department needed probation and parole data, the search would still only garner information that external entities are already granted access to. The main change, though, would be getting access to that information faster.

Prior to the event, David McQueeney, vice president of software for IBM Research, said that big data — often called “unprocessed” or “unstructured” data — can be utilized in the federal government outside of technical agencies like the U.S. Department of Energy or the military.

For example, the National Oceanic and Atmospheric Administration’s National Weather Service can utilize big data for storm tracking purposes, McQueeney said. “That’s a case where we’re using computational science to generate predictions about the future,” he said.

The combination of utilizing computational science and social media day can result in better storm tracking, McQueeney said. Predictions about future weather patterns can be generated by using data that people share,

such as if they are aware a storm is coming, if they've taken safety precautions for a storm, or if they've said they've evacuated.

"You get one form of very large-scale data that details the future of the physical world based on model and simulation, which would be the prediction of the storm track," McQueeney said. "But there's an equally enormous amount of data about the state of society and what businesses are doing. What are people doing? Are people reacting quickly enough?"

Fred Streitz, a computational physicist at the Lawrence Livermore National Laboratory in California, said as scientific simulations such as these grow more complex and bigger, big data will grow bigger.

"As you expand the scope of these simulations, they start creating enormous amounts of data in and among themselves, Streitz said.

Government agencies already have started to express a need for access to supercomputers that could help them more quickly process data sets.

InformationWeek

Army Plans Overhaul of Virtual Training Games

Patience Wait

June 15, 2012

Information Week

Military looks to add potential for massive multi-player online games, simulations for construction and management, and real-time strategy.

The U.S. Army wants to update the gaming system it uses for virtual training exercises. The Army's simulation office has issued a draft RFP for a new military training game that includes all the components and capabilities of Virtual Battlespace2 (VBS2), the battlefield simulation system currently in use. In addition, the Army wants the new platform to make room for improvements such as construction and management simulation, massive multi-player online role playing gaming, and real-time strategy gaming. The game will be used to train individuals and small units in a shared environment.

The new platform will take advantage of new commercial technologies, such as higher-fidelity graphics, the ability to move across computer platforms--including Web-based and mobile--and interoperability that will allow "live-virtual-constructive" environments. The last enables units in different locations to interact and conduct coordinated fights as though they are physically in the same place.

Over the past three years, VBS2 has been modified "to include capabilities such as terrain paging, improved graphic realism, IED training modules, insurgent methodology training scenarios, Special Operations Command ... enhancements, an improved cultural and language training capability, and a terrain database plug-in that will facilitate incorporation of Synthetic Environment ... Core databases," according to the draft RFP. The new game platform must continue to support these elements.

The Army also wants compatibility with already-developed middleware that provides additional features such as enhanced indirect fire skills training and combat lifesaver and medic training. "The required product will provide the User the ability to connect existing and future middleware via an Application Programming Interface (API) or plug-in," the RFP states.

"Whoever comes in as the contractor has to have a fully developed basic game," said Michael Adorno, the senior contracting specialist who issued the draft RFP. "The idea is to get a dialogue going with the industry. We have no expectation for a proposal, we just want to finalize the requirements. The comments should be back by July 12."

Adorno said this draft RFP is "90% to 95% of the solution. We want to tweak it, though we don't anticipate a whole lot of changes." He said the intent is to release the finalized RFP this fiscal year, within a month or two of the end of the comment period.

Would Activision's Call Of Duty, Microsoft's Halo, or other popular online games meet the Army's needs? Adorno did not answer that question directly, but did say that the Army is looking for a game that is easily customized, which could rule them out.

The contract is going to be firm fixed-price, with a value of about \$44.5 million over five years for an Army-wide or enterprise license, including updates and technical support.

NASA Starts Software Dev for Deep Space Rocket

Patience Wait

June 5, 2012

Information Week

Testbed computers from Boeing signal start of development of flight software for Space Launch System, the NASA rocket that will take humans to Mars.

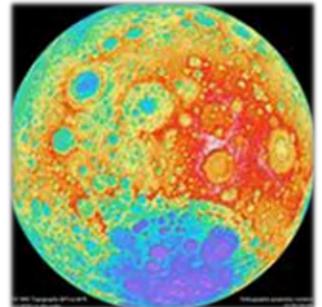
NASA's Marshall Space Flight Center has received three computers from Boeing that will be used to develop flight software for the space agency's Space Launch System, the heavy-lift rocket that's intended to carry humans to deep-space destinations such as Mars.

Each of the testbed computers is a standalone version of the flight computers on board the SLS. As contractor, Boeing provides the computer hardware and low-level software, such as the operating system, while NASA develops the software to fly the vehicle. NASA describes the new systems as real-time, embedded computers capable of executing programs on a fixed schedule measured in milliseconds. "These are the most capable flight computers ever developed for human spaceflight," said Dane Richardson, manager of Boeing's SLS avionics and software team.

The testbed computers each have three redundant processors, which interpret data separately and "vote" to be sure they all agree on a response to be sent. Three flight computers on the rocket compare answers, then send commands for execution.

"The triple redundant processors make each computer reliable in the harsh radiation environment," Richardson said. "Similarly, the three computers working in concert make the vehicle reliable." The configuration is referred to as the flight computer operating group.

NASA has legacy flight software and modeling and simulation software from other programs, such as the canceled Constellation program and recently concluded Space Shuttle program, that can be used in developing the SLS software. The arrival of the testbed computers signals the start of development of the application software and advanced modeling and simulation of space flight conditions.



The SLS is a heavy-lift rocket capable of boosting a 70 metric ton payload by its first launch, targeted for 2017, and eventually a payload of 130 metric tons, needed to enable manned missions beyond the Earth's orbit.

Other aspects of SLS development include an upcoming test on the J-2X upper stage engine at the Stennis Space Center in Mississippi. Another NASA program is focused on development of the Orion Multi-Purpose Crew Vehicle, the capsule to be lifted by the SLS rocket, which is slated for a 2014 test flight.



ITEC 2012: NATO to Expand Serious Gaming Output

Tony Osborne in London

May 24, 2012

Land Warfare International

NATO is expanding its serious gaming output with new immersive software which will teach soldiers how to handle situations in small communities.

An Afghanistan-based scenario will take users into a village filled with local nationals, and aims to show how the people and the environment look through the eyes of military personnel and then through the eyes of those working for civilian organisations such as non-governmental organisations (NGOs).

The idea is to introduce the personnel using the game to see that a different approach can advance community relations during operations like those in Afghanistan.

'The idea is to give personnel when they go into a country, a civil and military viewpoint,' said Paul Thurkettle of NATO's Allied Command Transformation Joint Education Training & Exercises division speaking to Shephard at ITEC 2012.



'When the military character goes into the village they will find that the locals react very differently than when they go in as a civilian.'

Thurkettle pointed out one scenario in the simulation where the military character sees a large pile of rubbish as a potential threat because insurgents could have planted an IED but the civilian character in the game simply sees it a health hazard to the locals and urges them to remove the waste.

Lt Gen Karlheinz Vierieck said that while the programme simulated a typical Afghan village scene, it would still be useful even after the end of combat operations in the theatre.

'It is training for Afghanistan,' said Vierieck, 'but it is still education in principle.'

The software is still in development and follows on from NATO's 'Boarders Ahoy' game which is designed to improve the effectiveness of personnel during maritime interdiction operations such as those currently underway in the Indian Ocean.

That software is now available on Google's Play Marketplace and can be operated on any Android-based mobile or tablet.

Another NATO e-learning programme which introduces personnel being deployed on the NATO ISAF mission in Afghanistan has now been used by 34,000 personnel including many from outside NATO nations while NATO's e-learning portal is now getting 1,000 new users signing on to the training programmes each month.

ITEC 2012: Sim Specialist Highlights Virtual Reality Deficiencies

Andrew White in London

May 22, 2012

Land Warfare International

CAE is considering expansion into virtual reality training for squad-level operations despite reservations that 'hi-tech' systems do not provide an all-up solution for infantry units.

According to the company's senior director for global land systems, Michael Ward, virtual reality training may not provide the best value for money in the current operational environment.

'The jury is out for squad-level virtual reality training,' he explained. 'CAE is looking at it, but I'm not sure for the amount of investment made, [users] are going to get that much value out of it.'

Describing training potential for 'high-intensity and short duration operations' specific to direct action tasks conducted by special forces, Ward said: 'There are 70,000 squads in the US Army. How many of them are going to be training in virtual reality?'



USSOCOM routinely uses simulation programmes in training for building clearance taskings and it is understood that US Navy SEALs used an undisclosed system prior to Operation Neptune's Spear to kill or capture Osama Bin Laden last year.

As an alternative, Ward highlighted how simulation could provide a 'cheaper' option while generating a 'high pay-off' in lessons learnt. 'You can do a lot more before you rely on hi-tech,' Ward exclaimed.

'In general, budgets have impacted land programmes-both equipment and simulation. However, there will be increased demand for simulation to offset reduced platform based training, operations and mission rehearsal.'

CAE has traditionally concentrated on flight simulation but the company is now in the midst of pursuing an aggressive strategy to expand interests in the land environment.

ITEC 2012: Hi-Tech sim lacks stress, Amputees in Action states

Andrew White in London

May 22, 2012

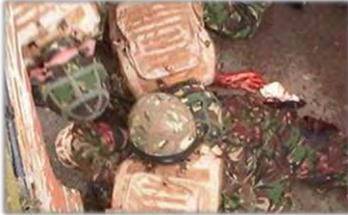
Land Warfare International

Amputees in Action, the casualty simulation provider, remains adamant that computer-generated training will never adequately imitate real-time stresses associated with combat medicine.

Speaking to Shephard at ITEC in London, company director Kim Lane expressed concern that 'high-tech' software used for flight and ground vehicle simulators as well as reactive mannequins for medical training could never replace the 'human factor'.

'We have respect for all types of simulation but a mannequin cannot give feedback or grab you. It's all about the initial eye contact that cannot be replicated,' Lane exclaimed. 'It's all about putting stress into the equation.'

Using state-of-the-art prosthetics and make-up, Amputees in Action employs actors to participate in not only film and television production but more importantly, military exercises. Operating in conjunction with military exercises in the UK and Europe since 2005, Lane described how Amputees In Action were routinely used at a variety of British training establishments including SENTA, Wales and a mock Afghan village at STANTA in Norfolk.



With a total of 300 actors on the books, the company continues to support British Army, Royal Navy and Royal Air Force exercises as well as multi-national programmes in Germany, Norway and Sweden. The company is also preparing to be included in basic training courses at locations around the UK including ATC Pirbright and has also responded to enquiries from India.

'We will always be in a minority but we are all about training for care-under-fire for combat,' Lane said while highlighting how training was not just focused on missing limbs. She described how prosthetics could be added to made-up wounds to allow a soldier to 'plug' a haemorrhage with Celox gauze or fit an Asherman's chest seal to combat sucking chest wounds, for example. Actors can also be canulated if they so desire.

'We provide powerful realism to a diverse range of trauma scenarios, allowing essential techniques to become innate and instinctive when transferred to the field. Most of our personnel have lost limbs as a direct result of trauma during action and unlike actors or dummies, are able to offer experienced insight as well as physical realism,' Lane concluded.

SOFEX 2012: Simulation Critical for SOF HVT Missions

Andrew White in Amman, Jordan

May 10, 2012

Land Warfare International

Simulation will maximise but never replace 'live' training, the USSOCOM's programme manager for special operations forces (SOF) training systems has announced.

Speaking at the Special Operations Forces Exhibition (SOFEX) in Amman, Jordan, Lt Col Richard Haggerty told delegates: 'There's no substitute for the real thing but the real thing isn't always available or convenient. Our portfolio offers very good training opportunities for us.'

When quizzed about the role of simulation in the planning and preparation stages before Operation Neptune's Spear which saw a US Naval Special Warfare Development Group (DEVGRU) unit eliminate Osama Bin Laden, Haggerty could only admit: 'Simulation in general did support training in helping take down different HVT [High Value Target] objectives. It's something [US SOF] train with every day, not just for special missions.'

Describing how simulation had morphed over the last 15 to 20 years, Haggerty said the cost of simulation had decreased while investment had increased. 'It's not cheap but the amount of training you get out of the amount you spend is definitely there,' he asserted.

Haggerty said resolution and capability of systems for aviation customers had now matured to such an extent that pilots wanted to train with simulation packages in order to enhance their skills.

In addition, simulation provides realistic alternatives to limited resources in today's fiscal environment, such as money, fuel, ammunition, real estate and training enablers, he added.

'Simulation allows us to push the envelope of training like brown-out landings, with less risk and training-related injuries, not to mention less environmental impact,' Haggerty continued.

Looking to the future, he predicted an ever-growing utilisation of gaming software due to the huge investment being 'pumped' into the commercial sector. Haggerty also foresees more 'mixed-reality' training with live immersion to sights, sounds and smells as well as increased levels in non-kinetic training for cultural awareness, indigenous force support and medical taskings.

Existing SOF simulation packages include a mixed-reality shooting house which projects reactive targets onto walls; the Joint Terminal Attack Controller (JTAC) trainer which includes an 'immersive' dome for near 360-degree coverage; and SOF Virtual Mission Rehearsal which is integrated into Falcon View and Virtual Battlespace 2 software for 3D mission planning, rehearsal and after-action-reviews.

Finally, Haggerty described how the JTAC trainer was now located in Virginia and running demonstrations for the international community.



Globalsim Delivers New Crane Simulators to US Navy

The Shephard News Team

July 6, 2012

Mil-Log

GlobalSim has announced that it has delivered a new MasterLift 4000 training simulator to the US Navy Construction Battalions. The new MasterLift 4000 simulation system includes training programmes for the Link Belt HTC-864 and Link Belt LS-108H construction cranes, according to a 5 July 2012 statement.

Also known as 'The Seabees', the Construction Battalions will use the new MasterLift 4000 as part of its training facilities in Gulfport, Mississippi.

The MasterLift 4000 is a versatile training simulator designed to aid equipment operator training across a variety of industries. In the case of the navy Seabees, it recreates the operating environment of two types of construction cranes. The simulator offers an immersive training environment, using high definition visual screens and authentic machine controls to fully recreate the crane cabin. The simulator's three-degrees-of-freedom motion base gives the operator the feeling of really moving with the crane.

GlobalSim said of the navy's purchase of the system, 'simulation training has gained favour in many training programmes because of its ability to recreate dangerous scenarios which would be impractical to practice on real equipment. Training instructors using MasterLift training platforms are able to assess their trainees' skills



through custom built training scenarios and track their progress through analytic software. The result is a more effective and efficient training programme which produces better prepared equipment operators.'

Eurosatory 2012: Next Steps for Thales Trainer Revealed

Andrew White in Paris

June 14, 2012

Mil-Log

Thales has described the next steps involved in the development of its 'Reality Mission' training and simulation software at Eurosatory in Paris.

Speaking to Shephard, company officials outlined a five-year plan to improve the system which is already used by armed forces in Australia, France, Germany, the Netherlands and the UK.

According to Ismaël Chaudhry, who is responsible for commercial and strategic development of training and simulation at Thales, Reality Mission must be integrated on board 'real' equipment.

'The capability to embed our system into real vehicles is the future,' he said while outlining plans to make the capability transportable by trailer so combat units could train during operational tours. Choudhary also expressed his desire to connect the training system to 'live' players.

In addition, he said Thales was considering offering Reality Mission as a contracted training service instead of a basic product for sale.

Reality Mission is designed to train commanders from squad to battlegroup levels in cooperation and command and control as well as familiarising them with their immediate environment. Up to 75 personnel can be accommodated at a single time during an exercise with a single operator viewing three screens comprising a vehicle perspective; vehicular controls; and remote weapon station.

'This means they can coordinate with each other, provide reports and learn how to observe properly,' Choudhary explained.

On display at Eurosatory, the working model boasted geo-specific terrain of the Kapisa Valley in Afghanistan where French forces are currently operating. Typically, a 'gaming' area of operations can be anything up to 200km² although this could be increased with reduction in resolution if required.

The system also includes battle management system, blue force tracking, after action review capability and mission rehearsal - all of which could be used for pre-deployment training, Choudhary added. There is also a workstation illustrating UAV coverage of the area of operations, he concluded.



ITEC 2012: CAE Highlights Simulation Budget Restrictions

Andrew White in London

May 23, 2012

Defence Notes

CAE UK's managing director, Ian Bell has warned of 'massive pressure' on defence budgets worldwide in the realm of simulation and training.

Speaking to Shephard ahead of the ITEC event in London, Bell said the UK in particular was seeking to edge away from so-called 'high-end' solutions but highlighted North Africa as an area of potential growth.

'One of those things driving the UK is the desire to get away from expensive training devices. What is it we can do on lower level devices?' Bell asked.

Highlighting 'huge' potential programmes such as the MFTS in the UK, Bell outlined a wide array of solutions from iPhones through to full flight simulators, saying: 'We are about putting an old head on young shoulders-preparing the kids as quickly as possible and putting them at ease with the equipment before they put themselves in harm's way.'

Identifying CAE's desire to expand into professional services, decision support solutions and COTS software training.'

Bell isolated land and UAS simulation as 'exciting'.

'UAVs are the future and I guess the only thing we need to get sorted out is how they're going to get mixed and matched in airspace,' Bell explained while describing market drivers including lowering costs and conducting mission rehearsals.

'We have seen this in the UK especially at RAF Benson, who are not interested in learning how to fly anymore, but more about bringing together collective training, C2, land and air elements and rehearsing the "what-ifs".'

'All the underlying technology is in place rather than a disparate arrangement of single devices. Having the ability to talk to each other whether you're in the next-door room or a different country.'

More specifically, CAE expressed its interest in North Africa which Bell said desired a 'lot of western technology'.

'They look to the UK as quite an important source of that technology now and less so their traditional allies in France and Italy. They want to work with companies that will give them intelligence in the country and wealth,' Bell said while mentioning Libya as such an example.

'Libya has huge potential on the military side but not in the near term,' Bell continued. 'They won't spend money until there is a government elected. Only when they have an elected government will they take long-term strategic decisions. In the meantime, they're talking to everybody.'

Elsewhere, Bell questioned whether South Africa was a 'stable' market and described central Africa as 'disparate' and 'still some way from considering sophisticated programmes'. He also denied that CAE would



supply China defence systems unless the US government altered its global strategy. CAE at present supplies China Southern Airlines with civil flight simulator systems.

Finally, it emerged that CAE's Stryker Driver Trainer system in Orlando, Florida will be unveiled at the AUSA exposition later this year. CAE is planning to enter this solution for the US Army's Common Driver Trainer programme.

ITEC 2012: Calls for Training to Replicate High-Pressure Scenarios

Andrew White in London

May 23, 2012

Defence Notes

Armed forces must integrate Recognition Primed Decision Making (RPDM) processes into existing training programmes to assist soldiers responding correctly to high-pressure situations, Shephard has been informed.

Senior consultant at Explosive Learning Solutions, Gary Craggs questioned whether traditional decision making models helped train soldiers to the best of their abilities.

'RPDM is how people actually make decisions in high-pressure situations and techniques for employing and improving RPDM can be taught,' he said.

By definition, RPDM illustrates how decision makers fail to compare lists of options when considering how to overcome a situation. Instead, a soldier will go with the first feasible option available to him. First unveiled in 1985, the model was designed to assist armed forces and fire-fighting services in day-to-day operations.

'Our current focus is in Afghanistan but with combat operations set to cease in 2014, the last pre-deployment training will be starting in 18 months so we need to implement changes now or it will be too late,' Craggs continued.

'What will the next operations be and is our current doctrine, TTPs and SOPs fit for purpose? We need to start looking at generic basic training and cognitive development now.'

Currently contracted by the MoD to look at situation awareness, the company is looking to develop techniques to integrate RPDM into broader mission specific training for use in the classroom and on exercise as well as online.

According to Craggs, current training for EOD operations especially, tends to focus on 'skills and drills' with emphasis on handling equipment, information gathering and coordination. 'As you learn the SOPs, decision making tends to be tested rather than taught,' he asserted.

However, Craggs warned that many recruits do not pass such tests: 'Traditionally, EOD courses have a very high failure rate and most [failures] come from poor decision making. We can improve by embedding RPDM in the training.'

Referring to a recent blue-on-blue incident in Afghanistan which saw a sniper shoot dead a fellow coalition soldier, Craggs explained how his instructor had described him having 'weak' observation skills despite having 'very good marksmanship'. The soldier killed in action had been under observation for over an hour, it is understood.



'We tend to focus on the physical environment during training and it is difficult to simulate the environment in which an EOD operator is working in. There is no simulation of sounds- you get a lot of cues and clues from sound and some say these are the most important,' Craggs said.

'We can use sound walls and speakers to help develop that situation awareness. The concept we are working on is aptitude testing to identify those who are "super aware"- soldiers who have a knack of spotting where IEDs are so we can develop them even further and place them in key positions in the unit to use as super spotters,' he went on to describe.

To integrate RPDM into current training, Craggs called for identification and 'training-in' of cues and patterns by working with intelligence assets; development of observation skills; use of media-rich scenarios; and aptitude testing to identify the 'super aware'.

Finally, Craggs highlighted the potential use of mental simulation including visualisation techniques as used by sports coaches and cognitive walk-through exercises.



ITEC 2012: UK Defence Helicopter Flying School Begins Simulated Gunnery Training Using New Virtalis System

Tony Osborne in London

May 23, 2012

Rotorhub

Virtalis has delivered a new gunnery module for use by the UK's Defence Helicopter Flying School (DHFS).

The module, being displayed at ITEC in London, is being used by crews on the DHFS' rear crew training course and introduces the crews to the basics of helicopter gunnery allowing them to understand the use of the weapon and the effect of conditions on the weapon's ballistics.

Until now, the introduction to helicopter gunnery at DHFS has been limited to Powerpoint presentations in the classroom. Hands-on experience wouldn't occur until the student had moved onto the Operational Conversion Unit (OCU) of the aircraft they will eventually be assigned to.

The HCR uses a mock-up of the rear cabin of the Bell 412, used by DHFS for multi-engine training. Students wear a virtual reality helmet allowing them to look inside, outside and even underneath the aircraft in a virtual world. Once fitted with a mock-up weapon, the students can also fire the weapon against a range of targets.



The gunnery module which uses the 7.62mm GPMG is part of a wider upgrade of the Helicopter Crew Reality (HCR) System produced by Virtalis for the school.

'This is the third major evolution of the system,' said James Clarkson, systems team manager at Virtalis.

'The second introduced the ability to do winching and other tasks, but with this we have not only introduced gunnery, but NVG usage and a new terrain model.'

The terrain model uses Virtualis' GeoVisionary software and gives the DHFS an accurate rendering of their most commonly used flying areas including Snowdonia. The NVG mode allows operators to understand how their surroundings will look when using the devices.

For example the interior of the aircraft becomes heavily blurred because of the focusing distances on real NVGs. A further enhancement comes from the addition of a simulated flashlight which is used by crews on SAR missions at night. Trainees can hold the flashlight and switch it on lighting up part of the landscape.

The new version also features an auto-fly option for the virtual helicopter, freeing up the instructor to concentrate on a student's progress. Additionally, Virtualis has broadened its library of moveable objects that can be dragged and dropped across the terrain to aid observational and navigational training.

HH-60G Pave Hawk Simulator Enters USAF Service

The Shephard News Team

May 21, 2012

Rotorhub

FlightSafety has announced that its new Sikorsky HH-60G Pave Hawk helicopter simulator has entered service at Kirtland US Air Force (USAF) Base in New Mexico as part of the USAF's Aircrew Training and Rehearsal Support (ATARS) programme. The company made the announcement in an 18 May, 2012 statement.

The simulator was designed by ATARS prime contractor Lockheed Martin and FlightSafety to prepare HH-60G aircrews for combat search and rescue missions. According to FlightSafety, students began training on the device in April 2012.

FlightSafety said, 'this is the first simulator built for the Sikorsky HH-60G aircraft to feature two side domes for aerial gunner stations equipped with simulated weapons... This technology enables pilots, flight engineers and aerial gunners to train together for the first time as a complete crew during training and mission rehearsal scenarios.'

The HH-60G weapons systems trainer has been designed to enhance the ATARS environment to effectively prepare aircrews for their missions. The simulator features a Level D flight model, electric motion and control loading technology, and VITAL X visual system with three image generators and 19 projectors. The Level D flight model was developed jointly by FlightSafety, USAF and US Army under a separate contract. This provides tanker and receiver flowfield and wake turbulence effects by modifying the aerodynamic models.

According to the company, the simulator also provides simulation for the survivability equipment installed on the Pave Hawk helicopter. FlightSafety's Electronic Warfare Simulation allows operation of on-board systems that can detect missile launches and contains threats and friendly mission physics based models developed with real-world data to immerse the crew in a realistic training environment.



Marines Execute Mock Rescue Mission, Culminates Exercise Mailed Fist

Cpl Tyler J. Bolken

June 27, 2012

Leatherneck

MARINE CORPS AIR STATION CHERRY POINT, N.C. – Hiding in the humid, dense forest of eastern North Carolina, June 22, 2012, Capt Nick M. Korent, posing as a downed U.S. Air Force F-15 pilot, found himself in a situation of survival, something pilots fear but train for – as was the case with Korent this day during a scenario-driven Tactical Recovery of Personnel or Aircraft training exercise.

This was the culminating operation of Mailed Fist, a week-long large-scale exercise geared toward training the Marine Corps' East Coast aviation elements for its many missions, including moments like this.

During this scenario, Korent was in a hostile, unfamiliar environment, with little food, water and means of protection, but the radio in his hand provided a lifeline to a virtual air wing of support. Help was on its way.

Though not clearly visible, a team of nearly every model of aircraft in the Marine Corps' arsenal was in the sky above Korent, including AV-8B Harriers and helicopter gunships that provided close-air support, an EA-6B Prowler to provide an electronic umbrella against foreign threats, a KC-130J Hercules to refuel the supporting aircraft and an MV-22B Osprey to serve as a back-up to two CH-53E Super Stallions. It was one of those Super Stallions that landed in a small clearing to pick Korent up. This escalating scenario tested one of Exercise Mailed Fist's primary goals.



Two CH-53E Super Stallion helicopters from HMH-366, land to recover a simulated downed pilot as part of a Tactical Recovery of Aircraft or Personnel training mission in the North Carolina Croatan National Forest, June 22, 2012.

“This size exercise with these types of operations refines our aviation elements' ability to operate together,” said Col Kevin M. Iiams, the Aviation Combat Element commander for Exercise Mailed Fist. “We can never forecast what's going to happen.”

The Marine Corps' most recent high profile TRAP mission was in rescue of a downed U.S. Air Force pilot in Libya, March 2011.

“TRAP missions are one of the most important things we train for,” said Korent, an AH-1W Super Cobra pilot with Marine Light Attack Helicopter Squadron 467 and native of Houlton, Wis. “We don't leave anyone of our own behind.”

In recent years, the Marine Corps has not been doing large-scale exercises like this one because of the focus on combat operations in Iraq and Afghanistan, explained Iiams, a native of New Orleans. It's important to the Wing's and Marine Corps' mission because it integrates Marine aviation into integrated missions for large-force employment.

“The Marines are able to see all the other functions we do and haven't been able to do,” said Iiams. “This exposes us to the rest of the spectrum of missions we could expect to do, should we go other places in the world.”

Some of the week's major operations included a battalion-sized assault with more than 500 Marines at Camp Lejeune, a raid on an objective and the June 22 TRAP.

"Exercise Mailed Fist is another measure so that no matter what mission comes up the future, we have seen it and experienced it," said Iiams. "We can focus on that, increase our training and capability in that area – then succeed in combat in that area."

Marine Corps News

II MEF Trains To Remain Current as Fighting Force

Cpl. Daniel A. Wulz, II Marine Expeditionary Force

May 24, 2012

Marines.mil

MARINE CORPS BASE CAMP LEJEUNE, N.C -- On May 20, on a gymnasium floor aboard Marine Corps Base Camp Lejeune, Marines from II Marine Expeditionary Force gathered around a large map resembling part of North and South Carolina with signs representing different units and their movement.

The Marines aren't assaulting or invading parts of the Carolinas. They are participating in Marine Expeditionary Force Exercise 12 (MEFEX 12), a large-scale exercise for conventional combat operations. The rehearsal of concept drill or "ROC drill" explains and practices the movement of troops and logistics throughout the exercise.

"There's a lot of hard work here but we haven't done this in a while at this scale," said Lt. Gen. John M. Paxton Jr., commanding general of II MEF.

MEFEX 12 is a scenario-driven, simulation supported, staff-level exercise designed to train II MEF and its Major Subordinate Commands and Major Subordinate Elements.

"The purpose is to figure out our standard operating procedures for planning in general and how we do that as a MEF," said Maj. Sean P. Dynan, the Operational Planning Team Leader for the MEFEX 12. "We really haven't done this since 2002, so it's the first time in a long time, so what we're doing is taking the lessons learned from this and incorporating it into our SOP."

After covering the general orientation of the map and discussing conventional operations, Marines began to describe in detail the specific parts of the operation.

While addressing each part of the operation, individual subordinate elements' representative explained their purpose and actions in the mission to the audience.

"The biggest part of today was people standing up and explaining what they were doing and everyone going 'okay I get it, I understand what you are doing and I will support that'," Dynan said.

Throughout the presentations, II MEF leaders including Paxton, asked questions to better refine the standard operating procedures and the plan of action for the MEFEX 12.

"We did exactly what we wanted to, which was to talk through the phasing and sequencing of the operation," said Paxton. "The second part of that was to capture potential friction points so that subordinate commanders and adjacent or higher headquarters could be identified and we did both of those things."

On May 21, the exercise portion of MEFEX 12 began providing Marines an even better idea of how to conduct conventional combat operations and accomplish their mission.



Geospatial Intelligence Forum
Official Publication of the United States Geospatial Intelligence Foundation

Geospatial Tools Aid Water Resources, Simulation Programs

June 2012 Vol 10, issue 4
Geospatial Intelligence

The Army Geospatial Center (AGC) and Engineer Research and Development Center have released the Hydrologic Data Resources Application (HyDRA), a web-based data survey and analysis tool created to provide the Department of Defense logistics and geospatial intelligence-related water communities with information on water resources data collection, visualization and dissemination in a mobile, enterprise-enabled environment.

HyDRA allows users to view, collect and edit unclassified water resources features via Android 2.2+ OS smart devices using Google Maps and Google Earth applications. Wells, water tanks, water storage points, dams, treatment plants and other features may be added, queried and edited in “connected” and “disconnected” modes, and collected features may also be edited through a Web page using the same functionality.

The Web page and app were created to assist Army engineers and the water community working in infrastructure and reconstruction operations with feature collection and identification. A compass feature is also included to assist the user in finding the nearest water feature and its bearings. The mobile application may be downloaded from the AGC’s website at www.agcarmy.mil/wrapp/hydralogin.cfm. An offline version of the mobile application, currently under development, will allow the user to store collected data locally and sync to the server after an Internet connection becomes available.

HyDRA’s database was initially populated with over 1.6 million features from across the globe. Information collected is added to the AGC’s Water Resources Data Base, an enterprise geodatabase containing information on the location, quantity and quality of land-based surface, ground and existing water facility features designed to support overseas DoD water resource missions. Both databases are maintained by the center’s water resources program, which serves as DoD’s primary agent for military water resource analysis and detection.

In addition, AGC recently announced that it has begun distributing modeling and simulation (M&S) terrain databases along with operational geospatial products on its Common Map Background (CMB) website, with the goal of providing a single repository for all geospatial products. There are 161 free synthetic terrain databases that support live, virtual and constructive simulations used in training, testing and experimentation hosted on CMB.

These M&S terrain databases are available in multiple formats suitable for use in Joint Semi-Automated Forces, One Semi-Automated Forces, Virtual Battle Space 2 and other DoD simulations. Available terrain databases include selected Army training areas as well as areas of recent Army deployments.

The terrain databases are available for download for free to DoD users with Common Access Cards at https://agcwfs.agc.army.mil/cmb_online/default.aspx. CMB's graphical interface is easy to use and users can select M&S terrain databases using a simple map interface.

Military Medical & Veterans Affairs Forum

Dedicated to the Military Medical & VA Community

Health Care Collaborator: Providing Care and Support to the Warfighter

M2VA 2012 Volume: 16 Issue: 3 (May)

Military Medical & Veterans Affairs Forum

Lieutenant General Patricia D. Horoho assumed command of the U.S. Army Medical Command on December 5, 2011, and was sworn in as the 43rd Army surgeon general on December 7, 2011. Her previous positions include deputy surgeon general, Office of the Surgeon General, Falls Church, Va., from 2010 to 2011; 23rd chief of the U.S. Army Nurse Corps, from 2008-2011; commander, Western Regional Medical Command, Fort Lewis, Wash., from 2008 to 2010; commander, Madigan Army Medical Center, Tacoma, Wash., from 2008 to 2009; commander, Walter Reed Health Care System, Washington, D.C., from 2007 to 2008; and commander, DeWitt Health Care Network, Fort Belvoir, Va., from 2004 to 2006.



*Lieutenant General Patricia
D. Horoho
Surgeon General, U.S. Army
Commanding General
U.S. Army
Medical Command*

As a registered nurse, Horoho earned her Bachelor of Science degree from the University of North Carolina at Chapel Hill in 1982. She received her Master of Science degree as a clinical trauma nurse specialist from the University of Pittsburgh. She is a resident graduate of the Army's Command and General Staff College and the Industrial College of the Armed Forces, where she earned a second Master of Science degree in national resource strategy. Other military assignments include staff nurse on a multi-service specialty ward, staff and head nurse of a Level III emergency department, Evans Army Community Hospital, Fort Carson, Colo.; nurse counselor, 1st Recruiting Brigade (Northeast) with duty at Harrisburg and Pittsburgh Recruiting Battalions; head nurse of a 22-bed emergency department, Womack Army Medical Center, Fort Bragg, N.C.; chief nurse and hospital commander of a 500-bed field hospital, 249th General Hospital, Fort Gordon, Ga.; assistant branch chief, Army Nurse Corps Branch, United States Total Army Personnel Command, Alexandria, Va.; assistant deputy for Healthcare Management Policy in the Office of the Assistant Secretary of the Army (Manpower and Reserve Affairs), Pentagon, Washington, D.C.; deputy commander for nursing and commander of the DeWitt Health Care Network, Fort Belvoir, Va.; and deputy commander for nursing, Walter Reed Army Medical Center and North Atlantic Regional Medical Command, Washington, D.C. In

2011, Horoho deployed with I Corps as the special assistant to the commander, International Security Assistance Force Joint Command, Kabul, Afghanistan.

Recognitions include being selected in 1993 by "The Great 100" as one of the top 100 nurses in the state of North Carolina. In the same year, she was also selected as Fort Bragg's Supervisor of the Year. She deployed to Haiti with the Army's first health facility assessment team. In 1998, she co-authored a chapter on training field

hospitals that was published by the U.S. Army Reserve Command Surgeon. Horoho was honored on December 3, 2001, by Time Life Publications for her actions at the Pentagon on September 11, 2001. On September 14, 2002, she was among 15 nurses selected by the American Red Cross and Nursing Spectrum to receive national recognition as a “Nurse Hero.” In 2007, she was honored as a University of Pittsburgh Legacy Laureate. In April 2009, she was selected as the USO’s “Woman of the Year,” and in May 2009, she became an affiliate faculty with Pacific Lutheran University School of Nursing, Tacoma, Wash. In May 2010, the Uniformed Services University of Health Sciences appointed her as Distinguished Professor in the Graduate School of Nursing. In 2011, University of North Carolina School of Nursing selected her as the Alumna of the Year.

Horoho’s awards and decorations include the Distinguished Service Medal, Legion of Merit (2 OLC), the Bronze Star Medal, Meritorious Service Medal (6 OLC), Army Commendation Medal (3 OLC), Army Achievement Medal (1 OLC), Armed Forces Expeditionary Medal, Afghanistan Campaign Medal and various service and unit awards. She served as the head nurse of Womack’s emergency department when the hospital was awarded the Superior Unit Citation during the Pope AFB Crash in 1994. She is also authorized to wear the DA Staff Badge and is the recipient of the Order of Military Medical Merit Medallion.

Q: What changes and improvements do you plan on implementing within the first year of being the U.S. Army Surgeon General? What are the top priorities for the U.S. Army Medical Command? What are the top three biggest needs?

A: Over the past decade, Army Medicine has led the joint health care effort in the most austere environments. As part of the most decisive and capable land force in the world, we stand ready to adapt to the Army’s reframing effort. Ten years of contingency operations have provided numerous lessons learned. We will use these as the foundations from which we deliver the Army’s vision. The following focus areas are the pillars upon which we deliver on that effort.

Support the Force—Army Medicine exists to serve the soldier in the operating and generating force. Delivering timely, effective care at home and abroad enhances the medical readiness of our soldiers. We will establish collaborative partnerships with supporting agencies to ensure the holistic readiness of the soldier and their families. It is our duty to stand alongside the soldier from point of injury through rehabilitation and recovery, fostering a spirit of resiliency. We are dedicated to identifying and caring for those soldiers who have sustained psychological and physical trauma associated with an Army engaged in a protracted war. A focus on wellness and prevention will ensure that our warriors are ready to heed the nation’s call.

The Care Experience—The warfighter does not stand alone. Army Medicine has a responsibility to all those who serve, to include family members, and our retirees who have already answered the call to our nation. We will fully engage our patients in all aspects of their health care experience. At each touch point, starting with the initial contact, each team member plays an important role in enhancing patient care. We will make the right care available at the right time, while demonstrating compassion to those we serve and value to our stakeholders. The collective health care experience is driven by a team of professionals, partnering with the patient, focused on health promotion and disease prevention to enhance wellness. We will continue to partner with community resources, seek innovative treatments, and conduct militarily relevant research to protect, enhance and optimize soldier and military family well-being.

Unity of Effort—The ability to form mixed organizations at home and on the battlefield with all service and coalition partners contributing to a single mission of preserving life is proof of the flexibility and adaptability of America’s medical warfighters. We will build on these successes on the battlefield as we perform our mission at home, further cementing our commitment to working as a combined team, anywhere, anytime. There are multiple stakeholders relying on the successes of Army Medicine. We will facilitate efficient and effective health care governance both throughout the MEDCOM and within the Military Health System. We are at our best when we operate as part of a joint team, and we need to proactively develop synergy with our partners as military medicine moves toward a joint operating environment.

Innovate Army Medicine and Health Services Support—Army Medicine’s medical innovations borne from lessons learned in combat have become the world-class standard of care for soldiers on the battlefield and civilians around the world. As our presence in the current war begins to change, we must remain vigilant in developing and assessing strategies to protect, enhance and optimize soldier wellness, prevention and collective health. Through leverage of information technology and militarily relevant research strategies, we will continue to develop new doctrine and education programs to reflect best practice health care on and off the battlefield, while ensuring that Army Medicine remains responsive and ready.

Optimize Resources—One of Army Medicine’s greatest challenges over the next three to five years is managing the escalating cost of providing world-class health care in a fiscally constrained environment. People are our most valuable resource. We will employ everyone to their greatest capacity and make every dollar go a little bit further. We will leverage our information technology solutions to optimize efficiencies. To capitalize on the overall cost savings of procurement and training, we will standardize equipment, supplies and procedures. We will be methodical and thoughtful in our preparation for budget constraints to ensure that the high-quality care our warriors and military families deserve is sustained.

Develop Leaders—The Army calls each of us to be a leader, and Army Medicine requires no less. We will capitalize on our leadership experiences in full spectrum operations while continuing to invest in relevant training and education to build confident and competent leaders. Within this focus area, we will examine our leader development strategy to ensure that we have clearly identified the knowledge, skills and talent required for leaders of Army Medicine. Organizations will be more engaged in synthesizing lessons-learned to posture themselves to respond to our nation’s call.

Support the Army Profession—Army Medicine has a rich history of sustaining the fighting force, and we need to tell our story of unprecedented successes across the continuum of care—from the heroic efforts of our medics at the point of injury to the comprehensive rehabilitation of our wounded warriors in overcoming exceptional challenges. After more than 10 years of persistent conflict, it is time to renew our collective commitment to the Army, its ideals, traditions and ethos. We have earned the trust of our combat tested warfighters, and it is critical that we continue to demonstrate integrity and excellence in all that we do.

Q: How important is MEDCOM’s partnership with industry?

A: From the perspective of medical research and development, academia and industry play key roles in all aspects of the product development process. While the Army labs serve as a source of many good ideas, academic and industry partners also support the pipeline of new concepts and ideas for development. These partners often work directly with Army labs to develop these concepts and ideas working through basic and applied research into prototype development. Similarly, industry partners serve as the critical link translating these prototypes into fielded products by providing funds, expertise and infrastructure for advanced development and production, often bearing the largest financial burden based on sound business decisions that allow industry to profit from their investments, all while assisting DoD in meeting their unique military medical requirements.

Q: What policies and initiatives does MEDCOM have in place to handle the growing problem of traumatic brain injury [TBI] and post-traumatic stress disorder [PTSD]?

A: MEDCOM has numerous policies and initiatives both in the garrison and deployed environments to address concussion and traumatic brain injury. In 2009, MEDCOM implemented an “educate, train, track, treat” strategy to promote early identification of concussive injuries, ensure prompt treatment and change the culture to one that encourages soldiers to seek care for these invisible injuries. In the deployed environment, the Department of Defense implemented a policy in June 2010 that mandates a medical evaluation and a period of downtime following an event associated with a concussion, or mild TBI [mTBI]. In the garrison environment, DoD published clinical practice guidelines [CPGs] in March 2009 that incorporate state-of-the-art science, technology and evidence-based outcomes to standardize TBI evaluation and treatment. A July 2011 study in

brain injury rated the VA/DoD clinical practice guideline the highest out of eight CPGs for mTBI. In June 2011, the Army published an order mandating that all soldiers receive TBI education, including pre-deployment education. Educational materials are readily available on the Army Training Network to ensure standardized education to soldiers from all components worldwide.

Soldiers and family members affected by TBI can be confident they will receive the world's finest treatment from Army Medicine. We will continue to critically evaluate new approaches with the highest degree of scientific rigor and quickly adopt evidence-based, effective interventions to facilitate recovery from the effects of TBI.

In the area of post-traumatic stress, Army Medicine is committed to strengthening psychological resilience and improving the behavioral health of our soldiers and their families. Army leadership is taking deliberate steps to ensure an array of behavioral health services are available to soldiers and their families to help those dealing with posttraumatic stress disorder, post-traumatic stress symptoms and other psychological effects of war. In the past year, the Army implemented the Behavioral Health System of Care Campaign Plan. This initiative is nested under the Army Campaign Plan for Health Promotion, Risk Reduction and Suicide Prevention. The Behavioral Health System of Care is intended to further standardize and optimize the vast array of behavioral health policies and procedures across the medical command to ensure seamless continuity of care to better identify, prevent, treat and track behavioral health issues that affect soldiers and families during every phase of the Army Force Generation cycle. The Army medical department provides behavioral health services in all garrison and operational environments.

The Army currently supports 23 enterprise behavioral health programs supporting soldiers and families who have experienced multiple deployments and other demands of military life during increased operational tempo. PTSD is only one diagnosis in a range of stress-related responses that an individual may develop as a result of exposure to potentially traumatic events. The Army provides support for all such behavioral health conditions.

Q: How has the Embedding Behavioral Health [EBH] program benefitted warfighters so far?

A: EBH provides multidisciplinary community behavioral health care to soldiers in close proximity to their unit area and in close coordination with unit leaders. The U.S. Army Public Health Command conducted a retrospective, mixed-methods evaluation of a pilot effort at Fort Carson to document the process and determine the impact and effectiveness of the program on soldiers' behavioral health service utilization, risk level and deployability. Overall, soldiers and key unit leaders, especially company commanders and first sergeants, reported high levels of satisfaction regarding accessibility, quality of care and trust of their EBH providers. Increased provider capacity resulted in significantly fewer off-post referrals for BH care therapy increasing command visibility of soldiers seeking BH care. Units supported by EBH also had significantly fewer psychiatric inpatient admissions, documented risk behaviors and non-deployable soldiers for BH reasons than units not supported by EBH. A cursory cost analysis suggested that EBH may produce cost-savings, especially with regard to the prevention of emergent psychiatric care.

EBH is fully operational at Fort Carson. At the beginning of fiscal year 2012, the Army has resourced the expansion of this program at eight additional installations: Fort Stewart, Fort Hood, Fort Leonard Wood, Schofield Barracks, Fort Bragg, Fort Bliss, Fort Drum and Fort Knox. Currently, the Army is preparing to roll EBH to an additional 10 installations and, when fully operational, will establish EBH in support of 44 brigades in the Army inventory.

Q: Could you describe how the U.S. Army medical community is utilizing medical simulations and what the benefits of those types of training are?

A: Warfighters led the way in simulated mission rehearsal on the ground, at sea and in flight, and they provide rich examples to train for high-risk, high-consequence events. The U.S. Army Medical Department [AMEDD] uses simulation-based training at all levels of care, from first responders at the point of injury to surgical teams

in the operating room. We train daily for injuries we hope never occur. Fortunately, in the continental U.S., war type injuries are rare. But the rarity of war injuries makes it essential we identify the most effective yet cost-effective simulators/systems of training to stay prepared.

Medical simulation training devices enhance the skill level of medical personnel, as well as non-medical first responders (combat lifesavers and individual warfighters). Prior to 2007, there were no dedicated resources for sustainment or enhancement of combat medic skills after soldiers completed advanced initial training. Sustainment training for soldier medics was neither standardized nor consistent from installation to installation. The Theater Combat Casualty Care Initial Capabilities Document was approved in 2007 to address the gap in medical training and it noted that valuable lessons learned from current military operations can be incorporated into simulation training scenarios in order to refresh medical skill sets for current environments.

Supporting battle-focused training for providing care in the first 10 minutes following injury is the objective of the new Medical Simulation Training Centers [MSTC]. The MSTC Program started in 2006 and is managed by Program Executive Office Simulation, Training, and Instrumentation. This system affords commanders the flexibility to validate their soldiers' medical skills prior to deployment and allows the greatest flexibility in creating training relevant to contemporary operating environment and the unit's mission essential task list. The initial operational capability for this system was the fourth quarter of FY08. Full operational capability is planned for the fourth quarter of FY15. This system will have the capacity to train 85,000 personnel annually. This robust training capability, at 24 locations, provides a standardized training platform for classroom and simulated battlefield conditions. Nearly 500,000 soldiers have been trained since it began. This powerful capability would not have been possible without simulation-based systems.

In support of medical simulation training requirements, the U.S. Army Medical Research and Materiel Command [MRMC] invested in development efforts to produce high quality medical simulation systems for training of first responders, both medical and non-medical personnel.

The U.S. Army Research Engineering Development Command and the MRMC joined forces to develop the iStan patient simulator. It is a high-performance and ultra-realistic patient simulator that is completely wireless, has fully articulated movement and tetherless control—with new and improved features that make it the most powerful and most advanced patient simulator in the world. It also has an advanced realistic skin that is ruggedized for use in field environments. It has fully reactive eyes that provide both consensual and independent, automatic pupillary response to light and trauma. It also has an improved airway, quieter operation and gives high-quality patient sounds to include voice, lung and heart sounds.

The system is capable of training most of the combat medic critical task list for initial entry, transition and sustainment training. This patient simulator is anatomically correct in weight, size and physical attributes, as well as exhibiting appropriate human physiological behavior. It also provides the capability to objectively evaluate student performance through the implementation of valid, accurate and repeatable medical simulations that eliminate subjective influences on simulation outcomes or assessment of student performance.

The Trauma FX Multiple Amputation Trauma Trainer simulates severe battlefield injuries to improve medical task training and provides critical emotional and stress conditioning to medics before deployment. This trainer is a state-of-the-art medical training simulation tool that has been used to support scenario-based training for pre-deployment training for soldiers and Marines going to Iraq and Afghanistan. It is a unique product using ruggedized, tetherless trauma training mannequins with lifelike skin and numerous wounds that simulate an improvised explosive device blast injury. The simulator addresses the number one cause of death on the battlefield: hemorrhage control. It is the first trauma simulator to implement robotic movement of the injured limbs, which significantly increases the realism and difficulty of treatment. It is currently being evaluated by multiple Army and joint services training sites and agencies and has been granted a provisional patent by the U.S. Government Patent Office.

The VIRGIL system combines the use of a realistic manikin with a PC-based graphical interface that tracks the internal position of chest darts and chest tubes during training exercises. VIRGIL provides realistic force feedback during the skin incision, dissection through intercostal muscle and pleura, and subsequent placement of a 36Fr chest tube. As the educational scenarios become progressively more difficult, the system tracks the trainee's progress and detects patterns of error. The system is used in a trainee/instructor configuration, with about 10 minutes required per trainee. A web-based educational tutorial is also available for refresher training. VIRGIL, the first practical demonstration of a long-term research program, directly addresses the expressed needs of the special forces medics to learn and practice safe treatment of combat chest trauma. The simulator combines sophisticated 3-D anatomic models generated from CT scans of actual human anatomy with a manikin built utilizing the same measurements as the computer models. Since the internal organs are proper in size, location and density, this simulator is remarkably realistic. This anatomic realism contributes to "transfer of learning" from the simulated world to real world trauma scenarios. Through collaboration between the Uniformed Services University of the Health Sciences [USUHS] in Bethesda, Md., and Boston Med-Flight, the Simulation Group participated in a series of controlled studies designed to validate the VIRGIL Chest Trauma Training System in a classroom environment. Participants responded enthusiastically to VIRGIL, citing better visualization and increased understanding of the procedure.

The Army Trauma Training Center conducts pre-deployment team training at the Ryder Trauma Center, University of Miami, led by experienced trauma surgeons at Ryder, and the U.S. Army. Technologically advanced manikins developed by industry have sophisticated capabilities and are their primary training tool. Team communication skills are done on their first full day of training and repeated near the end of their rotation, again focusing on the team's ability to communicate effectively and to transfer information. Universally, the teams' communications skills improve between iterations.

The Department of Defense operates its own medical school, the Uniformed Services University of the Health Sciences. One agency of the USUHS is the National Capital Area Medical Simulation Center [NCAMSC], one of the nation's most advanced "MedSim" centers and accredited as a Level 1 Accredited Educational Institution by the American College of Surgeons. Medical students from all DoD agencies are educated here, and simulation is embedded throughout the curricula. Skills labs have manikin and surgical part-task trainers to provide highly realistic scenarios for surgical and emergency medicine training. Students in clinical skills lab can communicate with human actors, called standardized patients to learn communication and interview skills. NCAMSC teachers are using—and developing—haptic technologies to simulate the "feel" of surgery. Simulation supports experiential learning, increasing performance, saving time and resources, and providing reliable feedback.

The Army's Graduate Medical Education [GME] program trains residents at 10 Army Military Treatment Facilities. The Charles A. Andersen [ASC] Simulation Center, Madigan Army Medical Center, Joint Base Lewis-McChord, Wash., provides an excellent illustration of the breadth of simulation use and innovative leadership. In 2002, GME leaders made a request to create a Central Simulation Committee, both to address new GME residency training requirements for 12 medical specialties and to address skills degradation of health care providers returning from deployment. A standardized, state-of-the-art, simulation-based curriculum and centralized electronic evaluation system resulted, so they could address problems in a safe environment rather than with live patients. For team training, they incorporated the TeamSTEPPS, developed jointly by the DoD and the Agency for Healthcare Research and Quality to improve patient safety by improving communication and teamwork skills. ASC trained 30,000 health care personnel in 2011. The Andersen Simulation Center is accredited by the American College of Surgeons as an Accredited Educational Institute and is accredited by the Society for Simulation in Healthcare. Simulation has been embedded in just about everything the ASC is doing, i.e., GME training of interns, residents and fellows; undergraduate medical students and physician assistant students; nursing education; combat medic refresher training; continuing medical education; and team training. While benefits differ, training officials from Madigan are reporting reduced complications, improved bedside

imaging, reduced risk to live patients and increased confidence before stateside or deployed assignments. Skills can be practiced over and over, with no risk to live patients. Medical specialty boards are recognizing the importance of simulation in the Maintenance of Certification process for anesthesia and surgery. Simulation supports Life Support courses, e.g., Basic Life Support and Advanced Cardiac Life Support, required for credentialing and is being used in the evaluation of some new medical devices and for equipment standardization. Simulation systems can be used as platforms for research and may have a place in the evaluation of some new medical devices and for equipment standardization. A systematic approach to training, including appropriate levels of fidelity, can replicate clinical events in many hospital environments, e.g., clinics, nursing units, interventional and operating suites. Each member of the health care team can practice use of individual skills, even switch roles, while learning to work as a team. This is where TeamSTEPPS is critical.

The Army's chemical-biological training makes use of specialized manikins for training in response to nerve agent exposure. Medical personnel at the U.S. Army's Medical Research Institute of Chemical Defense [USAMRICD] collaborated with simulation industry in developing high-end manikins that simulate a human seizure and the cholinergic crisis caused by severe nerve agent exposure. These manikins have totally replaced non-human primates for the training of medical personnel. Also, medical personnel from USAMRICD collaborated in developing sulfur mustard blisters that can be placed on manikins or human actors to simulate mustard agent exposure.

Moving beyond training, Madigan Army Medical Center and the National Center for Telehealth and Technology [T2] are exploring simulation to improve evidence-based behavioral health treatments for PTSD. With the University of Southern California's Institute for Creative Technologies, they piloted simulation to improve ecological validity of cognitive assessments for active duty soldiers at Joint Base Lewis-McChord. T2 now uses simulation to deliver interactive PTSD psychoeducation.

In summary, simulation has become one of the most effective modalities to train cognitive, psychomotor and communication skills among medical teams. Scenarios with authentic noises, visual cues and other sensory stimulators, even smells and "feel," are replacing sterile labs, sometimes-boring lectures and "there-I-was" stories. Synthetic environments train rote skills and critical thinking and yield more predictable outcomes, improved patient safety and quality of care. Serious gaming offers iterative learning in learner-centric environments, to engage tech-savvy volunteer soldiers. Of course, academics are still important, but the ability to synthesize academic information approaches reality through simulation. As we learned from Captain Sullenberger's water landing on the Hudson, his training in the aircraft simulator and years of experience saved many lives that day. Simulation can do that for the military medical community as we care for our patients, whether care is given on the battlefield, in the air during evacuation, or at a brick-and-mortar medical facility. If the outcome of a simulation is not good, we reset the simulator and try again.

Our medics and providers need standard, effective, repeatable training, tailored to learner needs, for yet more capable and confident caregivers, so we can protect and care for our warfighters and their families. The Army has developed, validated or provided significant monetary support for many of the medical simulators available today, either as working prototypes or in use by civilian hospitals and emergency medical services. Improvements in simulation technology have been impressive, but we must keep our eyes on the ball, seek the resources necessary, and close the gap between what we have and what we need. Our medical personnel and our patients deserve no less.

Q: What will be the primary focus of training of the medical caregiver as troops begin to come home from deployment?

A: As the Army transitions to a garrison-based, expeditionary force, the challenge will be to keep the skills of the battle-proven medical soldiers current and sharp. Various methods of instruction will be employed to ensure a well-trained, competent and ready medical force.

The 315 programs of instruction currently offered at the U.S. Army Medical Department Center and School [AMEDDC&S] are continually updated using the latest science, technology, innovations and lessons learned from the field. Medical simulations for both collective and individual skills will continue to be improved and implemented into training conducted at both forward locations and at the AMEDDC&S' Academy of Health Sciences.

The proposed Medical Skills Reset Program is designed to take advantage of the vast resources of the Army Medical Department for maintaining a skilled enlisted force. AMEDDC&S representatives will be working with the stakeholders such as the combatant commands, Forces Command, Army National Guard and the Army Reserve to determine the professional standards of trained and ready medical soldiers. Relevant, engaging and effective training will be implemented and executed through close coordination with medical education departments of installation medical, veterinary and dental activities.

Distributed learning products will continue to be available to units to maintain competency in deployment related medical skills while in a garrison environment. Currently, there are more than 280 Army Training Requirements and Resources System courses available through distributed learning technology.

Q: How has the U.S. Army medical community addressed the growing numbers of soldiers who are medically unfit for deployment?

A: MEDCOM has addressed the issue of medically not ready soldiers through several initiatives:

- Increasing the number of providers and support staff to ensure adequate resourcing to meet established timelines and ensure appropriate individual attention
- Flexing capacity through virtual capabilities like the implementation of telehealth assets and VTC capabilities
- Improving information systems to improve efficiencies and enhancements to eProfile and eMEB
- Improving and standardizing staff training to provide a more efficient and better informed workforce
- Creating a consolidated, centrally-managed program with detailed and prescriptive directions to subordinate organizations
- Automating the Army system for the creation of physical profiles for soldiers with medical limitations and mandated that all physical profiles be created in an electronic database [eProfile]. This allows visibility of both temporary and permanent profiles on all soldiers by eliminating the pocket profile, and provides transparency for providers and commanders in real time.
- Automating the system for identification of soldiers with evidence of a permanent medical condition and no medical or administrative board outcome in MEDPROS. These soldiers will automatically be moved into the 'not ready' population. Once a board finds a soldier fit for duty, they will automatically be moved into the 'ready' numbers. This process identifies soldiers as not ready if they have not been boarded and forces adjudication by a medical or administrative board.
- Developing an Individual Medical Readiness Leaders Course which: assists leaders to ensure soldiers are medically ready; gives leaders an understanding of medical profiles, individual readiness and unit medical readiness; and familiarizes leaders with the medical readiness classifications and available reports for monitoring unit medical readiness and profiles.

Special Operations Technology

World's Largest Distributed Special Ops Magazine

Fused Reality Sim System Provides Safe Training

SOTECH 2012 Volume: 10 Issue: 5 (July)
Special Operations Technology

Systems Technology Inc. (STI) released Fused Reality, a mixed reality visual system providing fusion of augmented reality, virtualized training, haptics and gesture technologies. Fused Reality bridges the gap between the physical world and a custom virtual environment used for cabin crew training, portable gun training, ground vehicle training, in-flight training/evaluation and other military training and evaluation environments.

STI launched Fused Reality publicly following a successful in-flight simulation evaluation system recently tested by pilots from the USAF Test Pilot School at Edwards Air Force Base and NASA Dryden Flight Research Center.

“We are very excited to be able to offer the U.S. armed forces a more technologically advanced alternative in military and in-flight training without risking the safety of the pilot and disruption of the aircraft vehicle or surrounding ecosystem,” said David R. Landon, STI CEO. “The Fused Reality technology has proven to be a game-changer with its advanced engineering and deployment of one of the most disruptive technologies offered to the military and aerospace industry, all at a very significant cost savings over currently fielded systems.”

The Fused Reality technology can be used with equal effect in both ground based simulation and in-flight. While airborne, the Fused Reality system allows pilots to perform difficult and risky flight maneuvers such as aerial refueling with a refueling tanker, close formation flying, precision offset landing, and more. By utilizing this innovative technology, pilots can perform operational tasks in a safe environment, since the other aircraft and/or the physical environment is simulated. In addition, the system is more cost effective as there is no need to fly additional aircraft for the in-flight evaluation mission and multiple tasks can be performed during a single sortie.

Fused Realty is a flexible and extensive system that can be used and adapted to any training scenario. From mechanics to medics, from pilots to ground crew, the technology has the power to increase the effectiveness of any training scenario.

New applications in development for Fused Reality include ambulance interior simulators, In-flight refueling simulators and motorcycle simulators, amongst other industry initiatives.

Thermal Device Weapon Sight Simulator Launched American Technologies Network

American Technologies Network launched an interactive thermal device simulator for its Thor thermal weapon scopes, available for use on the ATN website.

The idea for the thermal device simulator was propelled by the 2012 Shot Show and was the brain child of ATN's technology and product guru, Scott Henry, who wanted the ability to demonstrate the Thor weapon sight beyond the confines of the show. He envisioned something that could be viewed online, while portable enough for dealers to install or link from their own websites.

The simulator allows anyone to try out the Thor weapon sight on their own computer or iPad. Future plans for the simulator include various Android devices and smartphone applications that will be available to stores that sell ATN products.

Marc Vayn, ATN's CEO, has called the simulator and its future models a cutting edge sales tool that, until now, has not existed within the industry.

2012 SOCOM Program Management Updates

SOTECH 2012 Volume: 10 Issue: 4 (June)

Special Operations Technology

Aircrew Training Systems – Training the Fleet

Aircrew training system acquisitions address training needs for the Air Force Special Operations Command's multiple C-130 variants, along with CV-22 and U-28A. Additional aircrew training systems are being studied to address non-standard aviation and small unmanned aircraft systems. A current priority is the MC/AC-130J simulator program to develop and procure capability to support MC-130J and AC-130J aircrew training. Along with a front-end weapon system trainer for the pilots, this program procures an AC-130J mission training device that will support training back-end gunship aircrew. It will also deliver a simultaneous independent operations capability for AC-130J, allowing the front-end and back-end devices to operate either simultaneously as one interoperable training system or independently as two separate training capabilities. This capability enhances aircrew collective training, individual training and overall training management flexibility, resulting in greater training throughput and proficiency for mission crews.

The Simulator Block Update (SBUD) program ensures operational availability and relevancy of fixed wing aviation training capabilities through procurement of training device modifications and sustainment via contractor logistics support. This program procures modifications to sustain legacy training devices and replace obsolete subsystems to maintain fidelity, enhance reliability and maintainability, and ensure operational availability. In addition to upgrade procurements, the SBUD program sustains the operational availability of aircrew training devices and overall training management through contractor logistics support.

Rotary Wing Simulation

Rounding out the rotary wing portfolio is the family of simulators supporting SOF platforms and missions. PEO-RW, along with the SOF Training Systems Product Manager in Orlando, Fla., provides the 160th SOAR with high-fidelity, full-motion training systems for the MH-47E, MH-47G, MH-60K, MH-60M and A/MH-6M aircraft that support SOCOM requirements. The combat mission simulators (CMS) provide aircrews a real-world capability to practice, validate and verify tactics, techniques and procedures to support training and mission rehearsal. Additionally, the aquatics training device provides for aircrew emergency egress training in a variety of environmental conditions.

The simulators are continuously updated to reflect the latest aircraft modifications and to ensure SOF aircrews are provided training systems that are reliable, technically advanced and concurrent with the operational aircraft on the flight line. The MH-47E CMS started a legacy upgrade to an MH-47G CMS in 2011 and will be followed by an upgrade of the MH-60K to MH-60M. The upgrades will parallel the induction of newer-model aircraft into the fleet and accommodate increased training requirements while taking advantage of the latest simulation technology and processor advancements.

Special Operations Forces Planning, Rehearsal and Execution Preparation

Special Operations Forces Planning, Rehearsal and Execution Preparation (SOFPREP) provides enhanced geospatial intelligence data and three-dimensional scene visualization databases to support SOF operators worldwide. As a focal point for the gathering of sophisticated geospatial intelligence (GEOINT) source data and the generation of databases, SOFPREP integrates applications to support SOF mission and training preparation systems. GOTS/COTS systems acquire and consolidate elevation, feature, maps, imagery and other source data required for database production.

Systems validate the geospatial accuracy and certify the use of data in the completed databases and datasets. GEOINT and three-dimensional scene visualizations are also archived for use in contingency planning, humanitarian assistance and response to natural disasters. Geo-specific training databases use common database, Medallion, and Vital formats for SOF simulators. SOFPREP helps SOF units set the course and understand the area of operations before they get there.

Tactical Combat Casualty Care

Dave Ahearn

SOTECH 2012 Volume: 10 Issue: 4 (June)

Special Operations Technology

Special operators slip silently toward their objective, a squat house where the enemy lurks. But suddenly, the SOF are taking fire because someone tipped off the bad guys that the special operators were approaching. Two SOF are hit and seriously wounded by enemy rounds.

A combat medic is on the scene, stat, and he has time on his side: He reaches the wounded warriors early in that golden hour after enemy fire hits them, when chances of saving them are greatest. But will the medic have all the right gear to save the warfighters' lives? He holds their lives in his hands, and this is no time for measures that don't work.



We look at tactical combat casualty care equipment, systems and more that can spell the difference between success and failure for a medic.

Casualty Evacuation

The sooner a wounded combatant reaches a medical facility, whether it's a field hospital in a tent or a major brick-and-mortar hospital, the greater his chances of pulling through and surviving his wounds.

But a medic may not have the luxury of driving an ambulance or other vehicle able to transport the wounded. Rather, he may have to crawl over rough terrain—with the armed enemy nearby—to reach several wounded SOF requiring evacuation.

That's where a product from Skedco is in its element, providing precisely what the medic needs. The Sked, or Skedco, is much like a board on which a wounded combatant can be hauled over the ground to a point away from the enemy, where the patient can be transferred to a vehicle with litters or a medevac helicopter.

Bud Calkin, Skedco owner, explained how the designs of all the products he makes to save wounded warriors are informed by lessons learned in theater. For example, that's why there are varying sizes of the Sked, including some smaller patient litters.

"We have several variations of it," Calkin said. "We have just designed a new one for the Army, by request from downrange. And it's a very small stretcher. The regular Sked is 3 feet by 8 feet when you lay it flat. This

one is 22.5 inches by 6 feet 7 inches, and it's still hoist-able in the horizontal position. But it's carryable, hands-free. We make a little harness that you can carry it with, and those harnesses will double as an emergency rappel harness, too. And that is in the process of testing as we speak. So [the military] bought 110 of them to try them out, and they're all downrange, from what I understand."

Another thing learned from the realities of combat is that a medic crawling on the ground to reach a combatant needs less weight to carry. "So we're making things lighter weight, more efficacious," Calkin said. "We've got another product called the TJ Sked. It's 8 inches narrower than the standard Sked—28 inches wide—and that one has become very popular recently."

One critical concern is that in moving a wounded person on a Sked, it is critical that the patient doesn't fall off and incur critical injuries in addition to the wounds threatening his life. Dependably securing the patient on the Sked is paramount.

"We've put what we call Cobra buckles on there, which are extremely strong, a buckle that's machined out of highgrade, extremely hard aluminum," Calkin explained. "Both buckles break at about 5,000 pounds," far more than the beefiest special operator weighs.

"We put those on Skeds because it cuts your patient packaging time by about two-thirds," Calkin said, referring to the time it takes to secure a patient to a Sked. "So one person can roll a patient on or drag him on to the Sked, fasten the buckles really quickly, adjust them and they're on their way."

Calkin wants to ensure that this better fastener is available not only to military units procuring new Skeds, but also to those who long ago bought the patient mover. "So now what we're doing is selling buckle kits, so that they can retrofit their old Sked and not have to buy a brand-new Sked in order to get the quick-release buckles," he explained. "And those buckles won't release under tension, which is good, because if you're hoisting somebody into an aircraft and grab a buckle, it won't release and dump your patient. That's pretty important."

But Skedco is about more than just moving the wounded away from the enemy.

"We've got a couple of other products that are extremely important," Calkin continued. SOF often work in darkness, and a medic on a rescue mission must have sufficient visibility to help a wounded warrior to start breathing again. "If you've got somebody with a difficult airway, you need light in order to [insert a laryngoscope], so that you can open their airway. And we have a laryngoscope kit that you put a night vision filter in. Nobody can see [a light] except the people that are wearing night vision [goggles], so they actually can see vocal chords and the trachea very easily with this kit, and nobody knows you're even working a patient.

"And you also can shine it on the inside of the hand or on the inside of the wrist ... You cannot start an IV in total darkness. So that is pretty important."

All of these systems can help a highly skilled medic to perform his duties well and save lives. But Skedco is able to help train those who are newly recruited as medics to learn how to respond instantly with precisely the correct moves, reflexively providing the right care.

Calkin noted that often in medic training, when trainees first see a patient with profuse bleeding, the students are horrified and unable to act. So Skedco has devised a bleeding simulation system that permits them to learn how to steel themselves to the sight of blood when a patient's life isn't at stake—for example, during medic school training at Brooke Army Medical Center at Fort Sam Houston near San Antonio.

"The other product that we have that is extremely important is a bleeding simulation system that will simulate arterial, venous or capillary bleeding, all simultaneously, and it's all remote-controlled," Calkin noted.

With arterial bleeding, since the arteries carry blood away from the heart, a severed artery may emit blood in spurts as the heart pumps. A vein, carrying blood back to the heart, may emit blood in a smoother flow. And

there may be less bleeding from tiny capillaries that carry blood filled with food and oxygen to each cell in the body. “PEO STRI just placed a big order for the bleeding simulator,” he recalled.

Once a medic in training learns to ignore the blood and focus on treating the patient, “that makes your new medics prioritize the wounds and treat the most important ones first,” Calkin said.

The simulation system is realistic in many ways, he said. “If you’ve got a general bleed, it’s going to bleed out in three minutes, just like a real person does,” he continued. Further, this sim system, which works on a live actor who plays the part of a wounded warfighter, is low cost, at \$3,000 to \$3,500. “Instead of having to supply a manikin that costs \$50,000 to \$150,000 and just lies there and does nothing, we put this on a real live person. So that will [confront a medic trainee with] a live, screaming, combative, profusely bleeding patient. And that’s what makes the new medics who have never seen blood go into total panic mode, and forget everything they learned in school. But it forces them to develop this ... memory where they are able to treat a patient without having to stop and think about all the blood and gore that they are working with. So they are able to—after they have used it three, four, five times—they are able to treat a patient without hesitation. Everything that they learned in school is retained, instead of forgotten when they go into panic mode when they see all the blood.”

Administering an IV

Administering an intravenous fluid to a patient in a hospital is one thing, where you are in a clean environment, the patient is stabilized and an IV bag can be hung on a convenient stand. But administering an IV to a wounded warrior writhing in pain, lying in dirt, where anything elevated may be shot to pieces by the enemy, is another matter entirely.

Doug Nesbit, with Mobile I.V. Systems LLC, explained the situation. “Over the years, the need for gravity flow in IV therapy has resulted in some pretty creative ways to elevate the bag or otherwise deliver the fluids—recruiting a bystander to hold the bag up, hanging it on nails sticking out of nearby structures, clipping it on your uniform, holding it in your teeth, or jamming it under the patient’s leg, which is far from ideal.”

All of those solutions may have major drawbacks; the IV bag may not be sufficiently elevated to start the fluid flowing into the patient’s arm, or the bag may burst. Fortunately, Nesbit said, a solution has been devised.

“The revolutionary Mobile I.V. System is a new device that is designed to deliver all IV fluids evenly, from any position, without elevating the bag and without electricity or pumping,” Nesbit explained. “It was designed with and for combat medics, but also has superior applicability in a broad range of situations, both on and off the battlefield.”

So how does it work? The system uses carbon dioxide to compress a sleeve that fits around the IV bag. The medic gives a twist, and the sleeve swiftly squeezes the IV bag so the fluid in the bag begins to flow. It comes with a tube set that includes a proprietary all-position drip chamber, enabling the system to deliver IV fluid to the patient from all positions.

“Its portability enables the medic to start vital IV therapy in early stages of treatment, under any battlefield conditions,” Nesbit explained. Starting the flow of fluids to a wounded combatant on the battlefield may improve survival, in situations where evacuation is delayed. “The gravity free flow allows the medic to start the IV and lay the bag next to the patient, instead of finding some other way (usually a team member) to elevate the bag,” he added.

The Mobile I.V. System allows for simpler, safer transport, with less clutter, less chance of detached IV lines, needle sticks and fluid spatter, and warmer fluids since the bag can be placed next to the patient, according to Nesbit. “This means you can continue an IV during a helo/basket recovery, during rough stretcher carries, on the water, in rubble or low-clearance environments—potentially even in space!” he continued.

The system takes mere seconds to deploy, requires minimal training and weighs only 10 ounces, using standard IV bags up to 1000 ml. An even smaller 500 ml version is being developed.

Nesbit added that the system has been airworthiness certified, has undergone trials in Afghanistan and recently was used in live training exercises. Many units view it as a force-enhancement strategy, since fewer individuals are needed to deliver an IV (i.e., hold up the bag) for a patient. Overall feedback from active duty members of all branches has been outstanding, according to Nesbit.

Pelvic Injuries

One of the most serious and difficult-to-treat injuries can be inflicted not only by enemy fire, but in accidents such as vehicle rollovers: pelvic trauma. But a company, SAM Medical Products, has devised a way for medics to handle such challenging injuries.

The company was founded by a Vietnam medic and orthopedic surgeon who recognized an unmet need, and the company became a pioneer in the field of pre-hospital fracture management with the introduction of the SAM Splint in 1984. Since then, the company has selectively introduced additional products when they meet strict criteria of offering a substantial leap in quality and function when compared to the currently available clinical solution and offering a measureable enhancement to pre-hospital care.

Because of the potentially devastating hemorrhage associated with pelvic ring fractures, standard first aid protocol has historically included applying some type of circumferential binder around the victim's hips. What medics said they needed was a reduction of hip-ring fractures prior to and during transport.

Lance Hopman, director of research and development at SAM Medical Products, stated, "Although a window of desired force has been described, there had been no device available to the marketplace that removed the guesswork involved and enabled the accurate and repeatable application of force to the pelvic ring with each application."

The SAM Pelvic Sling II was developed as the first and only force-controlled circumferential pelvic belt scientifically proven in peer-reviewed studies to safely and effectively reduce and stabilize openbook pelvic ring fractures, according to Hopman. The device allows for emergent temporary intervention that reduces the risks associated with diffuse pelvic hemorrhage during transport and until definite pelvic stabilization can be provided.

The sling features a patented self-locking buckle that emerged from a development effort partially funded through a grant supplied by the Office of Naval Research, and Legacy Health Foundation. Hopman explained, "When secured, the buckle automatically limits applied force to a safe and proper level, providing a consistent, reliable and safe treatment that eliminates any guesswork in application."

A medic can place the belt-like device around the hips and pull tight until it clicks and locks into place with the desired force, eliminating any chance of over- or under-tightening. The resulting mechanism ensures that the pelvis will be bound with the optimal amount of force while the patient is transported to the next level of care.

Several of the SAM Pelvic Sling II's features were designed to specifically meet unique and challenging needs that present in the field casualty scenario. The sling incorporates a simple, one-piece design with no detachable hardware, is compact, easy to use and quick to apply (usually in less than one minute). The standard size fits (without cutting or trimming) 98 percent of the adult population. It does not require a fine touch to operate and gives clear feedback by sound and feel to confirm correct application of force.

Additionally, the sling is durable and unaffected by extremes of moisture and temperature or by exposure to hard or sharp objects. It is also radiolucent—an X-ray may be taken while the patient wears the device. It also is magnetic resonance imager safe, and can be cleaned for re-use with common detergents or anti-microbial solutions.

SAM Medical plans to continue to monitor trends and scientific literature to uncover new opportunities to improve pre-hospital fracture management.

Feedback from the Force

For makers of medic gear, the rewards can be multiple. A case in point: Calkin was in an airport in Tennessee when a passerby saw the Skedco patch on Calkin's sleeve, and walked up to thank him. That man and a buddy were hauled to safety in Afghanistan on Skedcos. Medics, too, have sent him letters of appreciation, telling him how Skedcos helped save patients by getting them to treatment quickly, Calkin said. ♦



Ready for the Real Thing

*Lieutenant Junior Grade Michael H. Cole
CGF 2012 Volume: 4 Issue: 2 (May)
U.S. Coast Guard Forum*

Seven-and-a-half weeks is not a lot of time. Like most survey courses, U.S. Coast Guard Recruit Basic Training must fit an enormous amount of material—ranging from military customs and courtesies to the Coast Guard's core missions to work/life balance—into a tiny indow of time before recruits graduate and join the fleet. Compounding the challenge is the raw nature of recruits, mostly men and women fresh out of high school with no military experience. With the Coast Guard's wide range of demanding missions, it is critical that new recruits arrive at their first units with the fundamentals necessary to perform basic tasks safely, especially in the core areas of maritime law enforcement, damage control and seamanship. To ensure this, U.S. Coast Guard Training Center Cape May (TRACEN) incorporates simulation technology into training to get new recruits as close to the real thing as possible, while safeguarding them against the hazards inherent in their work until they are seasoned enough to face them safely.

Maritime Law Enforcement

The safe and effective handling of firearms is a critical part of the Coast Guard's national security and maritime law enforcement missions. All ratings, from Boatswain's Mate to Yeoman, may be called upon to participate in boarding parties or to secure shore facilities, sometimes necessitating the use of force. Safe firearms handling skills take time and practice to develop, and the potential for accidents is a cause for concern. To that end, TRACEN Cape May employs a simulation system designed to provide recruits with an introduction to the safe handling and use of the Sig-Sauer P229 .40 Personal Defense Weapon—the standard issue pistol used by Coast Guard personnel.

The combined system is the only one of its kind, a customization based on simulators designed to train members of other branches of the armed services but tailored to the Coast Guard's basic course of fire. Recruits are armed with real P229s, rendered inert, but completely true to the weight and feel of the actual weapon. The simulated weapons are equipped with lasers that track the muzzle's position and Bluetooth devices that report the position of the trigger to a central computer. Magazines are loaded with compressed air, which simulates the gas discharge of a real weapon, cycling the action and causing recoil at about 60 percent of the force of an actual .40 round. The computer provides a slightly reduced sound of gunfire. Firing at a video screen that tracks where a real round would impact by means of the laser, recruits are drilled by range instructors on the fundamentals of marksmanship and safe weapons handling on the heels of an hour of classroom pre-fire

instruction conducted as if they were in a live-fire scenario. By the time recruits arrive at live fire ranges at their first unit, they understand how to handle and use a weapon safely and have basic familiarization with the sights, sounds and sensations they will expect with an actual P229.

Damage Control

Maritime firefighting is another skill that members of any rating may be called upon to exercise in the event of an emergency. Whether as a hose tender, nozzleman or plugman, newly minted Coast Guard members never know when they may be called on to participate in a repair party. As with firearms, the potential for accidental injury to untrained recruits exists, and once again TRACEN Cape May employs simulation technology to give recruits the most realistic possible experience as they build the experience and skill to effectively mitigate associated risks.

A range of simulators are used at TRACEN Cape May to give recruits the experience of going up against a raging maritime fire. Dressed in full firefighting gear including mask, helmet and fire-proof suits and manning real fire hoses in four-person teams, recruits face off against a simulated fire portrayed by 40-inch-by-60-inch LED screens in the “wet room.” The screens are sealed so that the recruits can use the hoses to douse the simulated flames, which can be raised or lowered by instructors depending on recruit performance. Smoke machines use dispersed water to provide simulated smoke—providing recruits with a realistic experience, simulators incorporate the heat, claustrophobia, sweat, exhaustion and disorientation that are components of real firefighting, yet without the risk of severe injury in the event of mistakes. Other apparatuses help simulate real flame scenarios outside the wet room, using propane fueled fires that simulate the heat projection and colors of different types of fires, such as wood/paper based, fuel based, electrically based and metal based. In all cases, quick reacting watertight doors and metal bulkheads simulate a ship’s interior and drills recruits for shipboard action, while also preparing them for action in an air station or other shore command.

Seamanship

The ability to stand a helm watch is as critical as the ability to handle a firearm or firehose. Most Coast Guard members will work afloat at one time or another in their early careers, whether on a larger cutter or at a small boat station. Helm watch possesses its own distinct vocabulary and follows specific protocols that ensure that commands are properly relayed, understood and executed to ensure the safety of the ship and its crew. In the case of ship and boat steering, a mistake poses less of a chance of immediate injury to a recruit, but there is a risk of damage to expensive and mission essential ships and equipment. TRACEN Cape May employs an electronic helm simulator to give recruits the basic familiarization they need to steer ships.

The simulator is a virtual reality video game, housed in a casing that represents the type of equipment a recruit will encounter on a real ship’s helm, including the tiller, helm indicator, rudder angle indicator, magnetic compass and gyro repeater. A video screen above the simulated helm displays what the helmsman would actually see: the ship’s prow cutting through the sea. The dynamic 3-D rendered scenery does its best to simulate real conditions, including other ships, fully rendered coastline and weather patterns ranging from calm waters under clear skies to 7-foot swells in a moderate gale. The simulation can represent a broad range of Coast Guard boats and ships from a 47’ motor life boat to the largest polar icebreaker, with the view from the helm varying accordingly. More importantly, the responsiveness of the rudder to the helm is accurately represented. It takes a lot longer for a 378’ ship’s rudder to respond to helm commands than it does for that of a 47’ boat, and it is important that recruits, most of whose concept of steering response comes from driving a comparatively agile car, understand this concept.

Recruits don a headset with a microphone while using the simulator and practice responding to commands from a virtual conning officer, including repeating commands, executing them and then advising of the rudder position. The simulator listens for the recruit’s voice, ensuring that commands have been repeated correctly, that the tiller is moved to the correct position and the recruit waits to ensure that the helm indicator matches the rudder angle indicator before advising, and that the recruit advises rudder position correctly. These are virtually

scored, giving instructors a chance to sit down with recruits after the simulation and the specific mistakes that were made. The simulator gives recruits experience handling a vessel at a range of rudder positions in a compressed period of time, enabling them to train in skills that would only normally come to bear infrequently or during a crisis.

All recruits must demonstrate a basic level of proficiency in firearms handling, firefighting and helmsman before graduating TRACEN Cape May. This ensures that they arrive at their first units able to safely perform tasks as they train further to qualify to perform them. As importantly, it exposes the recruit to the look and feel of a range of core work in the Coast Guard. Though their paths are somewhat laid as they enter the Coast Guard as seamen or firemen, non-rates are still servicemembers in flux, with the ability to change course if they feel passionate about a particular aspect of the service. Coast Guard members who are satisfied with their work perform better, and course corrections are best made early. A recruit set on aviation may decide to strike boatswain's mate after a turn at the helm simulator. Time spent in the wet-room may make a damage controlman out of an intended machinery technician. By giving the recruit a near-to-real experience, simulation technology allows them to add experience to an understanding of job duties that were previously only words on paper.

Simulation technology isn't perfect. Adjustment is still required for live fire situations, which involve higher recoil and louder gun noise than recruits will be used to. Real fires produce greater levels of heat and act with less predictability than simulated ones. An indoor helm simulator cannot give the feeling of a pitching deck or the challenge of hearing a conning officer's commands over roaring engines and the noise of a busy bridge. However, the employment of simulation technology is an important first step in preparing recruits for the jobs they'll have out in the fleet—and helps keep safety first. ♦

Practice Makes Perfect

Maura McCarthy

CGF 2012 Volume: 4 Issue: 2 (May)

U.S. Coast Guard Forum

Simulated training allows the Coast Guard to reduce costs in a variety of ways: The service can reduce the number of hard trainers they need to purchase, mitigate equipment wear and tear, and eliminate fuel consumption. “As budgets force people to rethink the way they do things, simulation is well-positioned to allow them to continue to operate at their high tempo and pump out the trained servicemembers that they need, but do it at a lower cost and faster,” Gabe Batstone, chief executive officer of Ngrain, a software simulation company, predicted. Live training is still important but can be reserved for critical tasks.

CSC's VirtualShip is used to train Coast Guardsmen at facilities across the country, including TRACEN Yorktown, Va., Fort Eustis, Va., Mare Island, Calif., the Trident Training Facilities in Bangor, Wash., and Kings Bay, Ga. An advanced ship simulation software package, VirtualShip can be used for training in navigation, seamanship, anti-terrorist force protection, escort and transit protection, vessel defense and weapons, total ship, underway replenishment and boat operations. TRACEN Yorktown utilizes a Response Boat- Small (RB-S) simulator, which “can take a new recruit right out of basic and train him or her in more than boat handling—the student learns rules of the road, whistle signals—and the skill to do it in challenging conditions,” Ron Peterman, director of Strategic Planning for CSC's Advanced Maritime Center explained. Previously, the gun crew trained in a separate room, but the RB-S simulator integrates the Fire Arms



Trainer which allows the gunner to train with the crew, further enhancing the realism of the training. The Trident Training Facilities in Bangor and Kings Bay have installed the Transit Protection Training System (TPTS) to facilitate their mission rehearsal of missile submarine escort. The demand for trainers is great, and in addition to having the VirtualShip installed at various Coast Guard facilities, CSC is working on taking the trainer on the road to reach reserve centers.

Only 18 miles from Coast Guard Air Station Clearwater, CAE's C-130 Tampa Training Center is the largest commercial Hercules training center in the world and provides training to over 30 U.S. government, foreign militaries and commercial operators. With over 400 separate courseware modules employed, this customized approach is a hallmark of the center. "Each and every training course has been specifically customized to the USCG aircraft configuration, operating and technical manuals, and approved procedures," said Rich Paglialonga, manager of the C-130 Tampa Training Center for CAE USA. The center has three C-130 full-mission simulators, one part task trainer (Flight Training Device, or FTD), 15 multimedia classrooms, an extensive courseware library, and a staff of highly qualified instructors. Full mission simulators conduct aircrew and maintenance training programs and feature "an integrated instructor operating station designed to allow control of the simulated environment, positions, intercommunications and an extensive set of malfunctions covering all aircraft systems," explained Paglialonga. The part task trainer is a full-size mock up of the C-130 flight deck that is fully functional in all primary aircraft systems operations, indications and interdependencies and bridges academic instruction and simulator training in the areas of spatial orientation, crew coordination and logistical decision-making. To meet the changing needs of their customers, the center recently incorporated an Advanced Avionics (glass) C-130H full mission simulator into their training.

Pre-deployment workups require additional training to prepare servicemembers for activities perhaps outside their traditional roles or operating areas. Forward deployed cutters from Portsmouth, Va., practice navigation at Fort Eustis with the VirtualShip, which has over 107 harbors in Africa, Asia, Europe, North America and South America in its database. "Granularity of harbors is 100 percent; it has all the aids to navigation in the harbor and the operator can manipulate conditions to make it day or night, adjust visibility, etc.," Peterman noted. In April 2011, the Coast Guard's Redeployment Assistance Inspection Detachment (RAID) team 13 was the first military unit to train with Lockheed Martin's Reconfigurable Vehicle Tactical Trainer (RVTT) simulator at Fort Dix. RAID members were conducting pre-deployment training with the Army when they broke in the RVTT, a realistic convoy training technology for drivers, gunners, communicators and decision-makers that immerses students in a 360-degree environment informed by detailed geographic databases. The simulators can be reconfigured, allowing flexibility for servicemembers to train on different variants of the highmobility multipurpose wheeled vehicle and the heavy expanded mobility tactical truck. "Additionally, the user community can utilize a library of different location databases and develop custom training scenarios. For example, they can choose from different location and various 'entities' (e.g., civilians, friendlies, enemy forces, different types of vehicles) to build a training scenario that works for their needs. That kind of agility is very useful to customers in a dynamic environment; when operational conditions change, for instance, training can be rapidly adapted," explained Jim Craig, vice president of operations for Lockheed Martin's Global Training and Logistics. In support of the Coast Guard's force-onforce training requirements, Lockheed Martin also developed the Seagoing Wireless Interactive Target System (SeaWITS), which can be used to instrument weapons like the M240 and M2 50 caliber machine guns or the Mk 38 and Mk 51 chain guns. "With SeaWITS, crew aboard various boats and ships can 'shoot' at each other using eye safe lasers (versus live fire ammunition) for practice and receive detailed after action reports on how they did. This reinforces the lessons they've learned so they can apply them to future training scenarios and if necessary, real life," Craig said.

As the Coast Guard recapitalizes its fleet, Coast Guardsmen must learn the intricacies of new vessels. With the national security cutters entering the fleet, Kongsberg Maritime Simulation designed a bridge identical to that of the NSC so that future crews could become proficient not only in the operation and use of bridge equipment, but also with the NSC's capabilities across the spectrum of Coast Guard operating environments and mission areas.

“In the case of the national security cutter, Kongsberg worked closely with Lockheed Martin and Sperry Marine in order to combine the Kongsberg Polaris Simulator software and Seaview visuals with the NSC’s real bridge equipment. In addition, this integration works with the Oasis Combat Information Center Training Simulator and can be used for executing integrated training exercises,” explained Mark A. McLeod, account executive for government programs at Kongsberg Maritime Simulation Inc. The crew of the Mackinaw, a Great Lakes icebreaker, also utilizes the onboard Polaris Simulator to enhance their navigation and seamanship skills. During the PRECOM period the system was set-up and operational at the shore facility but has now been moved on board where it is available for individual or bridge team training.

Simulated training allows Coast Guardsmen to acquire proficiency not only with new assets, but also with the technical procedures needed to sustain them. Ngrain provides 3-D simulation software and solutions for maintenance training and support and has worked with the Coast Guard since 2009 providing Virtual Task Trainer (VTT) solutions. At the Aviation Technical Training Center in Elizabeth City, the Coast Guard utilizes the VTT for the HC-144 Ocean Sentry maritime patrol aircraft’s avionics, power train and hydraulic systems and has recently selected the VTT solutions to standardize the service’s maintenance training for the Honda VF 225 outboard engine. The VTT for the Honda is essentially a 3-D simulation enhanced piece of training content focused on technical training. “The Coast Guard wanted to reduce training time while at the same time expedite individual training qualifications—and they wanted to do it in a deployable environment. Statistics show that 70-90 percent of learning occurs outside of a formal environment, so it’s important that the service provide the right tool, and the right information at the right time—which is often not in the classroom. They looked to distributed learning as a way to do that,” explained Batstone. In addition to being used as a primary piece of course material to teach standard operating procedures of the engine in the classroom, the VTT can be used by a student for self-study. Ngrain’s approach is unique in that they will provide software solutions that the customer can modify and enhance on their own to meet changing needs or protocols. “The Coast Guard actually has about 15 seats of our software, primarily in Yorktown. They’re always responding to realities in the field and updating operating procedures; this way they don’t have to go to a contractor to request a course update or procedural change on the VTT. They are actually able to do this themselves and that boils down to significant cost savings and sustainability,” said Batstone.

In the future, the service could move beyond technical training and into the operational support environment. For example, the Coast Guard could integrate VTTs into the fleet and use them as job aids where members are equipped with iPads or tablets while they are at sea and utilize them to see the procedure they are about to complete. To further increase the realism of simulation, the industry could also explore motion-based simulation, which is particularly important for gun crews on smaller boats. “You need to have the effect of your wake, especially when you start to integrate gun crews as your sight pattern changes if the boat leans over by 30 degrees,” noted Peterman. “The Coast Guard are some of the most visionary people when it comes to distributed learning and simulation, and I think that might be a function of size. Bigger organizations have more people, money, etc., which can at times lead to less innovation. As the Coast Guard is a more lean organization, I’ve found they’ve really taken the time to think outside the box and push the limits of technology,” concluded Batstone. ♦

State of the Art Simulation Center Opens

*CGF 2012 Volume: 4 Issue: 2 (May)
U.S. Coast Guard Forum*

Resolve Maritime Academy opened its new Simulation Training Center on March 12 with a ribbon-cutting ceremony at the Fort Lauderdale, Fla., facility adjacent to Port Everglades. The state of the art, 7,000-square-foot facility will provide leading edge simulation-based training programs to enhance safe navigation at sea for cruise line and commercial shipping personnel and other maritime professionals worldwide. The academy designed and developed the \$6.5 million Simulation Training Center, which features a Class A Full Mission Bridge Simulator with fully functional attached Bridge Wing with independent visual system, Electronic Chart Display and Information System (ECDIS) Classroom and Navigation Lab with a suite of advanced “mini” bridges. The academy’s unique curriculum utilizes state-of-the-art simulation technology and will initially include: Ship Handling; Bridge Resource Management; Operational Use of ECDIS; and Radar/Automatic Radar Planning Aids programs. Customized programs also will be offered, including: Integrated Bridge Systems (Sperry VisionMaster and NACOS Platinum); Dynamic Positioning Systems; and Communication and Leadership Development for all ranks and employees. Future plans include an Engine Room Simulator for operational and Engine Resource Management training.

The academy developed simulators and training programs specifically for Royal Caribbean Cruises Ltd. (RCL). In April 2012, the new programs were offered to personnel of three of RCL’s cruise brands—Azamara Club Cruises, Celebrity Cruises and Royal Caribbean International. Academy Director Denise Johnston said, “Our new Simulation Training Center greatly expands the training opportunities for shipboard personnel worldwide. In addition to standard bridge and engine room simulation courses, we will also offer training programs incorporating the use of bridge and engine room simulators with our Gray Manatee shipboard fire fighting training vessel/facility as well as Fast Rescue Boat and Hazwoper courses. Our first priority at the academy has always been to improve safety at sea, and these new programs will improve competencies and help build teamwork attitudes and behaviors in a dynamic, real-time environment. This new generation of highly effective training will result in safer navigation in all sectors of the maritime industry, greater safety for vessel passengers and cargoes, and better protection of the marine environment.”

Military Training Technology
America’s Longest Established Simulation & Training Magazine

Q&A: Vice Admiral David Architzel

*Brian O’Shea
MT2 2012: Volume 17 Issue: 4 (June)
Military Training Technology*

WAR FIGHTING INTEGRATOR: Collaborating Across All Elements of Our Navy and Marine Corps

Vice Admiral David Architzel currently serves as commander, Naval Air Systems Command, headquartered in Patuxent River, Md. He assumed his duties in May 2010, after serving as the principal military deputy to the Assistant Secretary of the Navy (Research, Development and Acquisition).

Previous flag assignments included program executive officer for Aircraft Carriers; commander, Operational Test and Evaluation Force, Norfolk; commander, Navy Region Mid-Atlantic; commander, Naval Safety Center, Norfolk; commander, Iceland Defense Force and Commander, Fleet Air Keflavik.

At sea, Architzel served as the executive officer, USS Dwight D. Eisenhower (CVN 69) and Pre-Commissioning Unit John C. Stennis (CVN 74). He served as the commanding officer, USS Guam (LPH 9), flagship for Commander Amphibious Squadron Two, and the sixth commanding officer of USS Theodore Roosevelt (CVN 71).



*Vice Admiral David Architzel
Commander
Naval Air Systems Command*

A career Naval aviator, Architzel has accumulated more than 5,000 flight hours, 4,300 in the S-3, and the remainder in some 30 other aircraft types in his role as a test pilot at NAS Patuxent River. He served in VS-30, deploying aboard USS Forrestal (CV 59), and as maintenance officer in VS-28, deploying aboard USS Independence (CV 62). He later returned to VS-30 as the executive officer and subsequently as commanding officer.

Architzel was born in Ogdensburg, N.Y., and raised in Merrick, Long Island. He earned a Bachelor of Science degree in mathematics at the U.S. Naval Academy in June 1973 and also holds a Master of Science degree in aeronautical systems from the University of West Florida.

His decorations include two Navy Distinguished Service Medals, the Defense Superior Service Medal, four Legions of Merit, three Meritorious Service Medals, the Navy Achievement Medal and various service related awards and campaign ribbons. He was also awarded the Spanish Naval Cross of Merit from His Majesty, King Juan Carlos of Spain, the Navy League's John Paul Jones Leadership Award for 1998, and the Commander's Cross with Star of the

Icelandic Order of the Falcon presented by the President of Iceland.

Q: What are the top three focus areas for NAVAIR?

A: Delivering integrated war fighting capabilities is a significant aspect of NAVAIR's core mission. Platforms, weapons and sensors continue to grow in complexity. These systems must operate with each other as well as with legacy systems. Delivering integrated war fighting capabilities to our combat commanders will require collaboration across all elements of our Navy and Marine Corps, the other services, industry and our coalition partners. Senior Navy leadership is looking to NAVAIR to take a lead role in ensuring proper integration and interoperability—applying our proven systems engineering experience, labs and test ranges to enable end-to-end, systems-of-systems development, testing and validation.

The need to reduce acquisition cycle time and total ownership cost continues to dominate conversation across the Defense Department. For Naval aviation, these imperatives are more important than ever. Much of NAVAIR's portfolio has transitioned to production and in-service support, placing a huge demand on NAE resources in the flying hour, rework and enabler accounts. We will leverage our institutional knowledge to assess trends, identify root causes, and proactively reduce production and inservice support requirements—allowing the Navy to invest in future capabilities.

Our long-range workforce strategy is based on the certainty that we will be operating and maintaining the weapons systems we are delivering today for the next 30 years—while developing the follow-on systems that will complement and eventually replace them. In order to successfully manage this transition while preparing our next generation workforce, we must anticipate and capitalize on emerging talent and technology trends. While the domestic economy will likely influence our workforce size and composition, we will continue to recruit, develop and retain our nation's finest acquisition and technology experts—and provide them with the training, tools and mentorship they'll need to succeed.

Q: How is NAVAIR using open architecture to reduce costs across all platforms?

A: Platform architectural and software diversity is the most significant cost driver of the Naval aviation capability evolution. Our program managers adhere to collective interoperability standards and protocols in order to control future modification costs.

NAVAIR employs open systems architecture [OSA] in hardware and software designs. The DoD OSA Guidebook for program managers is used within NAVAIR when developing requests for proposals to provide a consistent guide for all commodity and platform programs. NAVAIR focuses on ensuring the ‘key interfaces’ are open, those interfaces that have the highest probability of changes due to technology upgrades and obsolescence as well as the potential for the largest return on investment. By focusing on open key interfaces, costs for future enhancements can be controlled.

NAVAIR is also developing data rights strategies in our acquisition plans for strategic procurement of data rights that will enable real competition after a system reaches initial operational capability. NAVAIR also initiated a Consortia lead initiative so that we can design future platforms and evolve current platform processing architectures toward an open application interface configuration [FACE, Future Airborne Capabilities Environment] that allows systems and software to be integrated without requiring full mission profile regression testing.

Q: Can you discuss how NAVAIR plans on reducing cycle time and total operational cost, while maintaining capability and readiness?

A: We are working to ensure the success of future programs by applying a standard Requirements Trades process to inform early cost, schedule and risk decisions. This process enables requirements officers and program offices to develop program plans that are structured to meet cost, schedule and performance expectations throughout their entire life cycle—including transition to production.

- Designed a commandwide acquisition cycle time tool enabling program teams and competencies to measure cycle time across the entire acquisition cycle. The tool is in use in many program offices and competencies as command roll-out continues.
- Deployed the four-phase systems engineering process to ensure programs are structured with realistic schedule and cost estimates.
- Deployed integrated master schedule and supplier guidance for program teams.
- Fully resourced a program success orientation team to capture and accelerate replication of program management best practices, tools and lessons learned across programs.
- Completed a NAVAIR/PEO program management career path addressing qualifications for key PM leadership positions and a consistent training track across competencies for civilian PMs. A military PM career path is in development.

Q: Can you share NAVAIR’s strategy to continue facilitating the most effective and affordable use of available dollars regarding fiscal year 2013?

A: Ongoing pressures on the defense budget will require us to continually re-evaluate and rebalance our workforce, applying talent as efficiently and effectively as possible to meet the requirements of the Defense Strategic Guidance—which calls for a smaller but flexible, agile and ready force, capable of responding to a wide range of dynamic and increasingly complicated threats. Any decisions on program cancellations and/or restructures will be made at the Requirements/Resource Sponsor level. We will continue to provide decision support to Navy leadership—outlining impacts and risks, and providing options to help mitigate disruption to programs and capabilities.

Q: How is NAVAIR synchronizing planning and budgeting in the public and private sectors to leverage resources/investments for the greatest impact?

A: The ASN[RD&A] 2010 summer study on the “Status and Future of the Naval R&D Establishment” highlighted “a seriously weakened technical workforce and insufficient in-house hands-on work to build experience and maintain essential Navy technological competence.” Industry and academic institutions are poised to align their plans and budgets with ours for a future focused on scientific and advanced research strength—but the demand signal and initial funding stream will have to come from the government.

The Office of Naval Research’s recent investments in Naval Aviation are a great start. ONR designated Sea Based Aviation as a National Naval Responsibility in 2011, which will dedicate significant funding in basic and applied research to areas both NAVAIR and our NAWCs were instrumental in identifying.

Naval aviation has also benefitted from increased funding in ONR’s Enterprise Enablers program—specifically in the Variable cycle adaptive technologies project—as well as multiple new Future Naval Capability programs and a good percentage of the FY11 Rapid Innovation Funds.

Q: How is NAVAIR helping prepare the next generation workforce to meet tomorrow’s technological challenges?

A: In an effort to ignite interest in science, technology, engineering and math [STEM] subjects, we’ve put education partnership agreements in place with schools to bring real world science and technology applications to the classroom. Encouraging and nurturing a student’s interest in STEM subjects must start at the elementary school level and continue through high school and beyond. Through education outreach, the command not only strengthens the student’s understanding of science and technology, but exposes them to career opportunities at NAVAIR with hopes of influencing their future academic decisions.

Q: What are the benefits of expanding NAVAIR’s STEM initiatives beyond the K-12 levels?

A: We must look for every opportunity to leverage intellectual capital. Expanding our STEM initiatives beyond current thinking [K-12] helps incentivize the growth of a stronger post-graduate academic presence in local communities. A larger academic presence, particularly in research and science, in the communities surrounding NAVAIR facilities would provide significant resources toward helping us building a robust S&T intellectual base to support innovation, techniques for rapid transition and incorporation of invention into our products.

Q: What program or initiatives does NAVAIR plan to implement in the realm of simulation and training?

A: Our training systems division continues to work Aviation Simulation Master Plan activities, which include targeted upgrades to F/A-18 and H-60 simulators. They are also working on the littoral combat ship [LCS] suite of trainers. It’s notable that rather than working on a single trainer, this project includes an entire suite of several trainers that allows LCS crewmembers to train to certify and train to qualify almost exclusively ashore while their ship is deployed with another crew. The AEGIS ashore team trainer is being developed in cooperation with the Naval Surface Warfare Center Dahlgren Division.

Q: How is NAVAIR creating strategic science and technology partnerships and what are the primary benefits?

A: We must create strategic S&T partnerships based on a vision that promises benefits across all sectors of Navy, DoD, federal agencies, commercial industry and academia. We must leverage both entrepreneurial commercial capital and academic intellectual capital to effectively multiply the value of S&T money invested anywhere, at any level. Investment in emerging military technologies promises significant educational, commercial and economic benefits. Many of the evolving technologies and systems our Navy needs to remain the preeminent maritime force also hold significant potential for broad market commercial opportunities and other government agency missions—UAVs, cyber/IT, advanced sensors, networking, nanoscience/technology, metamaterials, human systems integration, to name a few.

Q: Why is there such a need to partner with federally funded research and development centers [FFRDCs] and university affiliated research centers [UARCs]?

A: Partnerships with FFRDCs and UARCs provide unique opportunities to expand and sharpen our in-house technical capabilities. We are at a pivotal point in our nation's history, and it's up to us to seize every opportunity, chart a new course, and secure the partnerships necessary for long-term success. ♦

Team Orlando Update

MT2 2012: Volume 17 Issue: 4 (June)
Military Training Technology

Army and Marine Corps Formalize Their Training Partnership

Colonel (P) Francisco A. Espailat, project manager, Combined Arms Tactical Trainers (PM CATT) and Colonel David A. Smith, program manager, Marine Corps Training Systems (PM TRASYS), officially recognized the two organizations' working partnership, signing a memorandum of agreement (MOA) on May 22, 2012.

The MOA outlines the goals, objectives and responsibilities between PM TRASYS and PM CATT in their efforts toward increasing partnership through synergistic capability development. The primary focus of the MOA will be to drive down development, procurement and sustainment costs for similar Army and Marine Corps training requirements.

“The Marines and soldiers that use our training devices will benefit greatly by what we are doing here today,” said Espailat. “This synergy we are building around training systems, especially in light of the current and future budget, is critical to our future success.”

Espailat also noted how this will help improve technology development by industry. “When we combine our requirements and put them on the table, it is much more powerful, and going forward we can figure out where we need to go, collectively, to train our Marines and soldiers in the future. This is a good day for us, and a good day for the training community.”

Smith added, “With the Army and the Marines working more closely together on common training requirements, especially in our approaches to collective and virtual training systems, our industry partners can better leverage their internal resources. I am confident they will appreciate our efforts, and help us drive down our training costs.”

Just last summer, PM TRASYS signed an MOU with PM TRADE to officially document their commitment to maintaining a partnership to work together on similar individual soldier and Marine training devices. “From the Marine Corps' perspective, as part of Team Orlando, this is just an extension of what we're already doing—with PEOSTRI, NAWCTSD and AFAMS,” said Smith. “This isn't theory. It is an example of real work being done inside Team Orlando that helps Marines, soldiers and industry.”

Espailat said it is extremely beneficial to Team Orlando overall to understand what the joint requirement looks like between the Marine Corps and the Army, because it also helps their industry and academia partners, as well as their own research and development arm.

“With this understanding of the joint requirements, they can figure out what the requirements look like so they can help us mature the technology necessary to train our future warfighters both in the Marine Corps and in the Army,” said Espailat.

Smith agreed. “Even without the declining defense budgets, what we are doing to increase cooperation and establish working partnerships just makes sense. If PM TRASYS and PM CATT can more clearly define our mutual training requirements for industry, we can drive costs down, and this will benefit everyone involved in the acquisition process. And I think the American taxpayers will appreciate our efforts too.” ♦

Maneuver Captains Career Course

The Army Learning Model, as discussed in TRADOC Pamphlet 525-8-2, states that curriculum, technology and software must rapidly change to meet the needs of the modern learning environment. In an effort to adapt to the new learning model, the Maneuver Captains Career Course (MCCC) was faced with the problems of changing its organizational behavior, fighting the iPhone culture, and the appropriate software to meet the course curriculum. Even with these major hurdles, MCCC sees value in implementing virtual and gaming simulations directly in the classroom to create decision exercises at the tactical level. Simulations provide students with another form of feedback on the outcomes of decisions in a fluid environment.

MCCC produces agile and adaptive leaders who are skilled in the art and science of mission command in the conduct of decisive action within current and anticipated operational environments. Students are prepared for the leadership, training and administrative requirements needed for company command. Additionally students receive training to execute the tactical planning responsibilities of Battalion/Brigade level staff officers using the military decision making process.

Why Simulations Work: Exercising the Decision Framework

Historically, students would use paper maps and acetate to conduct the troop leading procedures for a company tactical problem. The student would then brief a small group instructor (SGI) within a given amount of time, usually 60 minutes. The SGI critiqued the student on the strengths and weaknesses of the operations order. By taking a student’s plan, placing him in charge of artificially intelligent units or other students, it forces the student commander to create and develop the situation. Instructors can observe and annotate the creation of favorable conditions on the battlefield in real time. Students then learn from analyzing each other and after action reviews (AARs). Were movement control and direct fire control graphics effective in the assault of the objective? Was the support by fire element given enough maneuver space to affect the objective during the breach? These in-depth AAR conversations facilitate student visualization and learning in the small group setting.

In essence, simulation exercises create the environment where actions may be critiqued and lessons may be learned. The MCCC instructors now have the ability to critique how future company commanders capture, process and ultimately act on data and information in real time. Additionally, the SGI can evaluate the student’s ability to identify circumstances for actions to maintain momentum, conduct shaping actions that are proactive in influencing the battlefield outcomes, and determine what prudent actions the student should execute immediately (Command and General Staff College, “Trident Valley PE, CGSC Term II – 2009/2010”, Fort Leavenworth, Kan., 2010).

Simulations are an invaluable tool to instructors, allowing students to visualize complex terrain and tactical situations. The contemporary operating environment resulted in military units focusing on stability operations to ensure continued success in Operations Iraqi Freedom and Enduring Freedom. Proficiency in tasks such as the combined arms breach and a deliberate defense were regulated to a lower training priority. In an attempt to educate the next generation of Army leaders in these unpracticed tasks, MCCC instructors found simulations to be an irreplaceable tool to help students visualize the necessary synchronization and complexities of combined arms operations. The Close Combat Tactical Trainer (CCTT) linked to Fort Rucker’s Apache simulators allowed students to conduct air mission briefs, TLPs and engagement area development with actual AH-64 Apache pilots in aviation simulators. Programs such as Steel Beasts by eSim Games allow students to emplace obstacle plans, battle positions and indirect fire plans within a short period of time after starting the scenario.

The SGI and classmates can then watch their fellow student's operation unfold and provide invaluable insight and tactical analysis.

Challenges

Immersion vs. ease of use: The largest challenge MCCC faces is the inconsistency when it comes to simulations in the classroom. Students will use Virtual Battle Space 2 (VBS2) for their first module, followed by Steel Beasts or CCTT for the second and third, and VBS2 for the fourth. Currently, students use decisive action for the first battalion module, followed by joint conflict and Tactical Simulation (JCATS) for the second. For the stability module, students do a four-hour exercise in UrbanSim. The result is students spend an inordinate amount of time learning new systems instead of exercising decision making or critical thinking. On average, each student is given a 90-minute block of time to quickly familiarize himself with the software prior to execution. Although tutorials are assigned to students to learn controls, the students sacrifice study of them to spent time on academic assignments, which count towards their grade at MCCC. With the overwhelming majority of students exhibiting the instant technological mindset, i.e., short attention spans exemplified by the iPhone culture, they quickly write off complex simulations with unintuitive interfaces and unresponsive artificial intelligence (AI) (Matt Richtel, "Growing Up Digital, Wired for Distraction", NY Times, 21 November 2010). This decision hinders the spread of simulations as a training tool.

Another contributing factor to students' attitudes toward any simulation is the atmosphere in which the simulation is conducted. All simulations exercises are followed up with a survey that analyzes the ease of use, interface, training value and AI. Instructors and Sim Center staffs noted that student commanders who frame the simulation's strengths and weaknesses, training objectives, and enforce standards and discipline have higher student ratings in the ease of use and training tool categories across the individual seminars. Student commanders must reinforce to fellow students that the simulation will be run in a professional manner similar to an actual field training exercise or combat operation. Positive comments and ratings on the survey were more likely to occur in individual seminars where the student commander, observed by the SGI, enforced a combat mentality. Examples include pre-combat inspections, communications check, REDCON status, order of march, triggers, brevity on the radio and reporting requirements.

The combat student mentality directly highlights the significant problem faced by the MCCC in introducing simulations. Any organization must select a simulation that fits the training objectives of the organization. When organizations attempt to make simulations go beyond the original scope, the result is often unstable simulations that reduce student learning flow and training value (Mihaly Csikszentmihalyi, *Flow – The Psychology of Optimal Performance*. Harper Perennial, 1990). The MCCC requires programs that are reliant upon AI to fill the roles of company level and below. This creates significant issues as the majority of simulations containing AI-driven platoons are in the constructive realm, such as JCATS and Decisive Action. In the case of CCTT, unmaneuverable AI units are tethered to human units. This is where the current programs of record at MCCC do not meet all of the training objectives of our course curriculum. Current programs have maneuver captains acting as fire team leaders or squad leaders. Running a company level exercise requires a minimum of 17 to 18 students over command and control interfaces designed for platoon operations or below. Attempting to stretch VBS2 to the company command without soldiers playing fire team leaders creates span of control, AI path-finding and immersion difficulties. As a result, students develop a lack of drive in continued training with the software.

Student negative survey responses to VBS2 grouped strongly around the graphical user interface and AI. Negative responses in AARs across a group of 600 students consistently stayed in the 66-70 percent for these two categories. Taking into account student abilities with simulations and SGI support, these responses indicate the functionality of VBS2 does not support company- to battalion-sized engagements where individual soldiers are controlled by the software AI. Path-finding, react to contact, and general behavior of a squad controlled by one human in VBS2 results in flow breakdown and significant frustration for the user regardless of his ability to

use the program (Curtiss Murphy, “Why Games Work – The Science of Learning”, Alion Science and Technology, 2010).

The ideal student runs a company-level operation. A student can enter his plan with an unlimited number of repetitions. This can be achieved with commercial off the shelf (COTS) software that is not yet certified for use on government computers.

Currently, the approval process for units to obtain COTS software to test against training objectives is cumbersome. Network Enterprise Command is faced with the constant struggle of weighing security and training capabilities through simulations. Future leaders must assist unit training by efficiently streamlining the software development and approval process without sacrificing security.

The Way Ahead

Progress and creativity are achieved when students and leaders challenge the status quo. By allowing students freedom of access to programs like Steel Beasts or VBS2 at MCCC, students can test maneuver warfare theories and receive unbiased feedback. To create this type of learning environment, an open, supportive command climate is necessary. Major General Brown, commander of the Maneuver Center of Excellence, stressed this type of atmosphere to encourage creative adaptive thinking (Robert Brown, Major General, U.S. Army, “CG Welcome Brief to MCCC”, Feb. 14, 2012, Maneuver Center of Excellence, Fort Benning, GA 31905). The result is the ability of MCCC to implement a software solution that meets training objectives in all tactical modules.

The Maneuver Center of Excellence and MCCC are looking leverage simulations in training future agile leaders. All of the modules within MCCC curriculum will contain a simulation. The goal is to standardize the simulation platform across all modules to reduce the difficulties associated with student immersion and learning curve. Standardization of software that meets the curriculum will significantly increase student flow and allow instructors to facilitate more difficult scenarios. The standardized software must meet the training objectives of the institution and not be constrained by slow software development processes. ♦

Industry Interview: CAE USA

MT2 2012: Volume 17 Issue: 4 (June)

Military Training Technology

John Lenyo is president and general manager of CAE USA, which is one of the largest divisions within CAE’s global military business. CAE is a leading provider of modeling, simulation and training solutions to the defense, civil aviation and health care markets.

Q: Can you describe CAE’s history and evolution?

A: CAE was founded in 1947, so the company is one of the oldest and largest serving the simulation industry. In fact, CAE is all about modeling, simulation and training—more than 7,500 employees worldwide are focused on developing and delivering innovative simulation-based solutions. CAE USA became part of the company in 2001 following an acquisition. CAE USA is a U.S. company that is headed by Chairman of the Board General Michael E. Ryan, former chief of staff of the USAF, and we operate under a special security agreement with DoD. CAE prides itself on being the only truly global simulation and training company, and we are proud to be the U.S. military component of this world-class company serving the world’s largest and most important defense market.

Q: What are some of your key products in the DoD training and simulation industry?

A: CAE is best known for its flight training systems and services. We design and manufacture the highest fidelity flight simulators and are currently doing so for programs such as the USAF C-130J and U.S. Navy P-8A and MH- 60R/S. CAE USA is the prime contractor on the USAF's KC-135 Aircrew Training System program, where we provide training services to more than 3,500 pilots, co-pilots and boom operators annually. Lesser known are CAE's capabilities related to simulation and training solutions for ground forces. CAE USA is the U.S. Army's provider of comprehensive maintenance training systems for the Abrams tank, Bradley fighting vehicle and HIMARS. These are just a few examples of products and services we are providing to the U.S. DoD.

Q: What are some of the new simulation technologies CAE is developing?

A: Military customers want to increasingly use simulation for mission preparation and rehearsal, which is critical for ensuring the readiness of defence forces and doing so at a lower cost. And there is always a continuing desire for realism—in other words, to make the virtual world look and feel just like the real world. About 18 months ago, we started an internal research and development effort to lay the technological foundation for a correlated, interoperable and persistent dynamic synthetic environment [DSE]. What this means is the military wants the ability to plan for missions using what-if analysis and decision-support tools, rehearse for missions rapidly, and then execute missions that will leave less room for surprise outcomes—and be able to do this in “real time” and in “simulation.” Our DSE developments are aimed at addressing these requirements. CAE makes significant investments in R&D specific to modeling and simulation, and these investments are often the result of direct feedback from our customers.

Q: How are you positioned for the future within the military market?

A: We firmly believe the future of modeling and simulation is bright. Simulation offers a number of advantages that simply cannot be ignored in today's constrained budget environment. The increased cost of fuel, environmental impacts, significant wear and tear on weapon systems, and certainly saving money all point to the greater use of simulation and synthetic training. So we actually see significant opportunity for CAE's core simulation technologies and capabilities as defense forces look to do “more for less.” A great example is the U.S. Navy's P-8A program. We are under contract with Boeing to build 10 P-8A operational flight trainers and additional lower-level training devices for the Navy's planned fleet of 117 aircraft. This ratio is significantly more than for the existing P-3C fleet, so you can see how the Navy is planning to conduct more of the training curriculum in a simulation environment.

Q: What is CAE's view on collaboration and industry partnerships?

A: CAE has always had a culture of partnership, and in our military programs we often partner with either OEMs or small businesses to develop a solution that meets training requirements. We've done joint ventures with companies such as AgustaWestland and HAL in India, and just recently announced a joint venture with the government of Brunei to establish a multi-purpose training center. Here in the U.S., we have a long-standing relationship with Lockheed Martin to develop and deliver C-130 training systems and services, we are teamed with Hawker Beechcraft to support the AT-6 light attack aircraft, and we have numerous other teaming arrangements with both large and small companies. Sometimes we like to lead, and sometimes we'll play a supporting role, but I believe we are always a cooperative and flexible partner.

Q: Are there any key programs in the U.S. that CAE is pursuing, and where do you see growth opportunities?

A: Most in the simulation industry have the KC-46 aircrew training system program on the radar, and CAE is certainly focused on that program pursuit. One area where we see potential for growth is in simulationbased professional services. The use of modeling and simulation for training is generally well-understood, but



*John Lenyo
President and General
Manager
CAE USA*

simulation is also an effective tool when applied to analysis and operational decision-making. CAE is focused on extending the use of our modeling and simulation expertise, and we have a Global Professional Services practice that is now headed by Beverly Seay, a long-time industry executive who recently joined CAE.

Submarine Navigation

Chris Huntemann

MT2 2012: Volume 17 Issue: 4 (June)

Military Training Technology

Military operations that we hear about on the news typically consist of unmanned drones dropping bombs on the hideout of a suspected terrorist or the Navy SEALs carrying out a top-secret mission. But operations at sea, which include support provided by submarines, continue to be a vital part of our military.

A combined effort by the private sector and various military commands ensures that submarines receive not only the latest in navigation technology, but also that its sailors are up to speed with the latest training to use that technology.

The Kearfott Corp. in Little Falls, N.J., has developed the KN-5050 Family of Seaborne Navigation Systems (SEANAV), according to its website. In addition to submarine navigation, the system also has applications for navigation of surface ships, autonomous underwater vehicles, surface unmanned vehicles and remotely operated vehicles.

Gyros and other inertial components are used to help operate the SEANAV systems and while “smaller gyros may be used on navigation systems on smaller subs with short duration missions ... larger gyros are more accurate, and are needed for the long duration mission,” said Peter Boyfield, Kearfott’s marketing manager. “With more time spent underwater, you need more accurate system types,” he said.

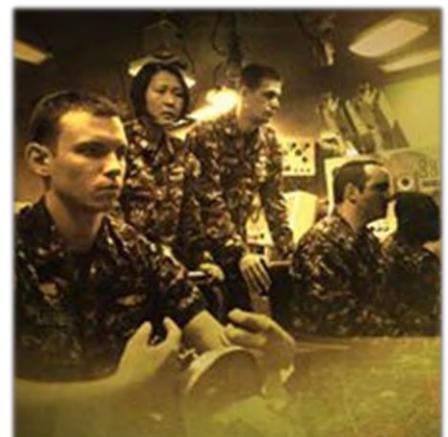
Budget Limitations Create Challenges

Part of using technology to provide submarine navigation is making sure that technology is constantly updated. However, budget considerations and constraints can impact required updates, according to William P. Kenny, spokesman for the Submarine Learning Center in Groton, Conn.

“The Submarine Learning Center coordinates with all stakeholders ... to determine priorities and provide recommendations to the decision makers at EXCOM as to how funding will be allocated,” Kenny said. He added that in addition to budget restrictions, trainers also deal with navigation trainer equipment software becoming obsolete.

The SLC presses forward with training sailors in submarine navigation, which includes virtual tours of harbors that submarines frequently travel to and from, lectures, six months of continuum training, team training and virtual environment submarine (VESUB) training, which provides submarine officers a simulated environment that provides the knowledge and skills associated with mooring and surfaced ship handling to support submarine qualifications and maintain proficiency, Kenny said.

CSC, a Falls Church, Va.-based company that provides technology-enabled business solutions and services, has been supporting VESUB since 1998 when it created a prototype for the Naval Air Warfare Center Training Systems Division (NAWCTSD), according to Ron Peterman, director of strategic planning for CSC’s Advanced Marine Center.



“One of the keys in making this trainer successful was establishing a speech recognition capability that allowed the student to verbally command the trainer, which allowed a single instructor to manage multiple students,” Peterman said.

Training support for all new installations and upgrades of navigation systems is available at the Space and Naval Warfare Systems Command Systems Center Atlantic (SPAWARSYSCEN), which has locations in Charleston, S.C., and Norfolk, Va., said a Naval Sea Systems Command (NAVSEA) in Washington, D.C.

“Training is conducted by the installers as OJT and differences training upon the installation, with follow-on visit of instructors providing a condensed version of the formal submarine training course to the platform,” the spokesperson said.

One-on-one training is also provided for navigation certifications and SPAWARSCEN also provides support to the SLC and TRIDENT Training Facilities and Submarine School, he added.

“Every effort is made to provide training when and where needed,” said the spokesperson. “However, due to operational commitments it is frequently difficult to provide complete training onboard to all personnel, as they are often required to perform other functions... sailors are busy.”

VESUB, SPAN a Big Part of Training

VESUB was created by NAWCTSD and is used by multiple commands, according to David A. Williams, deputy director, NAWCTSD Undersea Programs. VESUB is a virtual reality-based computer system that utilizes virtual environment and head-mounted display technology.

“VESUB immerses a student in a virtual waterway scene under varying geographic, environmental and emergency conditions,” said Williams. “The trainee stands in a bridge mock-up, wearing a head-mounted visual display with a 78-degree horizontal field-of-view (FOV) and a 40-degree vertical FOV, and communicates with other virtual members of the submarine crew.”

A key feature of VESUB is its ability to provide an accurate replay of a completed training session, recording a student’s actions and allowing all scenario events to be played back in a debrief mode, according to Williams.

The Submarine Piloting and Navigation (SPAN) trainer program also plays a major role in submarine navigation training through its purpose of providing individual and team-based training in piloting and navigating a surfaced submarine, Williams added.

SPAN trainers use a PC-based image generator to produce a simulated visual scene of a harbor or waterway, as if the submarine were traveling on the surface. SPAN trainers provide individual or team training in numerous areas, including the helmsman, fathometer operator, navigation center operator, contact coordinator, fire control technician and periscope operator, said Williams.

VESUB and SPAN trainers use CSC’s VirtualShip ship maneuvering and navigation simulation software and associated submarine and ship hydrodynamic models and geographic area databases, Peterman noted. Training through VESUB and SPAN also includes simulating tugs and mooring lines for pier maneuvering, he said.

Training Constantly Reinforced Through New Technology

Since members of the military cannot get enough training, new technology is being rolled out in submarine navigation to make sure the skills of personnel are constantly sharp.

CSC has developed and fielded trainers associated with maritime force protection, which has allowed the rehearsal of surfaced submarine transits with escort ships and aircraft, Peterman said.

Significant improvements in both display and information processing technology has enabled the use of high-resolution displays and provided a path to reducing the need for electro-mechanical equipment on submarines, according to Hoover. An alternative to GPS systems may also be in the works, he said, as the improvement of

technology and an open architecture environment has allowed for the use of additional information, such as bottom contour data, as an alternative to GPS.

“Submarines do not employ GPS when submerged and must rely on their navigation knowledge and skills, with inertial navigation equipment providing the reference data,” Hoover said.

A new training program is also being developed at the Naval Undersea Warfare Center in Rhode Island and currently being installed at the Navigation Training Department of Naval Submarine School in Connecticut, Kenny said.

The program, Submarine Bridge Trainer, simulates the view from atop the submarine’s flying bridge or sail and “the immersive environment enables up to eight trainees and an instructor to conduct predeployment and mooring training, assess operational performance, and improve the crew’s overall operational safety and effectiveness,” he said.

Another training program, the Integrated Submarine Piloting and Navigation Trainer, provides a training environment that more accurately represents shipboard spatial and operating configurations, Kenny added. “It allows more realistic training to support warfighter development and proficiency,” he said.

Fixed Wing Aircraft Carrier Landing

Brian O’Shea

MT2 2012: Volume 17 Issue: 4 (June)

Military Training Technology

Even non-aviation experts know that landing a fixed wing aircraft on an aircraft carrier is an extremely difficult challenge for an experienced pilot.

“It is important to understand that it is like flying yourself into a funnel,” said Captain Bill “Roto” Reuter, commanding officer, Naval Air Warfare Center Training Systems Division (NAWCTSD) and Naval Support Activity, Orlando. “The funnel is basically a 3-foot window at its end. So that funnel may be relatively wide at three-quarters of a mile behind the ship, but once over the flight deck, it is only 3 feet thick. So the margin for error continues to decrease and your ability to correct yourself also decreases as you get closer.”

The challenges of landing on the carrier are numerous and start long before a pilot enters the terminal landing phase, said Navy pilot, Lieutenant Deron Krietemeyer, NAWCTSD E2/C2 Legacy Training Systems Project Manager. From circling overhead of the carrier, determining the interval from which to enter, reacting to environmental conditions, maintaining your interval with the aircraft ahead of you, and then the actual landing phase, simulators help prepare pilots for what to expect.

“In all aspects of carrier landings, day or night, good weather or bad, simulation allows us to introduce scenarios outside of the norm to prepare for the unexpected,” said Krietemeyer. “As pilots grow more comfortable, more complex scenarios are introduced. While these scenarios may be unlikely, the ability of simulators to run these events help to build invaluable skills not only in control of the aircraft, but also in how aviators analyze their situation and apply time-critical decisions to safely recover or divert.”

Industry provides simulators that allow pilots to test their skills before attempting a live landing and the benefits are threefold, said Reuter. First, carrier-type landings, even on land, add significant wear and tear on aircraft. This reduces service life and increases operating cost, which increases total acquisition cost because new aircraft need to be replaced sooner. The operations cost is really on the fuel and “parts” side of the equation, added Reuter. Second, there is fuel cost and energy consumption associated with this flight that could be offset with the appropriate fidelity simulator. Third, since a great deal of this training occurs at night, there are always

risks that this training, regardless of how paramount, will result in noise concerns near the airfields where the training is conducted.

NAWCTSD's partnership with industry is vital to giving pilots the most up-to-date simulators as technology evolves.

"We continue to perfect this partnership through events that forecast our short- and long-range strategies," said Reuter. "This allows industry to posture themselves by developing relevant technologies that meet our needs. As technology matures, our vision for what's possible needs to mature as well. We could not do that without our partnership with industry."

Industry Contributions

Industry plays a huge role in giving the U.S. military the latest and greatest in aircraft simulation training. Boeing's Training Systems & Services (TSS) has a long history of fielding flight simulators/ trainers for U.S. Navy carrier-based aircraft, said Stephen Huey, Boeing chief engineer for Navy training systems. From TSS' establishment in the late 1980s with the A-6E/F-14D aircrew trainers, to today and the F/A-18E/F and EA-18G tactical operational flight trainers (TOFTs), Navy aircrews have trained with Boeing products for the demanding skills of carrier operations. The benefits of training with a simulator versus actual aircraft range from the ability to build a pilot's skills in and around the ship, to expenditure savings from fuel, wear-and-tear on the aircraft, personnel and overall safety, without committing valuable war fighting assets. "Airmanship" is one of the key lessons learned in the trainer before the student attempts to board the carrier for the first time.

Environmental Tectonics Corporation (ETC) manufactures an Authentic Tactical Fighting System (ATFS-400), which integrates a high fidelity, interchangeable, tactical aircraft cockpit with a state-of-the-art high performance "flyable" motion system, said Ken Ginader, retired Navy Captain, former F-14 Tomcat RIO (radar intercept officer) and Navy Fighter Weapons School (Top Gun) instructor from 1982-1984 and now director, business development for Tactical Fight Training Systems at ETC. Its modular design enables the system to realistically simulate the cockpit, dynamic performance, mission systems and interactive elements of a specific type and model aircraft in any tactical environment. Pilot inputs are processed by the ATFS-400 Phoenix aircraft-specific aeromodel to simultaneously drive the virtual (sight and sound) cues and command the multi-axis high performance motion system to correctly produce the correct inertial G forces, in all three axes, providing the physiological stresses and sustained G forces experienced during combat maneuvers. The ATFS-400 can provide realistic G forces experienced by pilots during a catapult shot or an arrested landing.

A primary benefit would be for student pilots preparing for their first carrier-arrested landings and catapult shots. Experiencing the realistic feel of an arrested landing and a catapult shot in a continuous G device would greatly assist in mitigating any anxiety and apprehension experienced by pilots prior to their first exposure to an arrested landing and catapult shot on an aircraft carrier. In July 2008, the chief of Naval Air Training visited ETC and flew the ATFS-400.

Ginader added that ETC's ATFS-400 can also be a "demonstration/ doing" system. Specifically, the ATFS-400 can be programmed for the "perfect flight" in the open loop mode, and the pilot trainee can ride the ATFS-400 as the system demonstrates the "perfect carrier landing." When the pilot is comfortable, the system can be switched to the closed loop mode and the pilot can then fly the carrier landing profile him or herself.

Lockheed Martin's commercial off-the-shelf Prepar3D simulation software suite offers quickly adaptable training scenarios for aviation, maritime and ground missions, said Martile Allen, Prepar3D program director. For an immersive carrier landing training experience, the Prepar3D environment allows users to import the needed aircraft models, design a scenario such as emergency procedures or mission rehearsal, and then facilitate the training exercise. Prepar3D also offers distributed training for collaborative experiences along with night vision and infrared sensor camera options to enhance military mission or night flying training. The Prepar3D

software can be used as a standalone program from a PC, but it also integrates with existing training solutions and hardware.

Prepar3D advances game-based technology to provide recallable training experiences. With a Prepar3D-based solution, trainees can:

- Experience a scenario before it happens to increase effectiveness and reduce response time
- Learn and test their knowledge in the same environment in which they will operate
- Re-create scenarios with operational data and experiment with different variables

Presagis has a suite of off-the-shelf software that enables the development of high-fidelity simulation scenarios that help bridge the gap between training and real-life scenarios.

Creator, 3-D modeling software for real-time simulation, provides immersive control over the entire modeling process, allowing the user to quickly generate optimized and highly detailed models. In this situation, both the fixed wing aircraft and the aircraft carrier can be precisely modeled using Presagis Creator.

Presagis Vega Prime is an off-the-shelf visualization tool for real-time 3-D development of simulation applications—enabling the creation of high resolution, realistic imagery of the visual environment, including weather states and time-of-day, said Nick Giannias, vice president, research and technology, Presagis.

Moreover, the Vega Prime Marine module solves the problem of creating realistic, dynamic water surfaces for simulations involving oceans, lakes, or coastlines. Vega Prime Marine provides the necessary effects to realistically simulate ocean surfaces, along with the vessels. By providing a native wave model, the user is able to control sea state, including distributions of direction, height, wavelength and alignment of the wind. Developers can define vessel effects, such as the bow, stern and hull wakes. The size and shape of the waves correspond to the size, shape and speed of the vessel. The waves also interact with the ambient water waves that the vessel encounters and can serve as a visual aid in determining the speed, maneuvering and direction of the vessel in a simulation environment. This enables the pilot to understand the speed and the angle of the ship, which is critical upon approach.

In addition to the out-of-the-box capability for wave simulation, the Marine module enables users to incorporate their own custom wave simulation algorithms of the sea state or ship dynamics. This is a key differentiator, allowing for a tailored real-world experience. For example, Virtual Marine Technologies (VMT) used Vega Prime Marine because of the high-fidelity wave models and because it provides a platform to create immersive environments. VMT created a realistic visual environment that included high-fidelity wave and ship motions for their training simulation.

Presagis FlightSIM is a solution for the creation of high-fidelity fixed wing flight dynamic simulations. It is ideal for safety-critical simulation applications as it enables the creation of accurate flight motion dynamics—such as the behaviors and interactions in the simulation, ensuring that the pilot is immersed in a training situation that completely replicates the behaviors of the aircraft on approach and landing on the carrier.

Industry Challenges

Attaining the highest level of fidelity remains one of industry's greatest challenges. "Without a doubt, the carrier landing is a very demanding phase of flight," said Reuter. "The pilot is using all of the senses at his or her disposal to make that perfect carrier landing. The pilot relies on the visual scene, the visual aids on the carrier, and the 'seat of the pants' cues. The demand for fidelity could not be greater when it comes to trying to simulate this in a way that provides 'flight-like' proficiency."

Industry is doing everything it can to meet this challenge. "Making the trainer capabilities and scenarios 'real' enough to train new airmen and mission qualified airmen alike, while not breaking the bank trying to make it perfect," said Huey of meeting the fidelity challenge. "The systems that make up the TOFT [and others]

today—when integrated with each other and the airman in the cockpit—have the fidelity to provide an ‘immersive’ environment in which to train. The timing of every sensory cue that the pilot sees in response to an action he has taken is critical. It must be ‘real’ to avoid any potential negative influence he may transfer to the jet.”

Ginader said that attaining three aspects of flight simulation are crucial to the fidelity challenge. “Speaking with the head of requirements for commander, Naval Air Force, it is also very difficult to correctly represent the Fresnel lens (glide slope information) to the pilot on final approach in [non-motion] full mission simulators,” said Gindaer. “ETC takes exception to the term full mission simulator, when in fact it is only a high fidelity part-task trainer. There are three primary stresses experienced in flying fighter or strike-fighter aircraft. They are workload, environment and physical. The high fidelity part-task trainers only train two of the three stresses: workload and environment. Any simulator or trainer that does not take into account all three stresses is only a part-task trainer.”

Versatility is one of the key aspects for Lockheed Martin when it comes to fully immersive flight training. “We’re taking advantage of our proficiency in high-tech platforms, training and logistics to offer a simulation application that can be used across flight, ground and maritime training,” said Allen. “With the mission creator tool in Prepar3D, exercises can be quickly developed and modified by an instructor or user. Our challenge now is to continue to develop in Prepar3D to expand its capabilities and features. Lockheed Martin’s focus is increasing back-end performance and developing a weapons capability for our military customers’ weapon training needs.”

Presagis takes into account environmental conditions present during aircraft carrier landing scenarios to reach its objective of fidelity.

“The challenges that developers encounter in building simulations for this scenario can include accurately simulating the weather and sea conditions, as well as the vessel’s motion relevant to the sea state,” said Giannias. “The realism of the vessel’s motion and movement, along with credible interaction between vessel and aircraft are important in providing an immersive training environment so that the pilot is able to receive precise feedback.”

He added that it is also very important to model both the aircraft and the aircraft carrier with the highest degree of details. The deck markings, landing lights, bridge and control tower of the aircraft carrier are but a few of the important details that enable the pilot to get the right visual cues during the training exercise.

It is important to note that while industry is providing the U.S. military with innovative technological advancements to attain maximum fidelity, Reuter said that being the case, simulators are not used to certify pilots of being ready to land on an aircraft on the carrier, but simulators do reduce the number of flights required to become sufficiently proficient such that the carrier qualification time is significantly reduced.

Air-to-Air Combat

Hank Hogan

MT2 2012: Volume 17 Issue: 4 (June)

Military Training Technology

The pending release of the movie Top Gun in 3-D is not the only example of technology marching on. The actual training of pilots for aerial combat on which the movie is based has improved a lot since the 1980s. At the time, training had to take place over ranges equipped with special infrastructure, as that was the only way to fix an aircraft’s location and thereby determine if a dummy missile scored a hit. That changed, however, with

the advent of GPS and fifth generation simulators with enough computing power to track and generate real-time training results.

“Airborne training can occur anywhere two or more aircraft can fly together, which is typically on training ranges all over the U.S. as well as over the open ocean. Aircrew will set up scenarios with one group simulating threat aircraft and the other simulating U.S. aircraft,” said Captain John “Snooze” Martins, program manager for the U.S. Navy’s Air-to-Air Missiles Program Office.

In the Navy and Air Force, air-to-air combat and missile training begins after basic flight school. The training encompasses both short- and medium-range situations, typically starting with aircraft 100 or so miles apart. They then run through the exercise until one or the other is judged dead.

In short-range training, visual contact between combatants is possible, and these mock modern dogfights involve dummy missiles that lack warheads or motors. Pilots employ helmetmounted sights. In medium range training, dummy missiles are still used but distances between planes may be tens of miles. Training in these circumstances occurs in flight using the radar display and simulated shots. It can also take place in ground based simulators. In any case, actual live fly missions are closely replicated.

“The aircraft and simulator systems both have built-in airto- air simulation for employing weapons and give the same indications as if you are actually shooting missiles; however, no live missiles are carried and nothing actually comes off the aircraft,” said Lieutenant Colonel Monte Cox, fighter training branch chief of the U.S. Air Force Air Education and Training Command.

Key to making such training realistic is some very clever electronics and computer programs. Advances have made it possible for a single airborne pilot to train alone, flying with virtual friends and against similarly constituted enemies. This blending of the real and otherwise is known as live, virtual and constructive, or LVC, exercises. Live is traditional training, virtual could involve representations controlled by pilots on the ground or in trainers, and constructive is computer generated. LVC promises to be useful.

“This allows a larger number of people to participate at one time and so increase the complexity as well as the training value of the exercise,” said Bob Pescatore, director of business development for San Diego-based Cubic Defense Applications.

The company supplies the current fifth generation P5 Combat Training System/Tactical Combat Training System (P5 CTS/ TCTS), which allows the Navy, Marines, Air National Guard and Air Force to train on a common platform. Cubic does this under a 10-year indefinite delivery/indefinite quantity contract that started in 2003 with a ceiling value of \$525 million.



The system consists of two components. The first are ground stations that provide real-time exercise support and post-mission debriefs, and these have been installed at more than 30 bases worldwide. The second are airborne instrumentation packages that are either incorporated within the airframe or mounted to aircraft as pods that are about the same size, weight and shape as an AIM-9 Sidewinder missile. More than 1,300 of these pods have been delivered.

The pods play a vital role in training. When a simulated missile is fired, a pod connected to the aircraft weapons bus receives a trigger signal, alerting it that a particular weapon has been launched. The pod then calculates whether the shot is a hit or a miss, using data about the weapon, information from the shooting plane’s weapons bus, and data from the target. The latter is supplied by a pod located on the opposing aircraft.

“This cooperative information from the target aircraft makes a P5 CTS/TCTS weapon adjudication very accurate,” Pescatore said.

In a final step in the event of success, the pod transmits an audible “kill” call to the shooter aircrew and an audible “dead” call to the target aircrew. The ground based system interfaces with the pods, supplying time,

space and position information used to judge a hit or miss. It also captures data for post-session analysis and debriefing. This need to communicate sets a maximum as to the range between planes. It also restricts how far away ground stations can be, if any are involved.

Since no missiles are actually fired, it's important that the weapon models that are used in simulation be accurate. Most of these that are used by the U.S. military and various international partners come from FAAC of Ann Arbor, Mich. They're nearly always classified by the appropriate authority. The models themselves can be derived from the ones used during weapons development or from actual live testing. These live results can also be used to update and refine the models.

There can be circumstances in which the models have to be developed using open-source data. For example, export restrictions may demand this. It also could be that it's not possible to lay hands on a weapons system, such as the latest threat from a potential adversary.

No matter where they come from, the models may also be adjusted so that they run in real-time on the pods and the rest of the simulation system. This slimming down has to preserve the faithfulness of the representation of the model to the actual weapon.

Less of this trimming may be needed in the future, according to information from Joe Testa, manager of business development for Parsippany, N.J.- based DRS Technologies. As a Cubic subcontractor, the company supplies the instrumentation pods in the P5 CTS/TCTS, and there are some planned upgrades on the way.

"Right now we're looking at the same size box that will contain multiple processors instead of one," Testa said. An advantage of more computing power is the ability to run more models in real time, he noted. The list could include additional weapons systems and other aircraft, an important capability for a future where some aircraft may be virtual or constructive.

Another future need in such a case would be greater communication capability, particularly with regard to low latency and high bandwidth. The pods and ground stations are constantly exchanging data, and the amount that must be shipped around will go up when non-real aircraft enter the fray. These beefed-up data links will have to include multi-level security so that more aircraft and other units can be involved in a training run. Doing so will also increase the necessity for more real-time encryption, decryption and authentication, thereby demanding more computing power.

Such advances promise to save dollars while improving training. At a variable cost that the Air Force in 2009 put at a shade under \$20,000 per flying hour, the F-22 is not a cheap plane to send airborne. Still it and F-35, another fifth generation fighter, offer capabilities such as information fusion, stealth and high performance that trainers like the 1960s-era T-38C don't. The latter faces sustainment problems and is still used by the Air Force for some advanced pilot training. One solution is the T-X, which replaces the T-38C and cuts costs in a number of ways.

"The T-X can potentially replace organic adversary, or 'Red Air,' platforms for fighter formal training units, thereby reducing costly operational fighter flight hours, extending service life, and negating an unaffordable 'stealth vs. stealth' negative training paradigm," the Air Force's Cox said.

With regard to improved training, this and other advanced technology could plug training capability gaps by allowing for a wider range of real and virtual aircraft to interact. That, in turn, would broaden the scope of experience that pilots get, thereby enhancing all their skills through the use new technology and novel techniques. This extension of scenarios is something that those involved in training oversight would like to implement.

As the Navy's Martins noted, "Most airborne training involves U.S. fighter pilots flying against other U.S. fighter planes simulating the enemy. Training is more realistic when a U.S. fighter pilot gets to train against a dissimilar aircraft that is simulating the enemy."

PEO STRI Top Contracts

MT2 2012: Volume 17 Issue: 4 (June)
Military Training Technology

This special section lists all companies who have won contracts with the Program Executive Office for Simulation, Training & Instrumentation (PEO STRI) between May 2011 and April 2012 worth at least \$100,000 in cumulative revenue. The list is printed in order of total dollar amount based on contract value, from highest to lowest. PEO STRI collaborates with industry to respond quickly to critical, emerging requirements with innovative acquisition and technology solutions.

1. Raytheon Technical Services \$301,205,020	12. Cubic Simulation Systems Inc. \$18,995,086	24. Meggitt Training Systems Inc. \$3,160,004
2. Lockheed Martin Corporation \$135,728,459	13. General Dynamics C4 Systems Inc. \$18,889,366	25. Allied Technology Llc \$3,124,793
3. Computer Sciences Corporation \$83,233,451	14. Battelle Memorial Institute \$12,765,268	26. Cubic Applications Inc. \$2,600,000
4. Science Applications International Corporation \$80,156,263	15. Nova Technologies \$9,102,520	27. American Purchasing Services Inc. \$2,584,694
5. Faac Inc. \$63,389,111	16. Scientific Research Corporation \$8,219,732	28. Operations Support Technologies Inc. \$2,471,494
6. Electronic Consulting Services Inc. \$49,918,369	17. Aegis Technologies Group Inc. \$5,959,019	29. Ktech Corporation \$2,410,669
7. General Dynamics Information Technology Inc. \$39,206,084	18. L-3 Services Inc. \$5,657,556	30. Kaegan Corporation \$2,384,812
8. L-3 Communications Corporation \$32,040,812	19. Akima Infrastructure Services Llc \$5,082,280	31. Axletech International Llc \$2,371,090
9. Rockwell Collins Simulation & Training Solutions \$24,628,788	20. Cole Engineering Services Inc. \$5,014,169	32. Physical Optics Corporation \$2,096,631
10. Nci Information Systems Inc. \$22,064,488	21. Optimal Technologies International Llc \$3,994,444	33. Northrop Grumman Technical Services Inc. \$2,048,720
11. Saab Training Usa Llc \$19,644,704	22. Cdw Government Llc \$3,593,629	34. Advanced Interactive Systems Inc. \$1,958,522
	23. Daedalus Technologies Inc. \$3,263,745	35. General Dynamics One Source Llc \$1,815,405

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| 36. Kforce Government Solutions Inc.
\$1,616,074 | 53. Tasc Inc.
\$582,425 | 68. Firehouse Medical Inc.
\$281,234 |
| 37. Ehs Technologies Corporation
\$1,595,734 | 54. Laerdal Medical Corporation
\$580,597 | 69. Camber Corporation
\$271,838 |
| 38. Tapestry Solutions Inc.
\$1,523,524 | 55. Gan Corporation
\$576,607 | 70. L-3 Communications Nova Engineering Inc.
\$264,888 |
| 39. Carnegie Mellon University
\$1,193,900 | 56. Channing Bete Company Inc.
\$521,685 | 71. Stanley Associates Inc.
\$221,990 |
| 40. Weibel Equipment Inc.
\$1,109,000 | 57. Teledyne Scientific & Imaging Llc
\$492,865 | 72. Skedco Inc.
\$209,059 |
| 41. Limbs & Things Inc.
\$1,029,554 | 58. Raytheon Technical Services
\$483,089 | 73. Eic Laboratories Inc.
\$204,708 |
| 42. Dtech Labs Inc.
\$969,807 | 59. Medical Training Consultants Inc.
\$472,369 | 74. Santa Barbara Infrared Inc.
\$198,936 |
| 43. Argon St Inc.
\$926,596 | 60. Mammacare Corporation
\$462,839 | 75. Fidelity Technologies Corporation
\$181,987 |
| 44. Oshkosh Corporation
\$910,000 | 61. Advanced Rotorcraft Technology Inc.
\$414,991 | 76. Cae Usa Inc.
\$149,371 |
| 45. Rolands & Associates Corporation
\$781,878 | 62. Gaumard Scientific Company Inc.
\$407,886 | 77. University Of Kansas Center For Research Inc.
\$139,582 |
| 46. Qinetiq Inc.
\$749,368 | 63. Asr Corporation
\$390,187 | 78. Firehouse Medical Inc.
\$130,342 |
| 47. Ball Aerospace & Technologies Corp.
\$716,935 | 64. Ewa Government Systems Inc.
\$346,706 | 79. Boston Dynamics Inc.
\$116,000 |
| 48. Katmai Information Technologies Llc
\$710,244 | 65. Optical Sciences Corporation
\$315,446 | 80. Bae Systems Land & Armaments Lp
\$110,535 |
| 49. Argonne Ridge Group Inc.
\$662,400 | 66. Intelligent Automation Inc.
\$312,770 | |
| 50. Ensco Inc.
\$646,115 | 67. Microsoft Corporation Sitz In Redmond Corporation
\$308,500 | |
| 51. Advanced Fiber Sensors Inc.
\$632,689 | | |
| 52. Ipkeys Technologies Inc.
\$617,736 | | |

Surface Combat Training Command Recognized for Training Excellence

*Kimberly M. Lansdale, Center for Surface Combat Systems
MT2 2012: Volume 17 Issue: 4 (June)
Military Training Technology*

Center for Surface Combat System (CSCS) announced recently that it received a citation for training excellence from the American Society for Training & Development (ASTD).

Captain Don Schmieley, CSCS' commanding officer, was informed by ASTD officials that the learning center was recognized with an Excellence in Organizational Learning and Performance Improvement citation for its Integrated Air and Missile Defense Advanced Warfare Training.

"Being recognized by the ASTD is a remarkable achievement," said Schmieley. "I'm proud to be a part of this command. This recognition clearly illustrates the hard work and dedication of the entire CSCS domain."

The Excellence in Practice Awards program recognizes organizations for results achieved through learning and performance practices and solutions. Awards are presented to organizations with proven practices that have delivered measurable results in achieving organizational goals. Citations are presented to organizations with practices that have shown they will demonstrate measurable results.

According to Lieutenant Jonathan Zang, CSCS' AWT subject matter expert, the program was developed as a direct response to real world and national security threats.

"The training and curriculum is designed to provide sailors with the knowledge they need to defeat today's complex missile systems deployed throughout areas of current U.S. naval operations," explained Zang. "Course content is continually evolving to meet the need of sailors and improve naval readiness against a wide array of sophisticated weapons."

ASTD received 160 submissions in 2011 from organizations around the world. Nineteen practices were chosen to receive awards and 63, which included CSCS, were selected to receive citations. Excellence in Practice categories included: career development, diversity and inclusion, integrated talent management, learning technologies, managing change, organizational learning, performance improvement, training management, technical training, and workplace learning and development.

The CSCS headquarters' staff oversees 14 learning sites, which provide 1,000 courses a year to more than 50,000 sailors. CSCS uses a mix of blended learning comprised of instructor-led classes, hands-on labs, simulation and computer-based training. Courses include specialized training supporting nine enlisted ratings, as well as training for officers in system-specific skills required to tactically operate and employ surface ships. Building maritime partnerships, the command also provides training to many international students.

ASTD is the world's largest professional association dedicated to the training and development field. In more than 100 countries, ASTD's members work in organizations of all sizes, in the private and public sectors, as independent consultants, and as suppliers. Members connect locally in 128 U.S. chapters and with 20 international partners. ASTD started in 1943 and in recent years has widened the profession's focus to align learning and performance to organizational results. For more information, visit www.astd.org.

Army and Marine Corps Formalize their Training Partnership

MT2 2012: Volume 17 Issue: 4 (June)

Military Training Technology

Colonel (P) Francisco A. Espailat, Project Manager, Combined Arms Tactical Trainers (PM CATT) and Colonel David A. Smith, Program Manager, Marine Corps Training Systems (PM TRASYS), officially recognized the two organizations' working partnership, signing a Memorandum of Agreement (MOA) on May 22, 2012.

The MOA outlines the goals, objectives and responsibilities between PM TRASYS and PM CATT in their efforts toward increasing partnership through synergistic capability development. The primary focus of the MOA will be to drive down development, procurement and sustainment costs for similar Army and Marine Corps training requirements.

"The Marines and soldiers that use our training devices will benefit greatly by what we are doing here today," said Espailat. "This synergy we are building around training systems, especially in light of the current and future budget, is critical to our future success."

Espailat also noted how this will help improve technology development by industry. "When we combine our requirements and put them on the table, it is much more powerful, and going forward we can figure out where we need to go, collectively, to train our Marines and soldiers in the future. This is a good day for us, and a good day for the training community."

Colonel Smith added, "With the Army and the Marines working more closely together on common training requirements, especially in our approaches to collective and virtual training systems, our industry partners can better leverage their internal resources. I am confident they will appreciate our efforts, and help us drive down our training costs."

Just last summer, PM TRASYS signed an MOU with PM TRADE to officially document their commitment to maintain a partnership to work together on similar individual soldier and Marine training devices. "From the Marine Corps' perspective, as part of Team Orlando, this is just an extension of what we're already doing – with PEOSTRI, NAWCTSD and AFAMS," said Smith. "This isn't theory. It is an example of real work being done inside Team Orlando that helps Marines, soldiers and industry."

Espailat said it is extremely beneficial to Team Orlando overall to understand what the joint requirement looks like between the Marine Corps and the Army, because it also helps their industry and academia partners, as well as their own research and development arm.

"With this understanding of the joint requirements, they can figure out what the requirements look like so they can help us mature the technology necessary to train our future warfighters both in the Marine Corps and in the Army," said Espailat.

Smith agreed. "Even without the declining defense budgets, what we are doing to increase cooperation and establish working partnerships just makes sense. If PM TRASYS and PM CATT can more clearly define our mutual training requirements for industry, we can drive costs down, and this will benefit everyone involved in the acquisition process. And I think the American taxpayers will appreciate our efforts too."



PM TRASYS signs a Memorandum of Agreement, officially recognizing the working partnership of the two organizations.

GameTech 2012

Tara Van Dyke

MT2 2012 Volume: 17 Issue: 3 (May)

Military Training Technology



There were record setting crowds at this year's Defense GameTech Users' Conference, hosted by Team Orlando. Nearly 800 people attended this three day event at the beautiful Caribe Royale Hotel and Conference Center of Orlando, which is 200 more than last year. From impressive keynote speakers to inspiring and informative sessions, tutorials and a packed exhibit hall, there was plenty to see.

GameTech's mission is to reach out to the user community, and to promote the use of game technology, enhance warfighter training, and provide updates on gaming and virtual world products and trends. The conference kicked off with the government keynote address from General Edward Rice Jr., commander, Air Education and Training Command, USAF, which focused on what he'd like to see from training developers in the future. The day rounded out with key tutorials on mobile learning, Replic8, and importing 3-D meshes into Second Life and OpenSim; and informative sessions on future game development trends, international case studies and technologies in the DoD schoolhouse.

Keynote Speakers

There was a common thread among the keynote addresses: a look toward the future. Rice opted to ditch his prepared presentation in order to speak on a topic that he decided was more relevant for the group.

Rice said he was very proud of the extremely high approval rating that trainees leaving his program receive, but he also knows that his decisions today will impact whether the AETC continues on its high note. Based on historical trends, Rice predicts that funding and manpower will decrease, so the return on any investment he will okay needs to occur in just a few years, not decades.

"I have to transform the way that I deliver recruiting, education and training." Rice said. "But I can't do it in the future in the same way that I did it in the past. I'm not going to have [as] much money and as many people to do it ... That transformation, that change, is going to be enabled by a lot of what you bring to the table; technology, simulation and games."

Rice's address was quickly followed by additional keynotes and overviews.

Day two put the spotlight on industry with an address by Michael Jones, chief technology advocate for Google. His focus was the future as well, but with a twist. Jones wanted to speak to all the technology developers not just about the things they are creating, but the type of people the technology creates. Jones believes the goal should be to build a society of people who experience the joy of learning through technology.

"As the pace of technology advances, the shelf life of factbased knowledge can be less than the span of a career," Jones said. Instead of focusing on knowing facts, Jones argued that knowing how to ask questions and knowing how to get the answers is better.

Game for the Gaming Exhibits

The exhibit hall featured innovative displays from companies such as Engineering & Computer Simulations, Lockheed Martin, Havok and many other large and small businesses. The creative booths allowed attendees a chance to see and touch existing new technologies.

Virtual World Competitions

The caliber of entrants grew exponentially for the second year of the Federal Virtual World Challenge (FVWC). The competition offers game and virtual world developers an opportunity to showcase their technology, techniques and products for U.S. government users. The FVWC was organized by the U.S. Army Simulation and Training Technology Center, with heavy involvement from Tami Griffith, science and technology manager. Thirty entries were submitted by government, niche companies and rogue developers, including entries from as far away as Japan and Australia. Griffith presented \$86,000 in prize money.

Get Ready for GameTech 2013

The planning committee is already ramping up for next year's conference, with a goal of making it even bigger and better. Team Orlando is enthusiastic that the work of its collaborative entities has continued to ensure a very successful GameTech conference.

GameTech 2012 Editor's Note:

With the plethora of exhibitors and speakers at the Defense GameTech Users' Conference in Orlando in April there was plenty to see and I was in no way disappointed. Although it was not an overly large show, it was jam-packed with sessions and the exhibitors I had the opportunity to speak with exceeded my expectations.

Exhibitor Highlights

Camber Corporation's Interactive Multimedia Instruction (IMI) includes three levels of training, beginning with a basic introduction. Level two includes more complex features and level three puts the user to specific tasks and objectives. The tutorial on display used IMI to train users how to fly an MQ-1C Gray Eagle. Much more interactive than a PowerPoint tutorial, it allows the user a self-paced learning system, taking some of the load off of a human instructor.

Havok's newly acquired Trinigy Vision Engine showed concepts not used in most games and simulations. Besides creating high fidelity graphics, the Vision Engine includes the ability to have the user's world adapt and change in ways designers do not predict, as well as have artificial intelligence react to such changes. For example, a program could have the user blow up a building and pieces of that building will fall to the ground and be potentially used as cover. Most games and simulations I have used would blow up the building and then have the pieces fall to the ground only to disappear.

Engineering and Computer Simulations (ECS) exhibited web-based Nexus Virtual Worlds, which can be used on any browser platform where users can interact in any number of situations. They are spaces that can enhance existing methods of communication and collaboration by allowing individuals and groups to meet online for a variety of class activities, including lectures, discussions, case studies, projects, papers, exams and labs. Communication can be done via voice or text. Similar things have been done in the past in video games, but ECS gives it utility allowing users to set up any type of situation to serve their needs.

Alelo's mobile application Operation "language," whether it is Operation Pashto or Operation Dari for example, allows users to use their voice and role-play certain scenarios with "socially intelligent virtual humans." If the user speaks and behaves correctly, the virtual Afghans become trustful and cooperative, and provide information that users need to advance further in the game path. I love this concept. New languages are in development wherever U.S. military operations are taking place and anyone with a cell phone can utilize this app.

Disti's Replic8 provides instructors the ability to use 3-D software to create training materials for others without any computer programming required. The user needs to complete a series of steps that they would like to train

another user to do; then, the person being trained needs to repeat those steps. Replic8 can be used to create a training platform for almost any tangible object that can be taken apart.

Quantum 3D's Expedition DI's Immersive Dismounted Infantry Training is always a crowd-pleaser at every show I've been to. Currently in the process of being fielded by the U.S. Army and being looked at by other branches, Expedition DI teaches warfighters squad level training focusing on team building, team communication and mission rehearsal. It integrates motion trackers, head mounted displays and tactical visual computers for a fully immersive training environment in any location.

Shoulder to Shoulder with Technology

Henry Canaday

MT2 2012 Volume: 17 Issue: 3 (May)

Military Training Technology

Training for shoulder-fired missiles makes extensive use of highly realistic simulation technologies to save money and time, improve safety, minimize environmental effects and better prepare infantry for combat. The Army, Marines and private companies are working to make these technologies even better. According to the Close Combat Weapons System (CCWS) Project Office of the Army's Program Executive Office, Missiles and Space, training for the FGM-148 Javelin has four components: initial, sustainment, collective and leader training.

Initial training takes one week of classroom and hands-on instruction, conducted by Net Equipment Training Teams and managed by CCWS. Sustainment and collective training is conducted in units.

The Javelin is fielded to heavy, infantry and Stryker brigade combat teams, rangers, special forces, battlefield surveillance brigades, tactical combat forces and engineers. About 900 soldiers train on the Javelin each year.

Classroom training uses a simulated Command Launch Unit (CLU) on a commercial PC that simulates operators interacting with vehicles and terrain. Outdoor hands-on training is done with a Field Tactical Trainer (FTT) firing a simulated Javelin missile. Force-on-force exercises are done with Lockheed Martin's Multiple Integrated Laser Engagement System (MILES).

Hardware for the CLU and FTT are procured through the Javelin Joint Venture and manufactured by firms like Cubic Simulation Systems. Software for the CLU is maintained by Aviation and Missile Research Development and Engineering Center. CCWS now seeks cost savings and improved capability from wireless, web and other emerging media training technologies.

In January 2011 Cubic received a \$26-million contract for basic skills trainers and student stations for the Javelin FTT. Delivery started in January 2012 under a contract with the Javelin Joint Venture. Since 2001, Cubic has delivered more than 2,000 classroom trainers and student and instructor stations to the joint venture.

"We provide the Army's CCWS with the Javelin system, which includes a basic skills trainer, a missile simulator round and FTT," explained Jim Weitzel, vice president of Lockheed Martin Training Solutions.

The Javelin basic skills trainer has 3-D simulation of the CLU and round imagery, computer generated-images simulating firing in multiple scenarios involving day, night and various weather conditions and targets. The missile simulator round replicates tactical form, weight and color, mechanically mates to the CLU and is designed for repetitive handling.

The FTT is compatible with MILES Shoulder Launched Munitions (SLM), has an instructor station for monitoring performance and has resulted in a new-gunner success rate of 97 percent.

In addition to Javelin, Lockheed has been awarded a \$6.7-million contract by the Army Program Executive Office of Simulation, Training and Instrumentation (PEO STRI) to provide up to 20 variants of its Instrumentable MILES SLM training devices. These are realistic, simulated shoulder-launched munitions for live force-on-force maneuver training. Lockheed has fielded more than 6,000 MILES SLM devices at Army facilities. MILES SLM training devices fielded or under development include the AT-4, RPG and Bunker Defeat Munition.

MILES SLM has two elements: a facade that replicates appearance of the weapon, and a common engine that replicates weapon effects. The common engine may be inserted into any weapon facade, saving costs. The common engine fires a laser out the front of the weapon and a pyrotechnic explosion out the back.

MILES SLM devices support force-on-force training, preparing soldiers for war in a way that is low-risk, affordable and adaptable. Training on the Marines' Shoulder-Launched Multipurpose Assault Weapon (SMAW), as well as AT4 anti-tank weapon and M203 40 mm grenade launcher, uses the Indoor Simulated Marksmanship Trainer (ISMT), explained Major Edwin Norris, program manager Training Systems (TRASYS) with Marine Corps Systems Command.

ISMT is an interactive audio-visual tool that simulates use and firing of an actual weapon. "You set up a video scenario, see the target, orient, aim and shoot," Norris explained. "It shows whether you hit or how far off you are."

ISMT is generally used before live firing but can also be used for refresher training. It saves ammunition and money and minimizes environmental effects. Made by Meggitt Training Systems, ISMT allows refresher training on a weekly or monthly basis. Norris estimates that ISMT saves about \$300 million a year in ammunition for all weapons.

ISMT also allows mistakes to be made and lessons to be learned safely. That is important because SMAW is the most violent small-arm weapon the Marines have.

SMAWs are mostly issued to Military Occupation Specialty (MOS) 0351 assault infantry, although some other 0300s may get familiarization with it. About 3,800 Marines received SMAW training on ISMT in 2010, and at least 3,100 did in 2011.

TRASYS supports ISMT and trains the trainers. ISMT started in the early 1990s and has been refined constantly. Norris hopes another software refresh will start in 2012 and finish in 2014. He also wants to update software scenarios.

TRASYS would also like to upgrade the hardware. ISMT is a tethered trainer for the SMAW, and Norris would like to make it wireless, like trainers for the M4 and 9 mm pistol that are already under Meggitt's BlueFire wireless system. "But we still want to get realistic recoil, and this is difficult," Norris noted.

Meggitt provides training solutions for the SMAW, AT4, RPG-7, Carl-Gustav Recoilless Rifle, Next Generation light anti-tank weapon, Javelin and M72 light anti-tank weapon.

"The instructor selects the training mode and training scenario," explained Tom Shirey, director of business development. "The trainee is positioned in front of a screen and engages the scenario with at least one weapon simulator and sometimes multiple weapons."

As the scenario plays out on the screen, the trainee uses simulated weaponry and his voice. The instructor touches the screen tablet to control the scenario. Trainees fire simulated weapons, usually live weapons provided by manufacturers and then converted to simulators by Meggitt. The system detects firing and hits and shows the visual and audio response. After action reports allow trainees to analyze performance.

Shirey said Meggitt training systems are used by all branches of the U.S. military and provide the highest level of realism. When integrated with Meggitt systems and software, simulated weapons reflect accurate ballistics,

and sensors tell instructors how weapons are held and operated. Meggitt's new BlueFire systems use Bluetooth technology for wireless operation.

The company has developed its Firearms Training System M100 to support multiple, simultaneous simulation and training modes with easy integration of third-party products. Supported training modes include computer generated imagery (CGI), marksmanship, judgmental video, Virtual Battlespace 2 (VBS2) and Meggitt's own Advanced Reality.

Raytheon is developing the SMAW II Serpent, noted Pat McCormack, virtual development manager. Unlike the SMAW, which uses a 9 mm round to spot targets and thus may reveal the gunner, the Serpent would have thermal sights for both day and night, a laser rangefinder and a computer to make adjustments for the weapon's four different types of ammunition. It would also be lighter than the SMAW.

"We are developing a trainer in parallel with the weapon," McCormack explained. This is a virtual indoor trainer, with the weight, feel and same buttons as the Serpent. Raytheon demonstrated the trainer in 2010 and is working with the Marines on requirements. It would use mostly the same parts as the Serpent and be highly durable and affordable.

The trainer could be used to train individual Marines or as part of collective training for a squad or platoon. It uses VBS2, which the Marine Corps already owns. The trainer consists of the launcher, cabling and a laptop. Gunners see images in the weapon's sights, while instructors can monitor the same image, plus data on how the weapon is being used—for example, button pushes—on the laptop screen.

"It can go through multiple steps, for example, engaging a target and then engaging multiple targets," McCormack said. "When you pull the trigger, it simulates what would happen to the target. If you do not hold the right button down it does not fire. You will see if it destroys the target or, if not, the target can shoot back." At present, realistic recoil is not in the training requirements.

Raytheon believes the best training systems are developed by weapon manufacturers, not afterwards by others. The company is also working on a trainer for the Javelin and hopes to offer trainers for the FIM-92 Stinger and the BGM-71 TOW anti-tank guided missile.

Saab Training and Simulation makes training products for a number of shoulder-fired weapons, noted spokesman Anders Jonzon. It offers the BILL2, simulating procedures for firing many real weapons, the AT4 trainer, the Javelin Weapon Effect Simulation, developed in cooperation with the Javelin Joint Venture, the Carl-Gustaf Weapon Effect Simulator (WES), the Next Generation light anti-tank weapon WES, the TOW2 Trainer and the RPG-7 OPFOR trainer.

Jonzon said Saab training systems are distinguished by realistic look, feel, weight, operation, ammunition handling and ballistics and time of flight, with two-way simulation. However, they tend to be expensive. He said Saab provided some systems to the Army in the 1990s and the RPG-7 OPFOR for Marine use. The Marines have seven RPG trainers in their inventory for threat-weapon familiarization

Vehicle Maintenance Training

Peter Buxbaum

MT2 2012 Volume: 17 Issue: 3 (May)

Military Training Technology

Before deploying a virtual system, Oshkosh Defense, the U.S. Army's supplier of the Heavy Expanded Mobility Tactical Truck (HEMTT) tanker, conducted all of the fueling and de-fueling training for the vehicle on the actual equipment itself. That proposition was expensive and had the additional disadvantage of being able to

accommodate only one student at a time. After incorporating the HEMTT Virtual Trainer, developed by Disti Corporation, into the training regime, Oshkosh was able to train several students in a class at the same time, saving expense and reducing training time.

The HEMTT story illustrates two of the advantages—reduced costs and increased training speed—to including virtual systems when training ground vehicle mechanics. Virtual maintenance training systems had their genesis in aviation but have since migrated to ground vehicles and have demonstrated a clear value in that arena.

The virtual training systems come in a few flavors. There are those—like the HEMTT Virtual Trainer—that are platform specific, often emphasizing specific maintenance tasks. Others are more generic and seek to introduce students to the basics of a particular subsystem, such as hydraulics or brakes. The virtual systems are also sometimes developed in response to a particular maintenance-related problem that a specific vehicle has experienced.



“It is hard to teach students to do fuel transfer in a schoolhouse environment. It is a dangerous task,” said Scott Ariotti, director of global marketing at Disti. “They used to teach it with PowerPoint slides. We created a trainer that puts the PowerPoint presentation into a virtual environment. It allows students to walk through and perform tasks in a 3-D interactive fashion. Setting valves, hoses and pumps are all accessed in the training environment.” The system includes schematics showing the flow of fuel, hydraulic pressure and electrical charges. “Simulations have traditionally been associated with the air side of the house,” said Gabe Batstone, the CEO of Ngrain. “The experience in Iraq and Afghanistan has demonstrated the growing complexity of ground systems and the value of using simulations.”

Most people have some day-to-day familiarity with wheeled vehicles, while a certain mystique still surrounds flight, Batstone explained. “But in reality, ground vehicles have a lot of moving parts,” he added, “and more so with military vehicles. When you are dealing with MRAPtype platforms, you are getting to comparable challenges with stealth aircraft from the perspective of having to deal with the unique designs of those platforms.”

The value proposition for using simulations to train for vehicle maintenance falls into a couple of buckets. The first is cost avoidance. “It is expensive to buy the equipment or replicas of equipment for live training,” said Batstone. “In the end, you always have to put warm hands on cold steel, but by using simulations, you can reduce the costs of live training.”

Speeding up training time is another benefit of incorporating simulations into maintenance training. One of Ngrain’s customers was able to reduce the length of a training course from five days to three. Increased speed yields yet another benefit: the increased throughput of students at a training facility. An Army facility in Fort Leonard Wood tripled the number of its annual student enrollment from 1,200 to 3,600.

Both Disti and Ngrain provide development environments through which they, their customers and third parties can develop vehicle maintenance training simulators. Disti’s platform, known as Replic8, takes 3-D models and converts them into interactive content to create training applications. “We have tools and technologies to allow users to create content ourselves for developing training devices,” said Ariotti. “Our professional services group will also use the tools and technologies to deliver turnkey solutions.”

Replic8 creates 3-D interactive maintenance and task training applications in less time than it takes to make a video, said Ariotti. “The mainstay of Replic8 is its ability to produce maintenance and task training applications, lessons and training material for vehicles,” he added. “The incorporation of Java technology means that the lessons produced will execute inside web browsers without having to install a third-party player.”

With Ngrain's platform, the Ngrain Production Suite, organizations can leverage a suite of software and tools to rapidly develop 3-D simulation applications, such as virtual task trainers and refreshers. Ngrain Production Suite does not require third-party 3-D tools to operate, and does not require 3-D experience or programming skills. A key component of this platform is Ngrain Producer.

"Ngrain's flagship product, Ngrain Producer, allows anyone to create and insert three-dimensional simulations into a work flow," said Batstone. "We use that platform to develop maintenance and training solutions and we license it to partners as well so that they can develop their own products."

Disti's HEMTT training application was developed for Oshkosh's HEMTT M978 tanker, a bulk liquid transporter. Operation and maintenance training for this vehicle has traditionally consisted of instructor presentations with only limited hands-on experience with the tanker.

Disti worked with Oshkosh to develop the Fuel Module Lesson Framework, combining interactive schematics for the hydraulics, electrical and pneumatic systems with 3-D graphics for the M978. The trainer includes 15 interactive lessons covering topics on component location, pre-operation steps, filling procedures, bulk loading, recirculation and fuel dispensing.

"With this interactive fueling lesson, students are trained in an immersive virtual environment and will gain critical situational awareness of the vehicle prior to potentially hazardous hands-on experience," said Ariotti.

Ngrain Producer has been used to develop training that is platform specific as well as generic systems training not tied to a specific vehicle. "Customers that are equipment manufacturers are usually interested in platform-specific solutions," said Batstone. "Schoolhouses usually take a more generic or holistic approach. When the problem comes from the field, the solution will generally be platform specific."

In one case, a training module was developed to address a specific problem that the HMMWV (high mobility multi-purpose wheeled vehicle) was experiencing in theater. The combat service life for a HMMWV is five years, far less than the 14 years expected outside the military. Based on warfighter feedback, specialists at the U.S. Army 187th Ordnance Battalion Wheel Vehicle Mechanic School (WVMS) at Fort Jackson, S.C., identified one of the most common problems with the HMMWV in theater: A wheel can fly off while driving.

"This dangerous situation occurs when the lock washer on the geared hub spindle is incorrectly installed," explained Batstone. "The problem arises when a mechanic does not replace the lock washer when servicing the bearings, or installs the lock washer incorrectly by not bending the lock washer's tabs into the locknut slots. The tabs can crack or break off if they are too worn, not replaced, or not fully seated in the lock washer's slots. In both cases, the geared hub may not be fully secured." Vibrations during driving can cause the spindle lock nut to loosen and come off, putting the entire wheel assembly at risk.

The cause of this malfunction turned out to be inadequate training. WVMS sought need to augment existing training with materials that would specifically address this training gap.

"Using a copy of Ngrain Producer, WVMS instructors with no programming skills or 3-D experience were able to create a 3-D animation of the maintenance procedure in a matter of hours," said Batstone. "The 3-D procedural animation includes a voice-over that narrates the procedure and highlights critical steps. The animation clearly visualizes the critical steps that maintainers were missing, allowing them for the first time to fully comprehend the procedure. The program was immediately integrated into the HMMWV mechanic training course and positive results of this curriculum addition were recognized within weeks."

In another example, the Army Training and Doctrine Command (TRADOC) determined that it needed new course material for battle damage assessment and repair (BDAR), and quickly: TRADOC was determined to deploy the solution within 90 days. The 90-day rapid development project leveraged Ngrain interactive 3-D technology—specifically its interactive 3-D representation of the Stryker vehicle—in conjunction with a self-paced computer training component and a realtime collaboration platform.

“The first segment of the training was divided into four standalone lessons, which soldiers complete at their own pace either online or via CD-ROM,” said Batstone. “The lessons deliver scenario-based instruction, allowing soldiers to interact with the Ngrain Stryker vehicle 3KO [3-D Knowledge Object].”

The second segment of the training consisted of a live one-on-one session with mobile training team instructors over a web-based interface. “During the collaborative session, the instructor presented a scenario to the soldier, and the soldier performed the BDAR actions he had learned,” said Batstone. “Throughout the session, both instructor and soldier used the Ngrain interactive 3-D Stryker and its 3-D components to illustrate points and show procedures.”

The Ngrain solution has been deployed at Camp Victory, Iraq, and at Aberdeen Proving Ground and Fort Benning in the United States. The project proved “that task-based, interactive, 3-D enhanced training content can be developed within 90 calendar days in response to new training requirements from the field,” said Batstone.

Today’s 3-D interactive technologies enable developers to replicate the vehicle environment with remarkable accuracy. “Oshkosh provided Disti with CAD [computer aided design] data, from which we developed our 3-D model of the HEMTT,” said Ariotti. “We were able to replicate the M978 environment and to produce 3-D interactivity.”

All of which helps to achieve the mission of these simulated training systems: effective training for ground vehicles mechanics and maintainers. “If a picture is worth a thousand words,” said Batstone, “then an interactive demonstration is worth ten thousand.”

European Leadership Insight

MT2 2012 Volume: 17 Issue: 3 (May)

Military Training Technology



Acquiring and maintaining the most up-to-date training and simulation technology takes a toll on the U.S. military’s budget. Providing the best possible training remains a top priority in our nation’s military, and much of the equipment used today is provided by European companies. To get some insight on the future of this process, MT2 asked three European industry leaders in simulation and training the following question:

What can be done to reduce acquisition and sustainment costs of high fidelity training programs and equipment over the next decade?

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Commitment to identifying and reusing capable and updateable training and simulation systems is one of the keys to delivering better value for money to our armed forces. Too many times over the years have we seen perfectly adequate, if not high fidelity, simulation and training systems thrown out because they are not using the latest technology, even though they have met the training need.

The solution to reducing the cost of high fidelity systems is to consider innovative licensing models that facilitate openness, and move away from proprietary systems that can only be updated by the manufacturer. This allows the military to reuse their legacy smartly and often in ways that were not envisaged with the

original procurement. Reuse is the key to efficient use of technology by the military and this means we need less expensive, bespoke training and simulation systems, and more use of standard interfaces and middleware. Indeed, as far as software is concerned, the military should be investing in government-owned middleware that can be improved and reused independently of specific simulation systems.

We have also seen that collaboration across national boundaries, where security permits, can offer and deliver real cost savings. NATO experimentation and modeling centers are sharing technologies, problems and, most importantly, talent to address mission and training capability gaps practically, securely and essentially with visible cost benefits. These best practices are too often lost as soon as something is tagged ‘of national security’ whether it is or not. Our nervousness at sharing content may be warranted, but technologies— software or hardware—will only provide outputs of relevance with the correct (and secure) inputs. In short, cross collaboration in procuring high fidelity systems could deliver real sustainment benefits over a long period without compromising that which we hold most dear—security and fulfilling the training requirement.

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The general trend in the industry is that the price vs. performance ratio has changed drastically, meaning you get increased performance at a similar or even reduced price point today compared to just a few years ago. As examples, you now get double the pixel density, much brighter images and better connectivity, to name a few.

Additionally, it is the operating costs that primarily will need to change over the next decade. In this area, the usage of DLP technology, combined with LED as a light source, will lead the way in reducing downtime and increasing life expectancy of the visual system. There is much work toward future development in this area, and already these technologies are getting a strong foothold. The level of life expectancy of LED projectors in a visual display system— with an unprecedented 100,000 hours operation (more than 11 years) with no lamp change or recalibration required—drastically reduces the maintenance costs, which have previously been a huge challenge for this industry.

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The simplest answer to this is to procure the training systems and services as part of a combined prime equipment, support and training package from the outset. To ensure value for money, the prime contractor should partner with the customer within this process, running sub-level competitions where appropriate. In addition, simulations should be based around the maximum re-use of prime equipment software designed for training, again from the outset, and integrated with commercial-off-theshelf technology. End users and procurement authorities need to work together more closely to capture training needs as early as possible, driving compatibility into training systems requirements aimed at facilitating networking within live, virtual and constructive environments. Such analysis should also look at the totality of the training pipeline, from Ab Initio through to final operational capability, to make sure that skills are trained at the appropriate level without large skill gaps left to the final higher cost stages in training. Finally, it is essential that budgets are allocated to maintain the fidelity and the technology of the training system through life. This will prevent costly training drift from simulation back to the platform as configuration diverges and costly early replacement of obsolescent systems.

Night Vision Training

Chris Huntemann

MT2 2012 Volume: 17 Issue: 3 (May)

Military Training Technology

Carrying out missions can be difficult enough for soldiers, but being forced to undertake those missions at night can add an additional layer of danger.

Fortunately, there is an array of equipment available to servicemembers through several companies that work closely with the military to ensure troop safety during missions that require night vision. Cyalume Technologies in West Springfield, Mass., has gone beyond the traditional methods of night vision training by creating infrared “dirt,” which is used by military police, special ops, engineers and other organizations in the military, said Don Schmidt, Cyalume’s executive director of U.S. government sales.

“U.S. Army units ordered a large amount [of infrared dirt] to use in Iraq and Afghanistan,” Schmidt said. The dirt appears the same as regular dirt, but with the use of night optical goggles, the infrared dirt emits a glowing infrared light and allows soldiers to trace others who are walking through their area, he added.

“Now they can see people who can be potential insurgents,” Schmidt said. The infrared dirt is also drawing interest from law enforcement agencies and the U.S. Border Patrol.

Among the other core products at Cyalume are its chemical illumination light sticks, Schmidt said. The sticks, which range in size from 1.5 inches to 15 inches, are available in a variety of visible light colors, as well as in the infrared spectrum. Infrared Impact light sticks activate upon contact with the ground and can be used to mark routes or covertly illuminate areas.

“Soldiers can also drill them into caves to illuminate the area or throw them into rooms during urban training,” Schmidt said. “They’re so versatile that soldiers think up many additional applications for them.”

Although Cyalume works with all four branches of the military, the Army and Marines use the light sticks “pretty consistently,” as does the Navy, Schmidt noted. For example, the Navy uses the light sticks in the event a sailor goes overboard by throwing them in the water in order to make a trail for the rescue divers.

In addition to light sticks, Cyalume also produces infrared, 3/4-inch squares and patches that are given to uniform manufacturers to stitch on soldiers’ uniforms to identify friend or foe or to distinguish with which country they’re affiliated. Cyalume also makes the U.S. infrared flag, Schmidt said.

Cyalume also produces chemical light payloads that are inserted into 40-millimeter rounds of ammunition. When they are fired at night and make contact with their target, they splash a substance that continues to glow to make the target visible, according to Schmidt. The rounds are especially popular with the Marines, Navy SEALs and the Army’s special ops team, he said.

Lethal, Non-lethal Components

The military’s Project Manager Soldier Sensors and Laser (PM SSL) includes a pair of subordinate programs that offer training in night vision, according to William Reagan, a program manager for PM SSL who manages both the Basic and Advanced New Equipment Training (NET) programs. Reagan is also a program manager at CACI International in Arlington, Va.

The lion’s share of training through PM SSL consists of hands-on exercises that challenge trainees, Reagan said.

“For example, one of the training programs’ foundational exercises emphasizes the ‘non-lethal’ applications of these very lethal devices,” he said. “Each of the trainees use their respective thermal devices to identify and



locate specific threats such as a suicide bomber, concealed devices or weapons and/or turned earth indicating a possible roadside bomb.”

There are two training programs available through PM SSL—the Basic and Advanced NET programs, according to Reagan. The Basic NET program includes two consecutive days devoted to 12 to 18 hours on the firing range zeroing and live firing assigned weapons and their new sensors, he said.

“Prior to live firing however, NET instructors coach, teach and mentor the trainees on laser-bore sighting,” Reagan noted. “When done properly, the laser-bore sighting exercise dramatically increases efficiency and effectiveness of training by shortening the zeroing process, which reduces ammunition expenditure and more importantly, maximizes the live fire portion of training.”

When training in the Advanced NET program, soldiers take a “graduate-level approach to training night vision and thermal devices,” Reagan said. “Unlike the Basic NET program that coaches, teaches and mentors trainees to use a single device, the Advanced Team takes a systems approach to training.”

The two primary courses offered by this team are the M4 carbine integration and sniper integration courses, Reagan said.

“During the M4 carbine course, the trainees not only learn the individual devices or sensors including the AN/PAS 13, aiming lasers and day optics, but [they] also learn how each device interacts with the other weapon-mounted sensors as well as their helmet mounted devices such as the new AN/PSQ 20 Enhanced Night Vision Goggle,” he said.

Similarly, the sniper integration course combines both image intensified sensors like the AN/PVS 30 with thermal devices as well as an infrared laser rangefinder with the ability to GPS locate targets, Reagan added.

Blended Training Services

Night Flight Concepts, a Texas company that specializes in visual technology, not only provides night vision goggles to military commands but also helps train soldiers. NFC’s “blended” training solutions include flight training and maintenance training, according to Adam Aldous, the company’s president.

NFC’s maintenance training for night vision goggles includes training on system capabilities and limitations, operational concepts and requirements, equipment parts familiarization and night vision goggle operations and maintenance procedures, Aldous said.

“The program combines 3-D virtual equipment training with conventional instructional methods, which ensures effective and accurate inspection and repair of night vision components and assemblies,” he added.

NFC is also introducing a computer-based training system to go with its night vision goggle services, which imparts knowledge through self-paced, interactive computer-based training modules that are available via the Internet, according to Aldous. However, that product is still new and is being reviewed by military customers, he said.

Military commands like Fort Rucker in Alabama provide night vision training to soldiers. The base serves as the worldwide point of contact and the principal DA staff agency for night vision training, operations and maintenance issues, according to its website. The branch provides night vision device academic instruction to all initial-entry and graduate-level aviators training at Fort Rucker.

Visual Technologies

Christie Digital Systems, which manufactures in Ontario, Canada, considers night vision a crucial element of its flagship product, the Christie Matrix StIM, according to Dave Kanahale, Christie’s director of simulation solutions. The StIM provides independent control over both the visible and infrared spectrum. Among the military commands that make use of the Christie Matrix StIM are Defence Research and Development Canada, an agency of Canada’s Department of National Defence, and the Royal Naval Air Station Culdrose in the U.K.

DRDC uses the Christie Matrix StIM as part of a major technology upgrade to train threat reaction by aircrew of the CC-130 J-model transport aircraft and other military aircrafts. The StIM projectors are installed in the Department's Hercules Observer Trainer simulator, which includes a correctly sized mock-up of a CC-130 J-model transport aircraft. Stuart Grant, a defense scientist with DRDC, said when his agency was looking for the latest-generation visual systems with infrared capabilities, the Christie solution was the "most mature system available."

"The Christie Matrix StIM has the means for delivering the features we needed for NVG stimulation, as well as blending, warping and other capabilities," Grant said. "We also selected it for its low heat emission due to its LEDs, an important consideration for our trainees, who were often subject to uncomfortable heat levels."

The Royal Naval Air Station Culdrose chose the Christie Matrix StIM to upgrade the RN Sea King helicopter flight simulator. Brian Mouser, the program manager at Thales U.K. who supervised the five-week installation phase, said "the Christie Matrix StIM offers capabilities that simply hadn't been seen before, such as its unique ability to run conventional night and NVG images simultaneously. It also offers a huge weight, power consumption and size advantage. The StIM improves visuals, training and reduces power usage."

For the station's commando helicopter force and airborne surveillance and control crews, who are tasked with supporting operations in Afghanistan, the Christie Matrix StIM fills a critical gap in the night vision goggle training and offers realistic, state-of-the-art imagery from the cockpit, Kanahale added.

Industry Interview: Booz Allen Hamilton

*MT2 2012 Volume: 17 Issue: 3 (May)
Military Training Technology*

Q: Can you describe BAH's history and evolution?

A: Booz Allen Hamilton has been at the forefront of strategy and technology consulting for nearly a century. Our management consulting heritage anchors our collaborative culture and operating model, and allows us to anticipate needs, opportunities, and to rapidly deploy talent and resources. Today, our 25,000 employees help to shape thinking and prepare for future developments in cybersecurity, homeland security, health care, engineering and information technology.

Q: What are some of your key services in the DoD training and simulation industry?

A: Booz Allen's services are aligned to our customers' specific mission requirements. They cover individual and mission training, M&S engineering and technology and LVC infrastructure, among other services. Some key services include:

- Run Time Manager, Independent Simulation Module and After Action Review System: Our GFE products support training to every Army Corps, active division, and multiple reserve and National Guard Units.
- ANG Distributed Training Operations Center: This integrated solution of GFE and COTS products for planning and execution of Distributed Mission Operations events, includes scheduling services, scenario development, mission planning, threat system development/ integration, and network security/IA support.



*Keith Catanzano
Vice President,
Analytics Team
Booz Allen Hamilton*

- Full Spectrum Low Overhead Driver: A self-contained, web-accessible, GFE constructive and gaming simulation product. Army units can easily tailor for offense, defense, and stability or civil support operations training needs.
- Enterprise Training Management and Delivery System: Uses GOTS options to replace the Navy's existing eLearning capabilities. Turnkey solution requires design, development and implementation of a Learning Management System [AtlasPro] to deliver Learning Content Management System [Rapid Online Content Creation Environment] for training material.

Q: What are some of the innovative approaches that Booz Allen is applying to training/simulation?

A: Booz Allen delivers solutions like service-oriented architecture, cloud computing and advanced analytics to enable the services to create flexible LVC solutions to support dynamic, interactive learning.

Advanced analytics will help the services improve after-action reporting and create more efficient training. Applying measurement and analytics would allow the services to create more personalized training; enabling the services to shift learning from high-cost to lower-cost approaches that prove to be equally effective. Similarly, the analyses enable the services to eliminate learning and training techniques that are not adding value for specific types of personnel or missions.

Q: How are you positioned for the future within the military?

A: We look across our DoD competencies to leverage best practices, and our experts. We put these LVC applications to work across the total force—including the National Guard and Reserve.

Importantly, we developed a firmwide approach to addressing organizational efficiency and effectiveness. This focuses on strategic analysis, core missions and an approach to efficiencies to help clients do the most important things—and do them well—in a budget-constrained environment.

Q: What is Booz Allen's connection with the defense community?

A: Booz Allen's work crosses all the services and DoD organizations. In the case of LVC and M&S, we already see how our relationships have helped to sharpen and tailor training to specific mission requirements. Working with the U.S. Army Forces Command [FORSCOM], we supported the introduction of more simulation for Fire Support Mission Training and Collective Training with Anti-Tank Missile systems. Booz Allen helped FORSCOM integrate Virtual Battlespace 2 [VBS2] Battlefield Simulation System with other simulators—to bring greater flexibility and efficiency in training Army units.

As a partner to the Air Force Air National Guard Distributed Training Operations Center [DTOC], we helped create tactical-level distributed mission operations [DMO] training events that are tailored to the specific needs of Air Force units stationed throughout the world.

Q: How do customers benefit from Booz Allen's varied resources and expertise?

A: Booz Allen is agile and client-focused. Our model allows us to deploy our most talented people to address our customers' challenges. Additionally, we work with and for program management officers to provide objective and unbiased advice as an independent integrator.

Q: How do you measure success?

A: Our success at the Air Force's DTOC can be measured in many ways. Our number of completed training missions escalated to an all-time high [over 4,000] in 2011, nearly doubling from the previous year; multiple Air Force schools [AWACS IQT; ASOC IQC] have changed their syllabus to incorporate DTOC DMO events as part of the required curriculum; and the DTOC has become the primary provider of Ready Aircrew Program missions for the Air Force command & control community. Since every DTOC mission is voluntary, the

increased mission numbers and success stories validate our approach of developing and facilitating DMO training and readiness missions based solely on warfighter requirements. ♦

Q&A: General Edward A. Rice Jr.

Written by Brian O'Shea

MT2 2012 Volume: 17 Issue: 3 (May)

Military Training Technology

RECRUITER AND TRAINER: Delivering and Sustaining Prepared Airmen

General Edward A. Rice Jr. is the commander of Air Education and Training Command at Randolph Air Force Base, Texas. He is responsible for the recruiting, training and education of Air Force personnel. His command includes the Air Force Recruiting Service, two numbered air forces and Air University. The command trains more than 340,000 students per year.

Rice earned his commission through the U.S. Air Force Academy, Colorado Springs, Colo., 34 years ago. A command-rated pilot with more than 3,900 flying hours, he has significant experience in combat and contingency operations, including commanding bomber operations during the first four months of Operation Enduring Freedom. He also served as deputy commander of the joint task force assigned to provide humanitarian assistance and disaster relief to victims of the 2004 tsunami in Southeast Asia.

During his diverse career, Rice has also served as a White House fellow at the Department of Health and Human Services, a professional staff member for the Commission on Roles and Missions of the Armed Forces, and as the deputy executive secretary for the National Security Council.

Q: With a budget rollback and personnel cuts looming, Secretary of the Air Force Michael Donley recently told members of the Armed Services Committee that Air Force leaders said the best course of action would be trade size for quality. How will Air Education and Training Command adapt to these changes?

A: Air Education and Training Command is in the force development business, which means we develop human capital. In times of shrinking resources, it is more important than ever that we get that human capital part of the equation right. And as good as we are today at recruiting, educating and training, we are going to need to be even better at it tomorrow if our Air Force is going to remain preeminent in the years and decades to come.

Air Education and Training command will continue its mission to produce airmen who possess the tactical expertise, the operational competence and the strategic vision to execute and lead the full spectrum of Air Force missions. While our resources will likely decrease in the future, we strongly believe we will have enough resources to accomplish our mission, but not enough resources to accomplish that mission in the same way we have in the past.

We have an opportunity to build a fundamentally different construct for recruiting, educating and training the force. If we do it right, and I am confident we will, it will require less resources and be more effective.

Q: What are AETC's top priorities?



*General Edward A. Rice Jr.
Commander
Air Education and Training
Command*

A: AETC's top priority is to deliver and sustain prepared airmen, who provide unrivaled Air, Space and Cyberspace power for our nation and its allied partners.

The Air Force is substantially smaller than in previous decades, but it continues to play a vital role in national security because of its global and cross-domain orientation, its reach, its power, and the proven capacity of airmen to adapt to and shape the evolving security environment. AETC is totally committed to developing those airmen. Our strategy for 2012 is to continue mission excellence in recruiting, training and education while transitioning to a more sustainable future. As we develop airmen for the fight, we are also developing a new paradigm for force development, integrating our partnership building efforts, and fostering a cost-conscious culture to achieve savings in money, resources and time.

In regards to a cost-conscious culture, or C3 for short, we must develop the mindset that every AETC airman must consider the cost implications of his or her actions, inactions and decisions. It's about being good stewards of America's resources. It's more than simply achieving greater efficiency. It truly is a mindset that makes cost considerations a part of everything we do.

Q: You've been in the Air Force since 1978. What are the biggest differences and similarities you see in Air Force training and education given then and now?

A: Over the past several years, there has been a large increase in the amount of technology in the classroom. This improvement in the tools we have available increases both the speed at which people learn and the quality of the learning process. We have only scratched the surface in this respect and I expect much more technology to come to our classrooms in the years ahead.

That said, our basic philosophy of training and education is largely unchanged over the past several decades. We spend a great deal of time ensuring we have the right curricula. We hire and train world-class instructors. And we provide our instructors and students with the resources they need to complete the learning process. Because of this, our training is the best in the world and we work hard to keep it that way.

Q: How important is AETC's partnership with industry to support recruiting, training and educating Air Force people?

A: In the first three days of air operations in Afghanistan, six B-2 Stealth bombers launched from the middle of America to embark on the longest combat sorties ever flown. The longest mission totaled more than 44 hours of continuous flight with six air-to-air refueling missions. The B-2 crews successfully destroyed their targets and returned home unseen and unscathed. Although we had never flown such lengthy sorties in actual combat, we flew similar, simulated missions many times in training. That training was key to ensuring our crews were combat ready.

Using simulators, aircrews were able to practice real-time missions from start to finish using authentic targets, threats and air refueling scenarios. That type of realistic simulation and rehearsal enables mission success. Exploring and developing innovative training and education solutions with our industry partners will only serve to bolster our national defense for years to come.

In the future, we'll be looking to our industry partners as we develop innovative methods to train and educate our airmen today for the missions they will carry out well into tomorrow. Robust, collaborative, online training and education hardware, software and courseware will allow airmen to learn while increasing the efficiency with which they do so. The emphasis will be on lower-cost delivery methods without sacrificing quality of products.

In the realm of modeling and simulation, the advent of the Standard Space Trainer [SST] underscores our goal to innovate, eliminate redundant training systems and reduce sustainment costs. By teaming with industry partners and using modeling and simulation technologies from commercial combat games, the Air Force delivered a proof-of-concept training system, the SST, currently in use in the training environment, both at the

533rd Training Squadron, Vandenberg AFB, Calif., as well as the 50th Operations Support Squadron, Schriever AFB, Colo.

Using commercial off-the-shelf hardware, the development team replicated two training systems—the global positioning satellite and the defense satellite communications system—and eliminated the requirement for two separate simulators. The legacy simulators may have performed 100 percent of all possible tasks an operator would see on the operations floor, yet the course training standard only required a percentage of those tasks to be taught. Therefore, it did not make sense to have two separate simulators with high acquisition and sustainment costs, especially if they were being underused.

The SST performed exactly as it was designed, a dedicated trainer built for instruction without costly proprietary software and hardware, for approximately \$7 million in development costs. The average cost of a legacy, single-use trainer is \$21.6 million per year. By combining two trainers into one, the cost savings to the Air Force was \$34-36 million. In a cost-conscious culture and in an effort to leverage technology to accomplish our mission and save money, the SST stands as a fine example of the art of the possible.

But cutting-edge technology is not the only consideration for a cost-conscious culture. It's also important we temper our appetite for the latest and greatest in performance and capability with a healthy dose of realism. We must look at what we really need and what we can afford.

Sometimes, last year's technology delivers the required capability for many years while vanguard technology is better suited for those on the battlefield ... that's where the money should be focused when considering cutting edge capabilities. Our procurement process must lead to efficiencies at reduced costs.

Q: What's the latest on the T-X program as the Air Force looks to replace the T-38 Talon as the Air Force's jet trainer? What are the biggest challenges to bringing that aircraft on line?

A: We're closely looking at the need for a fifth-generation fleet of Air Force jet trainers. The Air Force has yet to decide when to begin replacing the T-38 Talon. The T-X program will contain proven technologies that should make it possible to deliver quality training capability on schedule and at a reasonable cost.

The T-X program goal for initial operating capability is expected now to be available to train pilots starting around 2020. Currently, the T-38, which entered service in 1961, is the primary fast jet trainer. However, as neither of the Air Force's fifth-generation aircraft, the F-22 or F-35, have dual-cockpit capability, there is a need to have a more modern trainer that can more fully prepare pilots for what they'll see in the newer aircraft.

For instance, the T-38 does not have the ability to mid-air refuel and is limited in how much gravitation force [Gs] it can handle. A new trainer, the T-X, will address those gaps. It will also have a cockpit configuration that virtually replicates new aircraft technologies and displays. The T-38, while a great and venerable plane, is challenged to train our pilots to fifth-generation capability. To make up for that gap, Air Education and Training Command provides a bridge course for pilots who will fly the F-22 or F-35. The bridge course uses the two-seat F-16D and pilots go through several flights to work on high- G maneuvers and air-to-air refueling during daylight and nighttime conditions.

While effective, using the F-16s for training flights adversely affects the demand on the rest of the F-16D fleet, which must make up for the numbers lost to training. And those numbers will get higher as the Air Force increases student throughput for fifth generation training.

For now, we have more than 400 T-38s and their average age is 44 years old. The plan is to keep them flying until 2026, when their average age soars to nearly 60. If the T-X is acquired and produced, the Air Force's notional plan is to buy approximately 350 to replace the Talons.

Q: How is the Air Force looking to adapt its training curriculum in an age where advancements in technology occur so rapidly?

A: The Air Force has long excelled under the tenets of flexibility and versatility. Those tenets will again be key as we move forward in our strategic direction to become more effective and efficient.

We've talked about less classroom-based teaching. We plan to engage our airmen with the full spectrum of tools available through today's technology. That may include tablets to hold all class publications and manuals for each airman, as well as more computer-based training and high-fidelity simulator training. Virtual extended classrooms can provide more hands-on training and allow airmen to learn at their own pace. If an airman has a problem, he or she can log in to a class chat room or seek individual help from an instructor. The possibilities are truly endless and AETC is poised to be a leader in transforming the way our servicemembers learn.

Q: Numbers show that the quality of those joining the Air Force today has never been higher. How has that impacted the Air Force and what would you say to someone interested in becoming an Air Force member?

A: The quality of young men and women joining the Air Force today is truly the highest it's ever been. You can look no further than the qualifying scores, across the board, to see that we're getting the cream of the crop. The Air Force has always prided itself on the caliber of person it attracts and ultimately brings into its fold. By recruiting the best and brightest this nation has to offer, we have set ourselves up to excel well into the 21st century. In terms of impact to the Air Force, I'd say this can only mean good things for the service.

In the competitive environment we find ourselves in today, it's important for young people to realize the impact their actions today will have on their opportunities tomorrow. If you're thinking about the service, or any other professional organization, as a career option, you can't afford to make careless decisions.

Unfortunately the world has become too small for young men and women to make decisions that result in the kind of middle school and high school experience that is characterized by poor conduct. A law enforcement violation, finding yourself in poor physical condition, certain tattoos or piercings, can all cut you off from opportunities in which you might otherwise excel.

Nearly 75 percent of young men and women out there today disqualify themselves from any type of military service by things that are within their control before they graduate from high school. I don't know that you have to know what you want to be when you grow up, but I think you have to know what you can't do so you can remain competitive for opportunities.

You really have to think about yourself as entering a very competitive opportunity, especially so if you're thinking about any of the service academies. Candidly, you've got to take the toughest courses. You've got to have a sense of discipline and commitment to your teams. I recommend young men and women concentrate not just on academics but also try to find environments where they can develop a whole-person concept, whether it's in scouting, sports, music, academic teams, or volunteer work.

The services are looking for people who've got the leadership seeds that can be developed and grown. The hard truth is that colleges are very competitive and the Air Force Academy is no exception. If you look for the toughest courses in math and science and prepare to do well, you'll succeed in any path you choose.

Preparation is the key to success. It's a combination of intellect but also adaptability and flexibility. You've got to be the kind of person who can be around others and be inspired by excellence. Young people now are much more savvy about the kinds of opportunities out there for them. These are competitive environments and they are prepared to do well.

Q: What are the primary benefits of the Air Force using high-fidelity simulator based training?

A: Simulator-based training is vital to the Air Force. A great example is at Eglin AFB, Fla., where the Air Force has created perhaps the most sophisticated flight simulator ever developed for Air Education and Training Command's F-35 Joint Strike Fighter Training.

Eglin's F-35 Integrated Training Center, under the 33rd Fighter Wing, is the primary location to teach both student pilots and maintainers from the Air Force, Navy and Marine Corps in a state-of-the-art training campus. Maintainers receive hands-on training with the new airframe while aircrew and future pilot trainers begin ground training and simulator flights.

The full mission simulator provides high fidelity, 360-degree vision for the pilot. This allows for very realistic and lifelike training and ensures the pilot is fully capable of flying the aircraft for the first time. In a major technological breakthrough, a pilot can simulate his F-35 engaging in an aerial refueling with a KC-10 or KC-135 tanker, something previously unheard of. The simulator also allows pilots to conduct briefings and debriefings, where they can break down every portion of a flight, with multiple students and instructors learning from the experience.

Q: Is there anything else you would like to add?

A: The Air Force needs to continue to adapt how it provides airmen the tactical expertise, operational competency and strategic vision to execute the full range of Air Force missions. Rest assured that we in AETC keep that at the forefront as we look to transform how we recruit, train and educate the force.

While training provides airmen with the capabilities to answer questions, education prepares airmen to ask the right questions in the first place. To operate in the world as it exists today, with its increased constraints in budgets and increased pace of technology, the balance between training and education will shift and weigh more on education. How we in AETC bring those new, exciting educational opportunities to our airmen and civilians will determine our success moving forward. It's a daunting, but exciting, time for us all.

Team Orlando Update

Terri Bernhardt

MT2 2012 Volume: 17 Issue: 3 (May)

Military Training Technology

Team Orlando Hosts Informative Afternoon of Live, Virtual, Constructive

A busy group of intrigued professionals from around Research Park gathered at Team Orlando's Live Virtual Constructive (LVC) Open House, which featured an opportunity to see and share emerging technologies and concepts in the Department of Defense's LVC modeling and simulation arena. Participating in the showcase were Air Force Modeling & Simulation (AFAMS), Naval Air Warfare Command Training Systems Division, Program Executive Office for Simulation Training & Instrumentation (PEO STRI) and J7 Joint & Coalition Warfare Center, Research Development and Engineering Command (RDECOM) and Simulation & Training Technology Center U.S. Army RDECOM lab. Each team display featured presentations and demonstrations of the latest capabilities in LVC. "We had a steady stream of visitors from the time we started until we finished," stated Gary Allen, project manager, LVC Architecture Roadmap Implementation Joint Training Integration and Evaluation Center. "All of the representatives were engaged." Although attendance was primarily comprised of local representatives of government, industry and academia, Tom Irwin, SES, Joint Coalition Warfare Center, Suffolk, Va., was also present as well as representatives from U.S. Cyber Command.

LVC simulations are broad classifications for modeling and simulation technologies. However, categorizing a simulation as a live, virtual, or constructive environment is difficult since these technologies often overlap. The degree of human participation in a simulation varies, as does the degree of equipment realism. Therefore, the "live" in LVC typically instruments people working real equipment, e.g., a pilot flying a jet on a training range. Virtual M&S involves real people operating simulation systems or simulators using motor skills, e.g., flying a jet simulator, which requires decision-making and communication skills. Constructive M&S typically consists

of simulated organizations and equipment with an external controller or battle master providing varying levels of control of the simulation.

Although the concepts across the board were similar, different projects featured unique attributions such as user blogs, speech capabilities, the ability to train in more dynamic environments, and improving proficiency and readiness with the common goal of generating readiness at a lower cost. Each program has its own way of measuring feedback and rating the use based on the user's requirements. Collaboration between the services was evident in several locations on the showroom floor. A unique example is a project that has been in place prior to the event called Live, Virtual, Constructive, Architecture Roadmap - Implementation and is working with both the PEO STRI Program LVC - Integrated Architecture and the AFAMS Air & Space LVC Environment. This particular program has one principal goal: "Improve interoperability for the DoD M&S Communities of Interest." This joint effort will provide capabilities that all of the services will be able to leverage to meet their unique requirements.

The LVC open house took place on the afternoon of March 30 in the Partnership III building. For more information: www.teamorlando.org ♦

Editor's Perspective

Brian O'Shea

MT2 2012 Volume: 17 Issue: 3 (May)

Military Training Technology

The upcoming ITEC simulation and training conference in London appears to be a hotbed of innovative technologies and solutions to create the most high fidelity training products on the market for the U.S. military. Particularly of note are products that will be featured that focus on training military personnel in the area of cybersecurity. In this day and age, it is paramount to have boots on the ground gathering intelligence and conducting operations, but protecting military and civilian networks is no less crucial.

Solutions aimed at warfighters before they are deployed that emulate cyber defense in a virtual environment seem to be on the cutting edge. The technology is often based on previous incidents, simulating large scale virtual networks, and will allow trainees to secure national military and civilian networks against all forms of cyber attacks, establish countermeasures and improve protocols.

The Defense Department has also recently asked for help from the private sector in reporting computer network attacks in real time to stop what has been the "greatest transfer of wealth in history" that U.S. companies lose to foreign hackers, the head of U.S. Cyber Command told a Senate committee in late March.

Army General Keith B. Alexander, who also is the National Security Agency director, told the Senate Armed Services Committee that he supports legislation that would require private companies to report attacks, and added that such reporting needs to happen before an attack is complete.

"We need to see the attack," he said. "If we can't see the attack, we can't stop it. We have to have the ability to work with industry—our partners—so that when they are attacked, they can share that with us immediately."

The Defense Department's request of \$3.4 billion for Cyber Command in fiscal year 2013 is one of the few areas of growth in the DoD budget, senators noted. The command has made progress toward its goals of making cyberspace safer, maintaining freedom of movement there, and defending the vital interests of the United States and its allies, Alexander said. The command also is working toward paring down the department's 15,000 separate networks, he said.

With the nuclear capability the U.S. military possesses, and the fact that all government systems are run by computers, creating a defense for this sort of attack is a high priority for the military. Leaving our networks, both civilian and military, open to attack would result in horrendous consequences.



2012 Training and Simulation Industry Report

Fiona Greenyer

June 21, 2012

Halldale Media Group

There was a significant sea change in the theme and content of program briefings presented at this year's TSIS. Gone was the urgency at recent symposia, to develop and field cutting edge technologies to defeat IEDs and other combat threats, in Iraq and Afghanistan. The 2012 TSIS delegates also learned the reality of decreased service funds through the budget out years will mean fewer new programs for products and services, but huge opportunities for upgrades and enhancements to existing systems. At the same time, the services remain interested in pursuing a number of technologies and S&T applications to close existing gaps for their rapidly evolving missions under the Pentagon's new defense strategy of January 2012. And the symposium attendees learned of the service S&T acquisition community's continued interest in its small business partners.

Navy Insights

One of the more insightful remarks at this TSIS were from the keynote comments delivered by Rear Admiral Randy Mahr, the Commander, Naval Air Warfare Center Aircraft Division and Assistant Commander for Research and Engineering at the Naval Air Systems Command. In his leadership roles, Mahr has oversight of NAWCTSD-Orlando.

Mahr established himself as a proponent of the S&T sector's small businesses, noting in one case, these companies are the community's intellectual capital – "keeping the bigger businesses nervous." The Navy one-star admiral also reminded the attendees that small businesses are agile and responsive, as a result of being able to assign several responsibilities to one person as opposed to being dispersed across a directorate.

In 2010, NAWCAD awarded about \$1.6 billion in contracts to small businesses.

Mahr also set the tone for presenters from the other services, by noting NAWCTSD's continued commitment to an open and continuing dialogue with industry on S&T programs, through their small business offices and other organizations.

Brian Hicks, NAWCTSD's Director of Cross Warfare Programs, provided one of his service's insights on S&T technology areas of interest. Hicks' short list of technologies included virtual environments and gaming technologies, in particular those with mobile applications. "This is a big area for us. A lot of the work to be done in the course of the one or two years will be here."

Hicks also served notice that his service's commands are seeking to optimize progress in intelligent tutoring systems. "What the Navy is looking at, is adapting the intelligent tutor technology principally for development in its A & C schools. The goal: to use advanced tutor concept for scalability, repeatability and training – to

deploy the technology. This is a huge opportunity. You will soon start to see some requests for information come out.”

Maureen Bergondy-Wilhelm, the Director of Research and Technology Program at NAWCTSD, pointed out several “big deal areas” to her office during her presentation. Beyond the launch of work earlier this year to support live, virtual and constructive training fidelity, she also emphasized interest in unmanned systems; medical modeling and simulation training in terms of team performance; physiological and neurophysiological assessments to improve training; and also in virtual environments for training.

Desire for More Air Force Information

Anthony Dalsasso, the Chief of Air Combat and Special Operations Engineering Branch for the Simulators Division at Training Systems Product Group, left TSIS delegates looking for more information in two major programs following his symposium presentation. The Wright Patterson Air Force Base-stationed official did report progress on implementing his group’s TSA (Training Systems Acquisition) III program. Indeed, a request for proposal on the program is expected to be published July 12.

During the same presentation, Dalsasso noted that at the direction of his service’s KC-46 program office, he was unable to provide insights on the conceptual training system for the embryonic refueling fleet. Symposium delegates were also disappointed to learn that he was unable to provide insights on the rapidly evolving training system for his service’s “A” variant of the F-35. As oversight for all three U.S. DoD F-35 models is expected to remain under the oversight of the Joint Strike Fighter Office for the foreseeable future, NTSA, the TSIS sponsors, may be well advised to provide a separate F-35 training systems update at the 2013 TSIS.

USMC Perspectives

Colonel Dave Smith, in his waning days as Program Manager for Training Systems, managed the delegate’s expectations early on by noting there will “not be a lot of new, big-ticket procurement items” but there will be a number of near-term opportunities for the technical refresh of systems and in the services sector.

Smith, echoing a theme from Rear Admiral Mahr, said that his organization “still favors small business.” In the case of PM TRASYS, 48 percent of its work in 2011 went to small business. “We like small businesses,” he emphasized. The Marine acquisition official also closed out his briefing by noting his programs “are fully funded” in the FY 2013 defense budget request.

Army Areas of Interest

Rob Reyenga, the Deputy PEO STRI, said his service has a “very significant demand signal for the integration of training environment (ITE).” He explained that PEO STRI’s role in establishing the ITE is to field the service’s training systems and prepare them for use as the underlying LVC-IA initiative develops. “And then we can glue all of that together to create the ITE. “That is the pacing item that we are working on right now.

Also at the top of Army T&S program opportunities were those in foreign military sales. “One of the areas that we see as having significant growth is in foreign military sales,” Reyenga pointed out.

More details about the services’ individual programs discussed at the TSIS will be included in a feature article about S&T opportunities with the U.S. DoD, scheduled to be published in *MS&T* 4/2012.

DI-Guy Releases Human Simulation Software Suite Version 12

July 10, 2012

Halldale Media Group

DI-Guy launched Version 12 of its Human Simulation Software Suite – an integrated suite of realtime human simulation products and tools including DI-Guy SDK, DI-Guy Scenario, and DI-Guy AI.

DI-Guy, a supplier of software tools for realtime human simulation, launched Version 12 of its Human Simulation Software Suite – an integrated suite of realtime human simulation products and tools including DI-Guy SDK, DI-Guy Scenario, and DI-Guy AI.

Version 12 highlights include:

- Next generation character visualization and models including normal maps for enhanced high performance visual realism, reference shaders and infrastructure to support end application lighting and sensor environments, and multi-layer textures enabling customizable and extensible materials.
- Multi-threaded and multi-core processing for high performance visualization and AI path planning performance.
- Upgrade of DI-Guy Expressive Faces to the industry leading, FaceFX advanced facial animation solution. The FaceFX Studio Professional tool provides unprecedented facial authoring capabilities, including lip synching, gestures, and emotions that enable easy creation of realistic, animated dialogues.

Simbionix Introduces a Series of Training Curricula

Lori Ponoroff

July 10, 2012

Halldale Media Group

Simbionix USA Corporation, a provider of medical simulation training and education products, is offering a series of simulation-based curricula to customers of the LAP Mentor(TM), GI Mentor(TM), BRONCH Mentor(TM) and the VirtaMed HystSim(TM).

The simulator curriculum contributes to medical resident learning and the success of skills centers. The curricula cover various multidisciplinary specialties, made available via MentorLearn(TM), the company's web based Simulator Management System, which provides the solution for managing training and education needs for the Simbionix line of simulators. The system includes a library of ready-to-use simulator based courses provided in a standard format with the option to adapt to any format an institution uses, as well as a platform to design new training courses.

Currently available curricula for the LAP Mentor include the 'Imperial College Laparoscopic Cholecystectomy Training Curriculum' and the 'Laparoscopic Surgical Skills (LSS) Curriculum' developed by the LSS, an initiative by the European Association for Endoscopic Surgery (EAES). The curricula are suitable for all surgical specialties involving laparoscopic procedures, with a special focus on general surgery, bariatric surgery and gynecology and patient safety for OR nurses.

Curriculum for the BRONCH Mentor, intended for physicians specializing in pulmonology, thoracic surgery, interventional pulmonology and critical care includes the 'Bronchoscopy Hands-On Training Curriculum-Basics'. The GI Mentor 'Texas Association of Surgical Skills Laboratories (TASSL) Flexible Endoscopy Training Curriculum' is intended for those specializing in gastroenterology, general surgery, gastrointestinal surgery and internal medicine.

Florida Hospital Celebration and Mimic Collaborate

Lori Ponoroff

July 9, 2012

Halldale Media Group

A new collaboration between Florida Hospital Celebration Health and Mimic Technologies will add the latest robotic simulation training technology to the Nicholson Center for Surgical Advancement. The agreement will result in improved surgical training for physicians using the da Vinci robot, a complex surgical device that requires advanced skill for effective use.

The new improvements in training for the center will bring together physicians, surgeons, surgical teams, and allied health professionals to conduct research; develop and incubate the latest technologies, products, techniques, and processes; and create training curricula to advance the field of robotic surgery.

Simulation training is rapidly being adopted as hospitals seek to minimize the learning curve associated with robotic surgery. Mimic Technologies, the company responsible for da Vinci robot simulation, has provided the latest simulation technology to Florida Hospital to help meet the demand for better training.

Mimic will help develop simulation-based curricula that will accelerate the adoption of the latest robotic technologies and techniques. Research and development projects focused on medical robotics will advance training and innovation for the global community. The new simulator technology will also reduce training time spent on the actual da Vinci device, freeing up the surgical robot for elective patient surgeries.

Adam, Rouilly Develops Emergency Caesarean Simulator

Lori Ponoroff

July 6, 2012

Halldale Media Group

British medical team and manufacturers, Adam, Rouilly developed Desperate Debra, a life-size simulator that lets medical students learn and practice how to perform an emergency caesarian. An emergency caesarian is often called for during childbirth when the baby's head becomes stuck in the mother's pelvis. From this difficult position, the head must be pushed back into the uterus before an incision is made in the abdomen to retrieve the baby.

"Of all the women who reach full dilatation, somewhere between about two and five percent will end up needing this type of operation," explained Andy Shennan, professor of obstetrics at Guy's and St. Thomas's Hospital in London.

Calytrix CEO Wins Simulation Achievement Award

Lori Ponoroff

July 6, 2012

Halldale Media Group

Shawn Parr, Chief Executive Officer of Calytrix Technologies Pty Ltd won the 2012 Simulation Achievement Award from Simulation Australia. The organisation presents awards to recognise important contributions to simulation in Australia.

Parr has dedicated more than 20 years to the Australian simulation industry, beginning as a senior researcher at the Software Quality Institute and culminating as the founder and CEO of Calytrix Technologies. He has steadfastly supported the simulation industry, been active in the simulation community around the world and built an Australian company that now exports Australian simulation products and services to more than 15 countries worldwide.

Surgical Residents Perform Better with Simulation Training

Lori Ponoroff

July 6, 2012

Halldale Media Group

New research from St. Michael's Hospital in Toronto, Canada shows that surgical residents who receive structured training in a simulated environment perform significantly better when they start operating on patients.

The results of the study by surgeon Dr. Teodor Grantcharov and surgical resident Dr. Vanessa Palter were so convincing that the University of Toronto implemented the training program they developed even before their research was published in the July issue of the *Annals of Surgery*. According to the research team, surgical residents often came to the OR and surgeons didn't know if they had the skills or knowledge to perform the surgery. Now, only people who demonstrate proficiency in a simulation are allowed to come to the OR.

Grantcharov and Palter say that even though preventable medical errors contribute to between 9,000 and 24,000 deaths in Canada each year, there was no effective mechanism to ensure residents have the skills and knowledge to perform safe surgery.

They formed a study in which surgical residents were divided into two groups. One group received the conventional training for laparoscopic colorectal surgery—removing a tumour from the colon. The other group trained on a virtual reality simulator, received cognitive training (when and how to operate, how to work as a team) and practiced surgery on cadavers.

After five months of training, each resident performed a laparoscopic right hemicolectomy (removed a tumour from the right side of the colon) that was videotaped and analyzed by outside experts. Those who went through the simulated training performed the procedure significantly better and did better on a multiple choice test. They scored an average of 16 out of 20 on technical performance, double the 8 out of 20 score for those who underwent the conventional training. On the multiple choice test of their knowledge of the procedure they scored 10 out of 18, compared to 7.5 out of 18 for those in the conventional program.

Grantcharov said he has received inquiries from medical schools around the world regarding the curriculum he and Palter developed. While this curriculum currently applies to colorectal procedures, they are designing similar approaches for a number of other high-risk procedures.

Columbia University Med Center to Build Education Building

Lori Ponoroff

July 3, 2012

Halldale Media Group

Columbia University Medical Center (CUMC) is planning to build a new, state-of-the-art medical and graduate education building on the CUMC campus in the Washington Heights community of Northern Manhattan, New York.

The new building is a 14-story glass tower that will incorporate technologically advanced classrooms, collaboration spaces, and a modern simulation center, all reflecting how medicine is and will be taught, learned and practiced in the 21st century. The design was led by Diller Scofidio + Renfro, in collaboration with Gensler as executive architect. Construction is expected to begin in early 2013 and will take approximately 42 months.

The Medical and Graduate Education Building will be used by students from all four CUMC schools (Physicians & Surgeons, Nursing, Dental Medicine and the Mailman School of Public Health), and the biomedical departments of the Graduate School of Arts and Sciences. Its high-tech medical simulation center, which will allow hands-on learning in realistic settings, will transform the way CUMC trains health professionals in medicine, dentistry and nursing, as well as how practicing physicians maintain their clinical skills and learn new techniques.

Construction of the new building is supported by a lead gift of \$50 million from P. Roy Vagelos, M.D., a distinguished alumnus of Columbia's College of Physicians and Surgeons (P&S), and his wife, Diana Vagelos. This gift was announced in September 2010.

Northwestern University Showcases New Simulator

Lori Ponoroff

June 29, 2012

Halldale Media Group

Katherine Barsness, M.D., a pediatric surgeon at Children's Memorial Hospital and an assistant professor at Northwestern University Feinberg School of Medicine, and Lauren Davis, a member of the university's Simulation Technology and Immersive Learning's Innovations Lab, attended the American Pediatric Surgical Association's (APSA) Annual Meeting in San Antonio, Texas to showcase their Thoracoscopic Tracheoesophageal Fistula (TEF) Simulation Trainer.

The Thoracoscopic TEF Simulation Trainer recreates the procedure performed by pediatric surgeons on infants to repair a disconnect in the upper and lower esophagus, which prevents the normal passage of food from the mouth to the stomach. The disorder occurs in approximately one out of every 4000 births.

The goal of the trip was to determine if the simulator could benefit medical education by having the model exhibited and tested by pediatric surgeons and fellows attending the conference. According to Davis, "We

collected data to validate the simulator as an educational tool. It was really exciting to see the surgeons react to their experience using the model. We had very positive feedback.”

Now Barsness and Davis will analyze their collected data, and further test the effectiveness of the simulator with other doctors.

Singapore’s Newest Medical School Unveils Simulation Training

Lori Ponoroff

June 29, 2012

Halldale Media Group

Singapore's newest medical school, Nanyang Technological University’s Lee Kong Chian School of Medicine, unveiled its new simulation technology training center that will be ready when the first batch of medical students starts courses in August. Students will get to perform surgery on life-like prosthetics of human organs, complete with simulated bleeding.

With simulation training a cornerstone of its medical training, the Lee Kong Chian School of Medicine hopes to cut down on the amount of lectures and seminars, to make way for more interactive and practical training.

University of Texas Opens Nursing Simulation Center

Lori Ponoroff

June 28, 2012

Halldale Media Group

The University of Texas in Antonio opened a new \$3.9 million Simulation Center and Clinical Learning Lab for its School of Nursing. The 7,281-square-foot simulated hospital features a wide variety of settings, including a trauma center, intensive care unit, maternal/child center, pediatric care suite, ambulatory care suite and home health setting. Nursing students and interprofessional teams of students and residents will use the center to learn to appraise and respond to unique clinical scenarios and evaluate their responses.

First National Medical Simulation Seminar in Ireland

Lori Ponoroff

June 27, 2012

Halldale Media Group

The first national seminar on medical simulation in Ireland, “Simulation in Irish Medical Education: Where are We and Where Should We Be Going?” will take place at National University of Ireland, Galway (NUI Galway) on Monday, 2 July 2012.

The seminar will provide an overview of medical simulation in Ireland to make better use of the assets that are available; allow professionals experienced in the use of simulators to share their knowledge and discuss how simulators can be most effectively used to improve medical education, patient safety and quality of care.

Delegates will hear from speakers from the two main Irish medical simulator centres, ASSET Centre, University College Cork and St. James' Hospital Dublin, and the Australian Centre for Health Innovation in Melbourne. Presenters from the airline industry and specific medical specialties will discuss how simulation is used, how to evaluate the performance of trainees, and the challenges associated with setting up a simulation training programme. Delegates will also participate in hand-on demonstrations of the latest high-tech simulators by the ASSET centre and Cardiac Services.

Dr. Paul O'Connor, Senior Research Fellow with the Institute for Business, Social Sciences, and Public Policy at NUI Galway, said: "The use of medical simulators to train healthcare professionals is becoming increasingly common. Simulators provide a safe environment for healthcare professionals to build expertise in both clinical and nontechnical skills such as team-working and communication. The purpose of the seminar is to get Irish medical educators together to share knowledge and expertise in simulation and learn from national and international experts."

The seminar is sponsored by the Irish Network of Medical Educators (INMED) and the Institute for Business, Social Sciences, and Public Policy at NUI Galway.

Mechtronix Supports Oktal in Production of Train Simulators

Lori Ponoroff

June 27, 2012

Halldale Media Group

French simulation company Oktal chose Mechtronix to manufacture the complete hardware for training units it is manufacturing for the Société des Transports de Montréal's (STM) new training classrooms.

The classrooms will have twelve Compact Simulators and the associated Instructors, Observers and Scenario Preparation Stations that will be used to enhance the STM's current training capacities for its fleet of MR-73 cars. Oktal's completion of the hardware for the first prototype of the Compact Simulator is scheduled for the end of June 2012 and the delivery of the complete simulators is scheduled by the end of 2012.

The Compact Simulators are designed to accurately replicate the ergonomics of the train driver's working area. Comprised of three visual screens, three control screens and the simulated driver's controls; the training units are designed to represent either the MR-73 or the new MPM-10 train scheduled for delivery in 2014.

Modular Turret Simulator Unveiled

Fiona Greenyer

June 26, 2012

Halldale Media Group

During Eurosatory, the Belgian defence manufacturer and integrator CMI Defence presented a new modular turret training and simulation system. Based on the example of the company's Cockerill LCTS90 turret hardware, CMI demonstrated the easy plug and play capability of its turrets and weapon systems.

The new solution combines three configurations: static systems, embedded turret simulators and mobile simulation systems. CMI uses COTS equipment that is set up in a modular and open electronic architecture. This reduces cost and offers a variety of interactive scenarios and advanced post-action review and analysis.

To develop its new training and simulation systems, which address all aspects of military simulation, CMI Defence has worked with French SILKAN (former HPC Project), a company whose core competencies lie in virtual, constructive and cutting-edge simulation. The developed solutions feature direct connection to real combat hardware, creating embedded simulators for training and mission rehearsal. These systems include high performance simulation engines, reconfigurable interactive instructor stations with built-in debrief capabilities, and innovative immersive displays coupled with high fidelity image generation.

Planning for Saber Strike 2012

June 21, 2012

Halldale Media Group

Representatives from Estonia, the United States, Canada and Great Britain have gathered at the Tapa Training facility in Estonia to build, design and execute an exercise to push the limits and raise the capabilities of the participating nations' leadership through a war game simulation as part of Saber Strike 2012.

Working cooperatively with allied partners, the Estonian forces are exercising a combat action scenario in a fictitious country undergoing civil unrest and facing an invasion by neighboring foreign forces sympathetic to the unrest. The exercise is an opportunity for allied forces to work together in a combat environment. It focuses on the command and control, planning and coordination aspects of military operations – specifically the coordination and reporting activities of forces in the field through the various higher headquarters elements.

The international partnerships and relationships developed during Saber Strike 2012 will continue to grow and develop as the plans and established coordination channels are tested during week two of the command post portion of the exercise.

Week two of Saber Strike 2012 will feature the execution of plans to test the Estonian brigade's ability to coordinate and execute the developed plans cooperatively in a multinational environment.

Saber Strike 2012 is a multinational, tactical field training and command post exercise that involves more than 2,000 personnel from the U.S. Army's 2nd Cavalry Regiment, Pennsylvania National Guard, 21st Theater Sustainment Command, the 4th U.S. Marine Division, the 127th Wing of the Michigan Air National Guard, Estonian, Latvian, and Lithuanian armed forces, with contingents from Canada, Finland, France and the U.K. The exercise, led by U.S. Army Europe, is designed to enhance joint and combined interoperability between the U.S. and partner nations, and will help prepare participants to operate successfully in a joint, multinational, interagency, integrated environment.

Africa's First Full Motion Helicopter Sim

Fiona Greenyer

June 21, 2012

Halldale Media Group

Africa's first full-motion helicopter simulator has been commissioned by Eurocopter in Kempton Park. The simulator, designed to train pilots and flight engineers operating Super Puma and similarly compatible helicopters including the South African Air Force's (SAAF) Oryx, is located at the SimAero training centre adjacent to the O.R. Tambo International Airport.

"We aim to continuously improve and enhance flight safety and crew skills. By placing simulators as close as possible to our customers we are able to provide training programs tailored to their specific needs. We are confident that the simulator will add significant value, not just in terms of monetary savings for the SAAF, but in real terms, measured in terms of peoples' lives are saved," explained Eurocopter Souther Africa CEO, Fabrice Cagnat. "And positioning the simulator in Johannesburg, where it is easy to come and train, is an attractive proposition for all other Super Puma operators. We have already received a strong interest from operators from Africa but also from other parts of the world."

Integrated Evidence-Based Simulation Technology for Health Science Curriculums

Fiona Greenyer

June 20, 2012

Halldale Media Group

Elsevier, a provider of scientific, technical and medical information products and services, and CAE Healthcare, a leading provider of medical simulation and healthcare learning solutions, have announced a new electronic nursing education solution to be made available in July.

The new offering features evidence-based scenarios fully-programmed for CAE's METI line of human patient simulators, including an integrated electronic health record (EHR) and a library of teaching support resources to guide the student through every step of simulation.

This is the first product to result from the Elsevier-CAE collaboration, announced in May 2011.

Elsevier and CAE Healthcare have combined CAE's METI human patient simulators with Elsevier's suite of nursing simulation products, including the Simulation Learning System (SLS). This online toolkit helps instructors and facilitators effectively standardize and incorporate simulation into their nursing curriculum.

The SLS for Medical-Surgical Nursing provides more than 50 evidence-based scenarios, expanding the scope of topics covered in the nursing curriculum.

"Nursing programs around the country are looking for more effective ways to prepare the future health care workforce for success in actual clinical practice," said Tom Wilhelm, vice president, e-Solutions, Elsevier Nursing and Health Professions. "With clinical space at a premium, this product will provide nursing students with hands-on learning opportunities and the training and experience they need to handle new and emerging best practices and technologies. For educators, this product enables them to deliver multiple simulated clinical experiences without having to manually change each setting in the patient simulator."

Air National Guard Boom Operator Simulator Contract

Lori Ponoroff

June 19, 2012

Halldale Media Group

FAAC Incorporated, part of Arotech Corporation's Training and Simulation Division, received a \$25.3 million contract award for the design, development, production and delivery of 17 Boom Operator Simulator Systems.

This award from the U.S. Army Program Executive Office for Simulation, Training & Instrumentation (PEO STRI) is a competitive small-business delivery order under the STRI Omnibus Contract known as STOC II.

The initial award funded \$4.3M for design and development of a first article with the remaining \$21M in options expected to be exercised for the production of 16 additional units and up to four years of initial contractor logistical support of the installed systems. The period of performance for the production of the first article and 16 additional units including logistical support is estimated to be 60 months.

The Boom Operator Simulator System (BOSS) is a high fidelity trainer for Air National Guard (ANG) boom operators that replicates the KC-135R Block 40 boom pod. The BOSS provides an immersive simulation environment that uses realistic computer-generated images that emulate the actual aircraft boom controls. The BOSS is intended for squadron level training to be co-located with operational KC-135 air refueling wings.

Thales Wins Submarine Simulator Upgrade Contract

Lori Ponoroff

June 19, 2012

Halldale Media Group

Thales Australia signed a contract to upgrade the Collins Submarine Platform Training Simulator at the Submarine Training and Systems Centre at HMAS Stirling, Western Australia.

Thales Australia signed a contract with the Defence Materiel Organisation to upgrade the Collins Submarine Platform Training Simulator (PTS) at the Submarine Training and Systems Centre (STSC) at HMAS Stirling, Western Australia. In service since 1993, the PTS is comprised of a Propulsion Control Simulator (PCS) and a Submarine Control Simulator (SCS). It plays a central role in delivering individual and collective training across a number of critical submarine systems, including the propulsion, manoeuvring, power conversion and distribution, and auxiliary systems.

By adopting the latest Thales simulator technology, the upgrade will incorporate improvements to the PTS to address obsolescence and fidelity issues, bringing it up to date with the current configurations of the actual submarines. Thales will also be upgrading the periscope visual system under a recently-signed contract.

Cubic Highlighting Products for Special Operations Forces at SOFIC

Lori Ponoroff

May 22, 2012

Halldale Media Group

Cubic Defense Applications, the defense systems business of Cubic Corporation, will present tactical-edge products that meet the demanding requirements of the special operations operator at the Special Operations Forces Industry Conference (SOFIC) May 22-24 at the Tampa Convention Center in Tampa, Florida.

Cubic has provided products and services to the Department of Defense, national security community, and international partners since 1951. In recent years, the company has placed greater emphasis on developing training and tactical products for the special operations forces (SOF) community. SOF products must be discreet, absolutely reliable and function under the toughest conditions possible. Products tailored specifically for SOF customers will be highlighted in Booth 1118 at the conference.

TACTICAL PRODUCTS

Dismounted Combat ID – Target Location/Navigation (DCID-TALON) – Cubic has demonstrated DCID-TALON and other optical communications technologies to all branches of the SOF community. The DCID part of the scope provides combat identification of dismounted troops to reduce fratricide incidents. The TALON part includes GPS receivers and an azimuth sensor to help users calculate distances to targets and display their location.

Cubic is developing this technology to meet the demanding requirements of the SOF sniper community. TALON forms the basis of an optics revolution to greatly reduce the number of components, weight and power demand so that the SOF sniper is unencumbered and more effective.

Personnel Locator System (PLS) – U.S. and allied combat search and rescue crews rely upon Cubic's PLS to covertly extract and provide assistance to downed military personnel behind enemy lines. Cubic's system is considered the standard for U.S. Special Operations Forces.

Multiband Miniature Transceiver (MMT) – Cubic's MMT is a tactical data link transceiver that lightens the load that tactical units and UAS' have to carry to transmit and receive intelligence, surveillance and reconnaissance (ISR) video and target data. "A data link system that used to be the size of a toaster oven is now the size of two stacked lap top hard drives," according to Robert Kalebaugh, senior director of business development for Cubic Defense Applications. "This reduces the weight of backpacks for land-based forces and can also help increase fuel efficiency for UAS. It can also form the basis of a family of software defined radios for disadvantaged users."

XD Solutions - Cubic's cross-domain technology for sharing intelligence information offers secure high-speed data transfer to users at all security levels, plus a one-way print capability for energy and cost savings.

TRAINING PRODUCTS

Special Operations Forces – Weapons Engagement Simulation System (SOF-WESS). International land and air forces and elite paramilitary police are already using Cubic's wireless engagement system for force-on-force training. Small, lightweight and discreet, SOF-WESS is adaptable to many international weapons types and is ideal for military advisers training international forces. The key components of SOF-WESS are small arms transmitters that are mounted to actual weapons and wireless detectors modules that can be kept in place anywhere on a uniform or clothing by use of magnetic brackets.

EST Dismounted Soldier (DS) – Cubic will exhibit an easy to deploy one-lane version of its proven EST 2000 Engagement Skills Trainer designed to sharpen the skills of individual shooters. EST Dismounted Solution is an ideal training platform for SOF's mission to advise and train international partners. It mitigates the need for shipping ammunition, is quickly deployable, and can even be transferred to international forces for their training sustainment requirements.

Mission Rehearsal Planning System (MRPS) – MRPS is a deployable virtual sand table system with a touch screen interface. Designed for interactive planning and rehearsal, it allows units, leaders and teams to train using a true computer-based constructive simulation rather than a scripted game engine. This allows trainers to change the simulation on the fly so tactical squads can practice different tactics, techniques and ground conditions for their mission.

Cassidian Demonstrating Gaming Technology for First Responders

Lori Ponoroff

May 21, 2012

Halldale Media Group

Cassidian will be at ITEC in London this week demonstrating that a simulated environment can better prepare emergency responders for the increasingly complex and unpredictable nature of real life incidents in a variety of sectors from the military to law enforcement and aviation. Cassidian will show the simulation training software that has been used by the UK police to test their response to both overt and covert counter terrorist incidents using a simulated environment at ITEC booth F130.

In 2010, Gwent Police were one of the first UK police forces to use 3D mapping technology to help them coordinate the policing operation of the Ryder Cup. Developed by Cassidian, the technology provided senior officers with a 3D model/map of the venue for this historic sporting event - and allowed them to track their officers as avatars on the 3D map. Cassidian will also have this technology on its booth.

FlightSafety Installs Pave Hawk Helicopter Sim at Kirtland AFB

Lori Ponoroff

May 21, 2012

Halldale Media Group

FlightSafety's new Sikorsky HH-60G Pave Hawk helicopter simulator has entered service at Kirtland Air Force Base in New Mexico as part of the U.S. Air Force's Aircrew Training and Rehearsal Support (ATARS) program.

ATARS prime contractor Lockheed Martin and FlightSafety designed the weapons systems trainer to prepare HH-60G aircrews for combat search and rescue missions. Students began training on the device in April 2012.

The simulator features two side domes for aerial gunner stations equipped with simulated weapons – a technology that allows pilots, flight engineers and aerial gunners to train together for the first time as a complete crew during training and mission rehearsal scenarios, according to Rick Armstrong, FlightSafety Vice President, Simulation.

The simulator has a Level D flight model, electric motion and control loading technology and VITAL X visual system with three image generators and 19 projectors. The Level D flight model was developed jointly by FlightSafety, U.S. Air Force and U.S. Army under a separate contract.

The simulator also provides simulation for the survivability equipment installed on the Pave Hawk helicopter. FlightSafety's Electronic Warfare Simulation allows operation of on-board systems that can detect missile launches and contains threats and friendly mission physics based models developed with real-world data to immerse the crew in a realistic training environment.

Simbionix Introduces Next Generation Simulator Platform

Fiona Greenyer

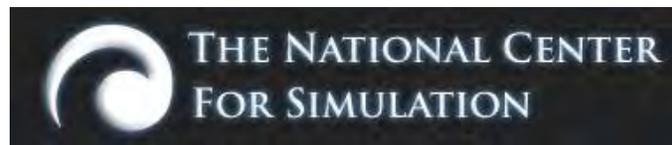
May 9, 2012

Halldale Media Group

Simbionix USA Corporation has announced the release of its next generation simulator platform for its endovascular training, the ANGIO Mentor™ Slim.

The ANGIO Mentor, an innovative virtual reality training simulator, provides hands-on practice in a comprehensive simulated environment for endovascular procedures. This unique system provides a solution for a variety of training programs, including Neurology and Thoracic Surgery. An ever-expanding library of modules supports the acquisition and honing of essential skills to build confidence and proficiency in a variety of endovascular techniques and procedures.

The new simulator platform is based on newly developed technology, offering advanced device tracking capabilities and more robust performance. Adding an additional hardware unit to the ANGIO Mentor Slim creates the ANGIO Mentor Dual Slim, which is used to provide realistic simulation of challenging endovascular procedures which require two simultaneous access sites, such as EVAR (Endovascular Abdominal Aortic Aneurysm Repair), TEVAR (Thoracic Endovascular Aneurysm Repair), Transseptal Puncture and ASD/PFO (using the ICE handle and the deployment device handles simultaneously). All ANGIO Mentor modules and PROCEDURE Rehearsal Studio™ modules can be used on this new platform.



Society for Modeling & Simulation International--Call for Papers

July 11, 2012

National Center for Simulation

The Society for Modeling and Simulation International (SCS) is well under way with preparations for the Autumn Sim 2012 being held October 28 – 31 in San Diego, California. Bev Seay, VP, CAE Global Professional Services will chair one of the panels focused on M&S ROI and has asked NCS to put out a call for papers/presenters. Anyone interested can contact her directly at 407-745-2600.

For additional conference information, you can contact MS Leah Ellis, the Conference Coordinator at 402-554-2158 or lellis@nebraska.edu.

The “Call for Papers” is available on the SCS website: <http://scs.org/node/324>.

ECS Delivers Simulation Based Enhanced Training for the National Guard Bureau

June 2, 2012

National Center for Simulation

June 1, 2012. Orlando, Fla. Engineering & Computer Simulations (ECS) announced that it has delivered and scheduled its Emergency Management Staff Training (EMST) facilitated exercises directed at National Guard State-level Joint Force Headquarters elements for the rest of Fiscal Year 2012. EMST, initially developed for the National Guard Bureau (NGB) J-3/7 to support the Guard's role in Emergency Management events, is a simulation-based training system that allows individuals or teams to make decisions in realistic situations and see the outcomes of their decisions.

In addition to developing EMST and its scenarios, ECS, in concert with its training and exercise partners Critical Operations, Inc., IIF, ANSER, and Camber, also provides full life-cycle support to its clients. The training, and subsequent help desk support, ensure clients have a sustained use of this adaptable solution. "Collaboration has certainly enhanced this type of training," stated Joe O'Connell, Vice President, Business Development, ECS. "Our goal is to partner with our client from requirements generation through development, test, delivery and sustainment."

Since the start of 2012, ECS and its partners have introduced multiple National Guard State Headquarters to EMST. ECS has subsequently developed scenarios with Subject Matter Experts to meet varying State-level requirements. A total of seventeen National Guard State Headquarters' have scheduled and/or held multiple facilitated exercises that support their Joint Mission Essential Task List. The scenarios exercised include inauguration, earthquake/tsunami, hurricane, wildfire, winter ice storm, pandemic flu, and civil unrest. Additionally, ECS has developed winter flood, levee failure, and building collapse scenarios for use. Mr. O'Connell expanded, "After Action Review comments from the States upon completion of using EMST for their exercises have been overwhelmingly positive in terms of its value."

ECS is slated to receive funding to support approximately thirty additional exercises throughout next year. These exercises will focus both on States using EMST for the first time, in addition to the continuation of more advanced staff training for States already using EMST.

In addition to the National Guard Bureau, other stakeholders using EMST include the Department of Homeland Security, US Army RDECOM, FEMA, TSWG, the Centers for Disease Control, and commercial clients.

Serious Game Design and Development Boot Camp is Coming to Orlando

May 17, 2012

National Center for Simulation

You are invited to attend the upcoming Serious Game Design and Development Boot Camp - a 3-day intensive professional development workshop intended for game designers, developers, and programmers interested in creating serious games. This training course will provide the students with practical knowledge and skills necessary for serious games design and development, ranging from selecting appropriate training strategies and creating a serious game design concept to applying the latest programming techniques featuring the Unity3D engine to develop effective games for training.

Upcoming Course Dates: July 24-26, 2012 in Orlando, FL (Seating is limited, so please register early!) To learn more about this training opportunity and register, please visit:

<http://www.eruditioncorp.com/bootcamp.html>

Florida Raises Profile of Unmanned Systems; Seeks Modeling & Simulation Industry's Participation

May 1, 2012

National Center for Simulation

Calling on NCS Member Companies to Step Forward & Support this State-wide Data Collection Effort!

As part of a strategy to elevate the UAS industry in the state, Space Florida intends to compete for one of the six FAA UAS Test Range designations mandated in the FAA Modernization and Reform Act 2012. Florida's Department of Transportation (FDOT), working with Space Florida and the Advanced Aerospace Platforms Applications Center (AAPAC), is conducting a Statewide Inventory of Aerospace Assets and Unmanned Aerospace Systems. Modeling and Simulation plays a significant role in all aspects of the unmanned systems industry and is a key element of the Inventory. If your company is working in the field of modeling and simulation, you are encouraged to be a part of this database. The requested information is non-proprietary. To take the short survey, visit www.aapacfl.org, register, click on the "Survey" and complete. Contact Larry Harvey at lharvey@aapacfl.org with any questions.

Thanks in advance for your support!

Thomas L. Baptiste, Lt Gen, USAF (Ret)
President/Executive Director
National Center for Simulation



Looking Back at Last 16 Years as NTSA President

Fred Lewis

June 2012

National Defense

My first year at the helm of the National Training and Simulation Association in 1995 was a turbulent time for the industry. Political leadership allowed the government to shut down for the first time in history and its representatives couldn't travel to the Albuquerque, N.M., Interservice/Industry Training, Simulation and Education Conference.

In spite of this adversity, we carried on with I/ITSEC 1995 and had another successful event.

I/ITSEC 1995 had particular significance for me because it was my first in-depth exposure to the industry as president of NTSA. I was deeply impressed by the array of companies involved in the enterprise, by the state-of-the-art technologies on display and by the commitment to excellence by all participants.

We have built on the technology development that I observed in 1995 and have made significant strides in enhancing the believability of our simulations. This is key to the success we have enjoyed as we responded to the changing requirements from the customer base, which were the result of different threats, operational environments and capabilities that have been strongly influenced by the increased processing power of computers and networks.

The industry has been blessed by tremendous agility and creativity in its responsiveness to meet warfighter requirements. Today, our constituent base includes other domains. These new fields now embrace modeling and simulation as a way to train, analyze, forecast, explore and develop. Manufacturing, financial analysis, meteorology, oil and gas exploration, transportation, education, architectural design, communication and aerospace industrial design are some of the domains where modeling and simulation has become a critical component of progress and success. In the healthcare field, the technology has experienced an explosion of growth and acceptance.

The single greatest challenge to our industry is work force development. In 2001, we began to offer a credentialing service with the certified M&S professional program. We instituted over the past 16 years the Future Leaders Pavilion, America's Teachers at I/ITSEC, Serious Games Showcase, and the Student Tours program, which have all proven to be highly successful in helping us to achieve our objectives of education and inspiration. We have only just begun to exploit the significant potential that modeling and simulation has throughout the education field.

I am confident that by leveraging new developments and by using new organizations such as the National Modeling and Simulation Coalition we will be able to make the next great technological leap forward.

In my view, that leap will take us to an environment where the use of virtual worlds will be commonplace in our society. They will be so because they will be accessible to all, and the immersion of participants into the simulation will be complete. There will be total suspension of disbelief, and the virtual worlds will exist according to the participant's desires. Farfetched? Perhaps, but if we can build virtual worlds today with limited capability, then it is not too much of a stretch to envision this kind of advancement 20 to 30 years hence.

I most strongly believe that the future is bright for our community of practice. As the nation's wars overseas recede into history and our troops return home, the reliance on the capabilities that modeling and simulation technologies can provide will significantly increase on the part of the Department of Defense.

New policies within the department dictate that training will increasingly be conducted at home stations, where the lack of adequate facilities will require that key activities be simulated. There will be greater demand for higher fidelity simulations as units seek to maintain the readiness levels required in an unstable and uncertain world.

There will be no end to the requirement that our industry provide training systems to meet the demand. I am confident that we in the community can meet this challenge. After all, we have done precisely that since 1995.

Retired Navy Rear Adm. Fred Lewis is stepping down as president of NTSA on June 1.

He will be replaced by Rear Adm. James A. Robb. A veteran Navy combat pilot, Robb served as officer in command of TOPGUN, the Navy Fighter Weapons School. Navy staff flag assignments included service as the director of Aviation Plans and Requirements and as director of Fleet Readiness. Since retirement, Robb has been an independent consultant, specializing in strategic planning, joint operations and defense acquisition reform.

Teaming Pilots with Drones Hampered By Technology

Dan Parsons

July 2012

National Defense

The Army recently found that the most cost effective solution to replace its scout helicopters was a mix of traditional rotary wing platforms and unmanned aerial vehicles flying alongside to cover more ground in a single mission.

While not an official procurement decision, the analysis of alternatives for a new armed aerial scout provides a snapshot into a future where military officials plan to team unmanned systems with manned vehicles on land, at sea and in the air.

“I had no doubt in my mind that was going to be one of the outcomes,” Mike Miller, director of business development for Bell Helicopter, told National Defense at the Army Aviation Association of America’s annual expo in Nashville. “The ability to team with unmanned systems was most certainly going to be one of the Army’s requirements. Everyone is wanting more manned-unmanned teaming because it is such a force multiplier.”

Leaders throughout the Defense Department see the same potential in teaming drones with other platforms. For example, they could pair swarms of UAVs with the new F-35 Joint Strike Fighter once it comes online, or with helicopters aboard the Littoral Combat Ship. Unmanned mine hunters could operate alongside future attack submarines.

Progress is being made in that direction with the melding of existing manned and unmanned platforms to accomplish specific missions.

But there are significant technological and logistical obstacles that must be overcome before the grand vision of seamless manned-unmanned teaming is a reality. Those include figuring out how man and machine will interact and in what form information will be delivered to pilots.

There is also a need to reduce the number of personnel flying a drone. Streamlining and simplifying the data pipeline between a UAV and the pilot of a manned aircraft is also instrumental to more integrated teaming, said Sean Varah, CEO of Burlingame, Calif.-based MotionDSP Inc.

“There are a whole lot of people involved in this chain,” Varah, whose company makes video-stabilization and enhancement software, said in an interview. “I think at last count, for every Predator mission, there were 170 people involved ... and the Air Force does 50 every day. We’ve got to reduce the workload. We’ve got to remove some folks from that chain.”

In a typical ground operation there may be dozens of personnel involved in the operation of aerial intelligence, surveillance and reconnaissance platforms, including manned and unmanned aircraft supporting troops on the ground. There might be both a manned surveillance aircraft and one or more UAVs.

Inside the manned aircraft, there would be a pilot, a camera operator and a video analyst. There would be that many personnel actively operating and receiving data from the UAV as well. Both platforms would be potentially beaming intelligence and surveillance information back to troops and pilots that were involved in the operation.

At least some of the information burden can be removed by using a \$300 processor that was designed for videogame consoles, Varah said. Real-time video analytics, as Varah calls the process, allows even small, non-stabilized cameras to feed clarified video directly to a console — whether a handheld tablet or a helicopter cockpit display.

“We designed our software to fix YouTube videos,” Varah said. “Now we can do visual moving target indication by highlighting different types of motion. We can help the analyst with situational awareness. There’s none of this going on at all right now. Seeing better saves lives.”

Once the video is processed, it still has to be made available to the pilot of a manned aircraft in some form. But the glut of information that even one unmanned platform can gather has to be streamlined and prioritized for it to be useful to a pilot in the sky.

Helicopter and jet pilots are already inundated with information from sensors on their own aircraft and radio communications, not to mention enemy fire. Introducing another source of information or controls for another platform into the cockpit could be distracting and potentially disastrous, said Steve Reid, senior vice president and general manager of unmanned aircraft systems for AAI Corp.

“A pilot and even the co-pilot have a lot of information to process already,” Reid said. “So we’re doing a lot of studies on how best to integrate the cockpit.”

AAI, in partnership with Bell Helicopter, is researching manned-unmanned teaming. Bell’s OH-58 Kiowa Warriors are the first military aircraft being teamed and deployed with UAVs.

The companies, both owned by Textron Systems, are also in the process of building a laboratory in Huntsville, Ala., that is dedicated to studying the operational feasibility of teaming manned with unmanned aircraft.

UAVs currently operate at “level one” integration where the information they gather is interpreted by a remote operator, then communicated to the pilot of a manned aircraft or to troops on the ground. Some operate at “level two,” where the drone’s video feed is directly linked to the flat-panel display of a manned aircraft.

As technology progresses to level three, pilots or co-pilots of manned aircraft will take control of the drone’s sensors. At level four, aircraft pilots will control the drone’s flight and firing mechanism. Ultimately, with level-five teaming, manned aircraft crews will take complete control of their partner drones to include takeoff, landing and flight and fire control.

“We’re still trying to work out what the human interface will be like in the cockpit,” Reid said. “Will it be a joystick? Will it be controlled some other way? We don’t know yet and we’re trying to figure it out.”

Another, more controversial component to teaming UAVs with manned vehicles is the level of autonomy those unmanned systems are granted. To alleviate human pilots from having to control UAV flights at teaming levels four and five, the unmanned platforms will have to accomplish some tasks on their own.

Target recognition is a major capability that is not yet mature, said Varah. While software can recognize different sorts of motion, it cannot differentiate between enemy and civilian, he said.

“We call that ‘slideware,’” he said. “A lot of companies say their systems can pick out the enemy, but what looks good on a PowerPoint slide, doesn’t always work in reality.”

For that reason, all armed drones must have a human “in the loop” in order to engage an enemy.

Still, both military officials and industry engineers are giving drones greater autonomy in flight, a capability that will eventually allow pilots of manned aircraft to give them broad instructions without having to fly them in a traditional sense.

Many of the drones operating in war zones already have some level of autonomy. Putting them on autopilot relieves the monotony of an operator staring at a console, watching video broadcast by an aircraft that can stay aloft for hours at a time.

Some drones can already fly and spy on their own without a pilot directly supervising. Others simply take off and land on their own, then hand over control to a ground-based operator while in flight.

The Navy's Fire Scout, a rotary wing UAV that is built by Northrop Grumman, is tethered to its host ship by an electronic link that allows it to land on a deck. The experimental fleet is currently grounded because of two recent mishaps, one caused by a malfunction of its autonomous landing system.

Once the kinks are worked out, Navy leaders hope to team Fire Scouts with MH-60 Blackhawks aboard the new Littoral Combat Ship. Both the Lockheed Martin-built LCS-1 mono-hull and the Austal Inc.-built aluminum-hulled trimaran will be equipped with a mix of Fire Scouts and Blackhawks.

The Army is fielding manned and unmanned aviation platforms in the same units. Army scout helicopter squadrons are being paired with General Atomics MQ-1C Gray Eagle drones to aid in target acquisition and reconnaissance missions.

Company F, Combat Aviation Brigade, 1st Infantry Division has deployed as the first unit thus far to have full ownership of its own UAV fleet — in this case 12 Gray Eagles.

Kiowa Warrior armed scout helicopters and the Apache Block III are being teamed with Shadows. A fleet that has flown 750,000 hours, 92 percent of which was in combat, the Shadow can beam live video and targeting information directly into the cockpit of either helicopter.

Later this year, the 101st Combat Aviation Brigade will deploy with two companies equipped with Shadow drones — another of what Col. Grant Webb, capability manager for unmanned aerial systems at Army Training and Doctrine Command, called “quantum leaps” in the progression of manned-unmanned teaming.

“This is a big deal,” Webb said at the Army Aviation Association of America's annual symposium. “With command and control and other aspects, there are a lot of lessons that will be learned. Processing, exploitation and dissemination, for instance ... that can be an exhausting task. We're working on that. We're working on leader education. We expect demand [for manned-unmanned teaming] to rise.”

The deployment marks a major transition of UAVs from a primarily ground asset to a dedicated aviation asset in support of ground troops.

“We are curious to see all the benefits of manned-unmanned teaming,” Lt. Col. Scott Anderson, project manager for unmanned aerial systems command, said at the conference. “What are the metrics that we're going to use to measure the effectiveness of a reconnaissance squadron when they have their own Shadows embedded with them? How effective are the manned systems going to be because they're able to use their own assets.”

While teamed Kiowas and Shadows conduct operations, other work will be done by the AAI-Bell lab that is scheduled to open this year.

This manned-unmanned teaming lab will serve as a research-and-development facility to develop and test technologies that could make the vision of seamlessly teamed manned and unmanned aircraft a reality.

The new lab will be connected to the existing Shadow Tactical UAS system integration center in Huntsville, which is being expanded to house a Kiowa Warrior OH-58D simulation facility.

The combined laboratory will enable accelerated technology insertion to ensure aviation forces are equipped and trained with the most current capabilities and advantages, according to a statement from the companies. The lab will be dedicated to studying information dissemination, which will enable multiple levels of UAS interoperability, evaluation of emerging technologies in an operational environment, and rapid fielding of new technologies. Simulation will allow pilots to test levels of teaming and train with different mixes of aircraft in simulated combat environments.



USS Trayer Turns Five at RTC

Scott A. Thornbloom, NSTC Public Affairs Office

June 21, 2012

Navy.mil

GREAT LAKES, Ill. (NNS) -- The Navy's largest simulator, USS Trayer (BST 21), turned five-years-old June 18 at Recruit Training Command (RTC).

Trayer, a 210-foot-long Arleigh Burke-class destroyer simulator, was commissioned in 2007 and is the "E" Ticket ride of the Navy's only boot camp. It has stood ready, embarking more than 38,000 recruits each year, as the centerpiece of Battle Stations 21. The ship has never been to sea, never been on deployment or been in combat.

But on many nights during the week, Navy engineers work to sink the ship while the Navy's newest recruits fight to save her.

"USS Trayer is the Navy's premier capstone event - over the past five years, more than 185,000 recruits have made the transition to Sailor on board USS Trayer," said Capt. Steven G. Bethke, commanding officer of RTC. "This facility provides a phenomenal teamwork experience for our newest Sailors. I am impressed in the confidence built for our Sailors as they learn to function as a high performance team."

As part of a 10-year, \$763 million recapitalization of recruit training facilities, Trayer was built to be used for Battle Stations as the final evaluation before recruits graduate. According to RTC officials, for the past five years Trayer has set new standards in using the latest in simulation technology -- video screens, smells, vibrations and sound effects.

"I was really excited when we got here but when the doors opened the first time and we came walking out onto the pier, I was like 'Wow!'" said Seaman Recruit Austin Robison, 20, from Marshall, Mich. "I didn't know what to expect, but you really do feel like you are coming down a pier, walking across the brow and boarding a ship. Then there is everything that happens after you're on board. You feel like the ship is under attack and you feel you have to fight the ship, stop the fires and flooding and save the ship."

Before recruits graduate from boot camp, they spend an entire night on board Trayer loading stores, getting underway, handling mooring lines, manning general quarter stations, stopping floods and combating shipboard fires. It is as close to being underway as a recruit can get before they receive orders to their first ship. It is also considered the final evaluation of a recruit's reactions in tight situations and a chance for the recruit to see how far they have come in their eight weeks of training.



GREAT LAKES, Ill. (Oct. 4, 2011) Republic of Korea navy Vice Adm. Son Jung-Mok observes training at the U.S. Navy's only boot camp, Recruit Training Command (RTC) and Training Support Center (TSC) Great Lakes, during a day-long visit. While at RTC and TSC, Son toured the 210-foot Arleigh Burke-class destroyer simulator USS Trayer (BST 21) and facilities for weapons handling and firing, firefighting and damage control. (U.S. Navy photo by S.A. Thornbloom/Released)

"In the five years since we've been running Trayer, we've learned how to do things better and more proficient," said Lt. Josh Oates, Trayer division officer. "We continue to learn how to keep Trayer current and relevant to what the fleet needs, making sure that we are producing a product that the fleet can use."

The entire Iowa complex cost \$82.5 million including the high-tech simulator. Oates said Trayer evaluates recruits on teamwork and basic skills needed when they report to their first ship.

Battle Stations consists of 12 hours and 17 different scenarios of anything that can happen aboard a ship at sea from missile attacks that can cause fires to flooding caused by exploding undersea mines. There are also watches on the bridge and engineering scenarios, lookout scenarios, and mass casualty drills.

Battle Stations 21 incorporates lessons learned from actual events, attacks and mishaps at sea. While Battle Stations uses Navy history as a tool, today's newest recruits understand the importance of the training they receive throughout their eight weeks at RTC. They also understand the training is preparing them for their night aboard Trayer and for later in fleet.

"At first you don't think about the meaning of going through Battle Stations and the legacies that Trayer is teaching us," said Seaman Recruit Leticia Garza, 21, from San Diego. "We were put together in groups and had to work as a team and handle all the different scenarios. Afterwards in our discussions and after action reports, we realized we were part of something bigger and really special."

Trayer is outfitted inside and out with salvaged gauges, pipes and electrical gear from decommissioned ships. Inside, compartments are outfitted with berthing spaces, control rooms and the bridge. There are also special controlled areas where magazine spaces flood and compartments are engulfed in controlled flames.

"I think this training will be very helpful and will stay with me when I report to a ship," Seaman Recruit Regina Allen, 32, from Cookeville, Tenn., who is scheduled to attend Hospital Corpsman "A" School in San Antonio, Texas. "It was an exciting night but a very tiring night."

There are 50 facilitators, or ship's crew, assigned to Trayer and Battle Stations. Each crewmember brings his or her fleet experiences to Trayer giving the recruits a Sailor that has seen or actually fought a shipboard fire, stopped compartment flooding or applied first aid to a shipmate.

"Being a facilitator on Trayer and during Battle Stations is helping me be a better trainer and petty officer," said Aviation Ordnanceman 2nd Class (AW/SW) Brad Allen, 29, of Greenwood, Ind., who has been a facilitator on Trayer for a year. "Being here is going to help me better train Sailors when I go back to a ship."

Facilitators also want recruits to leave Battle Stations and Trayer with a strong familiarization on handling casualties and emergencies on board a ship.

"At least they won't be going into these emergency situations with no experience," said Personnelman 1st Class (SW/FMF) Romaine Pollard, 38, from Chicago. "I've been in for 17 years and was here running from building to building with a sea bag on my back during Battle Station Legacy before Trayer was built. When I first reported here as an instructor, I was just amazed at what was built and the training we would be giving as instructors. To walk on the pier here and see a ship inside a building I was taken aback just as a recruit seeing it for the first time."

Five years after being commissioned, USS Trayer and Battle Stations are continuing its growing legacy of training and preparing recruits for the fleet.

RTC is primarily responsible for conducting the initial Navy orientation and training of new recruits. The command is commonly referred to as "boot camp" or "recruit training" and has been in operation at Great Lakes since 1911.

Naval Service Training Command (NSTC) oversees 98 percent of the officer and enlisted accessions training for the Navy. That includes RTC, the Naval Reserve Officers Training Corps (NROTC) program at more than

150 colleges and universities that either host NROTC units or have cross-town enrollment agreements with a host university. NSTC also oversees Officer Training Command (OTC) in Newport, R.I., as well as the Navy Junior Reserve Officers Training Corps (NJROTC) citizenship development program at more than 600 high schools worldwide.

Tests Underway to Understand Effects of Motion on Performance

Jacqui Barker, Naval Surface Warfare Center Panama City Division

June 15, 2012

Navy.mil

PANAMA CITY, Fla (NNS) -- The Naval Surface Warfare Center Panama City Division (NSWC PCD) Human Systems Integration Team is supporting the U.S. Marine Corps in better understanding the effects of amphibious vehicle motion on human performance.

They are conducting a 13-week Habitability Simulation Test (HST). Presently, the test is in week eight, and is scheduled to conclude in July 2012.

NSWC PCD is conducting the HST for Program Manager Advanced Amphibious Assault (PM AAA) using 156 active duty U.S. Marines as test participants. The test is designed to evaluate three combat-relevant functions potentially affected by exposure to craft motion.

These functions are cognitive performance (the ability to assess the situation and communicate effectively), physical coordination (the ability to maneuver to an objective), and sensory perception (marksmanship). The HST exposes participants to simulated expeditionary fighting vehicle (EFV) or amphibious assault vehicle (AAV) motion over a range of sea states and durations representative of current and future concepts of operations. The resulting human performance is measured using a battery of tests including running, throwing grenades, and shooting a demilitarized M4 rifle, modified to use a laser and compressed air.

"Combat effectiveness is defined by functions affecting the ability of personnel to conduct combat operations during an amphibious assault," said Marine Corps Col. Keith Moore, program manager, PM-AAA. "We seek to understand and ultimately identify preventative measures that will allow our Marines to maintain expeditionary and amphibious warfare combat effectiveness."

The HST is a follow-on test to the Habitability Assessment Test (HAT) conducted at Camp Pendleton, Calif., by PM AAA in August 2011. The HAT, which was also supported by members of the team at NSWC PCD, was the initial assessment of the effects of amphibious vehicle motion on U.S. Marine performance.

"The HAT was conducted to determine how far off shore U.S. Marines can deploy from amphibious ships aboard the amphibious tractors and still be effective when the objective is reached," said Eric Pierce, project engineer, NSWC PCD. "The overall objective of the HST is to build on lessons learned from the HAT and determine the degradation effects in the warfighter's combat effectiveness after transiting in an amphibious vehicle over land and various sea states for various time durations."

A motion simulator platform located at NSWC PCD's Biodynamics Lab is being used to simulate AAV and EFV transits. Understanding the limitations of Marines during amphibious assault missions is important to maximizing operational utility on the battlefield. We believe that performance will degrade with exposure to increasing severity of motion sickness. Specifically, Sopsite syndrome, which is a physical ailment that includes tiredness and mood swings, can lead to a lack of initiative," said Amanda Bandstra, principal investigator, NSWC PCD.

"I've been impressed with this team and their technical abilities," said Moore. "We came to NSWC PCD because of the past proven performance of this team on the earlier HAT testing."

The Naval Sea Systems Command (NAVSEA) Technical Warrant Holder (TWH) for Displays and Human Factors Engineering (Surface Ship Warfare Systems) recognizes NSWC PCD as the leading expert on the effects of motion on human performance and injury. As such, the TWH recently tasked NSWC PCD to revise the shock and vibration section of MIL-STD-1472G, the primary human factors reference for all of DoD.

"We also have membership as U.S. delegates on the international ISO committee, where our research is being used to revise ISO 2631 PT5," said Pierce.

Moore, who visited NSWC PCD June 6 and 7, said after the HST concludes, future research may evaluate environmental conditions such as air temperature and quality, as well as lighting in troop compartments. The questions remain - how much lighting is required for situation awareness in troop compartments? What effects does ambient or conditional lighting have on troop effectiveness? Would air conditioned compartments impact a Marine's ability to transition ashore and effectively perform?

NSWC PCD is a leader in littoral warfare and coastal defense.

International Partner Views Combat Systems Training in Dahlgren

Kimberly M. Lansdale, Center for Surface Combat Systems

June 15, 2012

Navy.mil

DAHLGREN, Va. (NNS) -- The Center for Surface Combat Systems (CSCS) and Aegis Training and Readiness Center (ATRC) hosted the program manager for Australia's Defense Materiel Organization's Air Warfare Destroyer (AWD) Program June 12.

The visit by Peter Croser was to familiarize him with how the U.S. Navy trains its Sailors and give him an understanding of how Royal Australian navy (RAN) Sailors manning its Hobart-class ship, Na class of three air warfare destroyers (AWDs), would be trained at ATRC.

"One of the key goals of the Maritime Strategy is evolving and establishing cooperative international relationships," said Capt. Ian Hall, commanding officer, ATRC. "Our partners view Aegis training at ATRC as a key piece to the Navy's strategy."

Edward Gohring, CSCS' executive director, and Hall gave Croser an overview of combat systems training, including ATRC's training laboratories and electronic classrooms. Topics of discussion focused on ATRC's training structure, lab usage, training technology and tools, which included the Synthetic Combat Operator Trainer (SCOT) and Visual Integrated Simulation and Training Application (VISTA).

"It was an honor to host Mr. Croser," Gohring said. "ATRC provided him the opportunity to see how the U.S. Navy trains combat systems to Sailors. He was able to observe classrooms and labs at ATRC to gain perspective on the Aegis combat system. Our partnership with the Royal Australian Navy is important not only to CSCS but the United States Navy as well."

Croser says he was very impressed with the training.

"I would like to return to Dahlgren and attend Aegis training myself," Croser said.

CSCS' international training is coordinated through the command's Security Assistance and International Programs directorate.

"The mission of CSCS International Programs is to provide allied forces quality training to enable them to develop ready teams capable of operations that maintain and expertly employ surface combatants," explained Dr. Darrell Tatro, director of CSCS International Programs. "The directorate partners with U.S. training, readiness, and policy organizations, as well as other government agencies and industry to support maritime partnership objectives."

NMCS D Debu s Bioskills Training Center

Mass Communication Specialist 3rd Class Jessica Tounzen Naval Medical Center San Diego Public Affairs

April 24, 2012

Navy.mil

SAN DIEGO (NNS) -- Naval Medical Center San Diego (NMCS D) unveiled a major upgrade to one of its training facilities during a grand opening ceremony April 23.

The hospital's 450-square-foot Surgical Training Lab had been in use since 1998. Over the years, the space became inadequate due to increased use by the hospital's residency programs, staff and pre-deployment training programs, and it was determined that more room was needed.

Now boasting 2,100 square feet of usable space, the Surgical Training Lab is the new Bioskills Training Center (BTC). The new \$5 million facility can accommodate up to 40 medical personnel and 10-12 supplementary personnel at eight full cadaver stations or 16 partial specimen stations.

The mission of the BTC is to support NMCS D's mission of operational readiness, patient care, and staff and resident medical education. BTC provides courses to teach advanced surgical skills, enhance and hone existing skills, provide opportunities for patient-specific procedure development. The BTC also provides a venue for the introduction of new technology, new procedures, and innovative development by Navy researchers.

In 2007, Rebecca Eveland, head of surgical training laboratories and BTC, along with her NMCS D colleagues, began brainstorming ideas for a new training space. A grant was received and serious planning efforts commenced in 2009.

"That was when we requisitioned several spaces adjacent to the Surgical Training Lab: a storeroom, a room with two freezers, Pathology's HIV lab, and a small NCIS office. It's an expansion and complete renovation of the original Surgical Training Lab," said Eveland.

Setting the BTC apart from other training facilities is the fact that it can accommodate both larger and smaller specimens and is well-suited for nearly any type of surgical training. It is the only such training facility of its kind throughout the Department of Defense.

Within the BTC are 12 large flat-screen televisions as well as five cameras, four wall-mounted and one housed in the surgical lamp above the instructor's table. The facility's previously cramped 450-square-foot space meant residents had to crowd around one table to view a procedure. Now, participants are able to simply glance up at a monitor to observe.

The BTC's two civilian staff members along with NMCS D Simulation Center staff will offer training courses such as advanced anatomy and dissection, individual study and practice, deployment preparation, surgical skills enhancement, and research. The BTC not only accommodates NMCS D staff but medical personnel from throughout the Department of the Navy.

In fiscal year 2011, the Surgical Training Lab educated 2,197 physicians during 279 events, totaling 7,510 man-hours of training. The new BTC will greatly increase the amount, and quality, of training, research, and support to Navy Medicine.



New Army Energy Lab Drives the Future

*Max Cacas
July 2012
Signal Magazine*

Efficient powertrains for ground vehicles reduce fuel needs, lessening the risk to warfighters.

The U.S. Army has opened a one-of-a-kind laboratory that gives the service unprecedented ability to research and test new energy and powertrain technologies. The goal is to develop the next generation of energy-efficient vehicles that will make troops less dependent on fossil fuels that must be delivered via supply lines that endanger soldiers.

The Ground Systems Power and Energy Laboratory (GSPEL) is part of the Tank Automotive Research, Development and Engineering Center (TARDEC), located at the U.S. Army Garrison–Detroit Arsenal in Warren, Michigan. The \$60 million facility opened in April after three years of construction.

“Until recently, the Army focused primarily on survivability and the capabilities of its vehicles, but not [on] fuel efficiency,” explains Jennifer Hitchcock, interim director of TARDEC. “However, since about 70 to 80 percent of the convoys in Afghanistan are hauling fuel, reducing our consumption and the number of fuel convoys will take thousands of soldiers out of harm’s way. The Army is aggressively seeking new technologies to become more efficient and to reduce consumption, which would reduce the logistics tail in battle and ultimately increase the capabilities of the warfighter.”

The new energy-efficient technologies being developed at GSPEL potentially could be integrated into military ground vehicles. This significantly affects the way energy is used in the future, Hitchcock suggests.

“Having the energy we need, when we need it, to accomplish the mission, is vital,” she says, and even small cost savings can add up to a lot over time. “Less fuel, more fight.” Since World War II, TARDEC has served as the development facility for most major Defense Department combat vehicles, from tanks to Humvees. Hitchcock says GSPEL, with its eight component laboratories under one roof (see box), will for the first time enable TARDEC to test new vehicle systems rigorously for energy efficiency as well as for their ability to serve combat needs.

“GSPEL gives us the flexibility to test individual system components or entire vehicle systems,” she explains, “on simulations of any terrain in the world and in extreme environmental conditions ranging from minus 60 degrees up to 160 degrees Fahrenheit.”

In the past, it was common practice to ship vehicles to locations around the globe to perform field tests and then ship them back to the lab to analyze the data, Hitchcock recalls. “Since GSPEL accomplishes this at a single location,” she says, “it saves time and money.”

GSPEL enables TARDEC to test even large supply trucks, with as many as five axles and weighing as much as 44 tons, and to perform those tests in laboratories that can simulate the harshest weather and terrain conditions imaginable. “Being able to test both individual components and then retest them as part of the entire vehicle system is a tremendous capability that we never had before,” she says. “The test results of components can significantly change after you integrate them in a vehicle, which affects loads and requirements. GSPEL allows us to conduct more thorough testing.”

Customer needs when it comes to energy and powertrain use will determine the specific types of testing to be performed on vehicles at GSPEL, according to Chuck Coutteau, TARDEC associate director for ground vehicle power and mobility, and interim executive director for research and technology integration. The type of test to be performed on a component or a vehicle can reflect a need or condition uncovered by troops in the field “to something much more grand and complicated when it comes to a capability gap,” Coutteau explains. GSPEL’s resources will be a valuable tool in examining the best technology to fill that gap, while optimizing energy use and conservation at the same time, he says.

Another feature at GSPEL is the ability to link any of its laboratories with other research and testing facilities within TARDEC. Coutteau says this becomes especially useful when testing an engine/powertrain combination under the same kinds of conditions found in the field.

“We can put it through its paces in terms of the load on the engine or the transmission,” Coutteau explains. “We can simulate a grade, which places more stress on systems. We can work with our counterparts and put it through a full-motion simulation, so we can connect GSPEL’s Power and Energy Vehicle Environmental Lab to our full-motion simulators, so we can leverage each other’s capabilities.” Such collaborative testing, he explains, allows for a new level of vehicle evaluation that is “repeatable, exact; we can crunch that data and get that analysis, and then do those changes as needed.”

A palletized loading system with multiple axles currently is being tested at GSPEL, Coutteau says. Describing the tests underway on the vehicle, he explains, “We have it hooked up to the various dynamometers, and we can exercise it through its drive cycle. We are trying to validate its performance, especially perfecting the suspension and drivelines.”

Coutteau also notes that GSPEL gives his staff the ability to test fuel cells more thoroughly. Fuel cells are an energy technology that produces a continuous stream of electrical energy by oxidizing another chemical, such as oxygen or hydrogen. While the principle behind fuel cells has been known for some time, their practical and widespread application has been held back by limits to known chemical processes and material science.

GSPEL Is Eight Labs in One

Power and Energy Vehicle Environmental Lab

—Provides full mission profile testing for vehicles in any environmental conditions and contains one of the largest drive-through environmental chambers in the world.

Hybrid Electric Components Lab

—Performs state-of-the-art evaluation of hybrid electric power trains and develops hybrid motor technology.

Fuel Cell Lab

—Enables engineers to develop and evaluate fuel cell components and systems. The laboratory has the capability to test anything from components to full systems and from watts to kilowatts.

Power Lab

—Evaluates charging, air conditioning and hydraulic systems. The laboratory will develop high-voltage electrical devices and integrate pulse power and directed energy at the network and system levels.

Thermal Management Lab

—Tests the heat management of ground vehicle power electronics. The lab contains the world’s largest calorimeter for testing radiators, charge-air coolers and oil coolers.

Air Filtration Lab

—Tests and evaluates the air filtration systems for all military ground vehicle systems.

Calorimeter Lab

—Helps develop high-voltage, direct current electrical devices and tests the efficiency of electrical power distribution and control strategy. The lab consists of high-, low- and tri-voltage power supplies.

Energy Storage Lab

—Explosion-proof testing chambers make it possible to safely test and evaluate advanced chemistry battery vehicle modules.

Robots largely operate off batteries, so more efficient fuel-cell technology could improve their duration and range. A small robot that was used to carry a package of communications gear recently was tested at GSPEL.

The fuel cell developed for the test allowed the robot to perform its mission over eight hours, as opposed to the traditional operational limit of two hours for standard batteries.

It is no coincidence that GSPEL is located in Michigan, and in the same neighborhood as many of the top U.S. automotive and truck manufacturers. For years, TARDEC has worked closely with domestic vehicle makers, and Hitchcock says GSPEL is designed to do that as well.

“Collaboration is vital to everything we do, and we are encouraging industry and academia to use the new GSPEL facility,” Coutteau explains. “There are many opportunities for dual-use technology especially in the area of power and mobility. By working closely,” he says, “we hope to speed up the development of emerging technologies and drive down the costs.”

Research Laboratory Awards LADAR Contract

George I. Seffers
June 20th, 2012
Signal Magazine

Science Applications International Corporation, McLean, Virginia, is being awarded a \$32,800,000 cost-plus-fixed-fee indefinite-delivery/indefinite-quantity contract to provide research and development effort to conduct basic, applied and advanced research focusing on seven broad technical areas: N-D laser radar (LADAR), laser radar, laser sources, optical apertures, electro-optical sensor test range, field testing of electro-optical/infra-red LADAR systems, modeling, and simulation laboratory. Air Force Research Laboratory, Wright-Patterson Air Force Base, Ohio, is the contracting activity.

Army Virtual Worlds Expert Forges Ahead Without 'Second Life'

Max Cacas
June 11, 2012
Signal Magazine

As recently as a few years ago, Second Life was a vital, flourishing virtual community in which users carried on their lives, interacting with others and “living” fully imagined existences within the memory of a large computer server.

In fact, Second Life caught the imagination of the U.S. military, and in some cases, members of the services began using Second Life for real-world collaboration and to solve problems shared by all services.

Now, one of the most ardent proponents of virtual worlds technologies for military collaboration has forged ahead and developed a version of the Second Life technology that is able to operate behind secure .mil firewalls, and it is on its way to being certified for secure operation within most military networks.

Douglas Maxwell is science and technology manager with the Army Research Laboratory’s (ARL’s) Simulation and Training Technology Center in Orlando, Florida. He is also a staff researcher with the Naval Undersea Warfare Center in Newport, Rhode Island.

In recent years, he's been the principal organizer of "Military Lands in Second Life," or "MilLands," the section of the virtual community set aside for members of the U.S. armed forces to work on projects of common interest.

Maxwell says the summer 2010 decision by Linden Labs, the firm that originally developed Second Life, to discontinue work on an enterprise version that could operate securely on a server behind a corporate firewall, was a prime motivator behind his work.

"I respect Linden Labs' decision to do that, because they had to survive as a company," he explains. But he also wanted to ensure that the effort expended in developing

MilLands did not go to waste.

"We looked for ways," Maxwell went on, "to transfer the knowledge to an open platform, one that we could own and control, and move forward."

Maxwell says that with the help of several industry partners, he was able to advance development of Open Simulator, a virtual worlds application similar to Second Life, and successfully transfer the environmental grids and other digital elements of MilLands into MOSES, the Military Open Simulator Enterprise Strategy. He describes MOSES as a "proof-of-concept" information technology project designed to show that virtual worlds environments can be adapted to operate securely.

The effort was made, says Maxwell, on behalf of a large and growing community of experts, both within and outside of the military's scientific community, who had come to depend on MilLands as a tool for collaboration.

"I wasn't the only person coming to the conclusion that there was value in this platform," he explains. "There are many other people in other laboratories and other services who saw that this platform was wonderfully flexible and powerful."

Maxwell recently assisted the Naval Undersea Warfare Center in utilizing Open Simulator for development of the next generation of U.S. Navy attack submarines.

Maxwell goes on to say that because MilLands operated on the open Internet and was hosted by a commercial company, sensitive data could not be easily integrated into MilLands, which was the original motivation for the development of Second Life Enterprise (SLE). Maxwell credits Linden Labs for giving him and his colleagues enough advance notice that SLE would no longer be developed and making it possible for outside developers to continue the work.

"Linden Labs made the Second Life client open source, and a group of Second Life developers were able to reverse-engineer a suitable server application that could provide the same, or similar, service." He says, while individuals did some of the outside development, engineers at IBM and Intel also provided support.

The result, says Maxwell, is the Open Simulator server application software that can run in a secure environment behind a .mil firewall but can also operate on the open commercial Internet to facilitate collaboration with military, industry and academic computer experts who are making its continued development possible.

At this time, MOSES has about 370 users, says Maxwell, representing academia (including Tulane University, George Washington University, Colorado Technical University, University of Southern California, University of Central Florida, University of Edinburgh and the Naval Postgraduate School); the military (Naval Undersea Warfare Center/NAVSEA, Air Education Training Command at Maxwell Air Force Base, Air Force Research Laboratory at Wright-Patterson Air Force Base); and industry (Sonalysts, Raytheon).

In an interview during the recent Federal Consortium of Virtual Worlds Conference held at the National Defense University in Washington, D.C., Maxwell says that the next step is "getting the necessary information assurance documents and authorities so that we can deploy it on a proper .mil network."

He envisions one day being able to run Open Simulator on the Defense Research and Engineering Network (DREN) and its secure-network counterpart, S-DREN. Maxwell says that testing to achieve information assurance certification for MOSES will be taking place during the summer and adds that he recently received tentative approval to test MOSES on the ARL's segment of the DREN.

Another goal is to make possible authenticated logins on the Open Simulator server using the Common Access Card (CAC) now in use throughout the Defense Department. He also wants to augment the "physics" within MOSES (in other words, how virtual objects behave in a virtual environment) and explore how to better integrate real-world terrain maps and grids to enhance MOSES' utility in training and simulation exercises.

Maxwell stresses that MOSES is a proof-of-concept "strategy," and that he is not interested in developing or supporting a monolithic Open Simulator system for the entire U.S. military. Rather, he says he is more interested in "providing guidance and (digital) copies of the MOSES infrastructure to other organizations that want to run it behind their firewalls and put their own data into it."

L-3 to Support Marine Tactical Warfare Simulation

George I. Seffers

May 14, 2012

Signal Magazine

L-3 Services Incorporated, Mount Laurel, New Jersey, is being awarded a \$9,633,769 firm-fixed-price contract to provide software analysis, design, development, testing, integration, verification, documentation, and support for the Marine Air Ground Task Force Tactical Warfare Simulation (MTWS) system. Post Deployment Software Support (PDSS) shall include the software analysis, design, development, testing, integration, verification, documentation, and support for the yearly maintenance and release of the MTWS system, to include the Model Application Network (MAN), Model System Control (MSC), Model Display Station (MDS), Combat Analysis and Review Toolkit (CART), CART client, Apex, Model High-Level Architecture Bridge (MHB), and Command, Control, Communications, Computers, and Intelligence (C4I) components. The yearly maintenance will also include the configuration management, system administration, information assurance, system architecture, and program management to support any releases of an MTWS system. The Marine Corps System Command, Quantico, Virginia, is the contracting activity.

TASC to Continue Space Architecting Modeling and Simulation

George I. Seffers

May 2, 2012

Signal Magazine

TASC Incorporated, Andover, Massachusetts, is being awarded a \$9,600,001 cost-plus-fixed-fee and level of effort modification contract to continue space control architecting, modeling, and simulation activities for the space control architecture development program through April 2013. This will enable continued space control architecture development in support of offensive and defensive counterspace, space situational awareness, and command and control mission areas. Space and Missile System Center, Space Superiority Systems Directorate, Los Angeles Air Force Base, El Segundo, California, is the contracting activity.



Team Orlando at ITEC

Mary Trier

June 2012

Team Orlando News

Sharing Information, Encouraging Collaboration and Promoting Training and Education

These were the clear-cut goals of the Team Orlando executives and professionals that headed out to London to participate in ITEC this year in late May. The international flavor provided the venue for the US team to discuss strategic vision and programs that are critical to forging partnerships and collaboration with individuals and organizations across the globe. Mr. Frank DiGiovanni, Director of Training Readiness and Strategy in the Office of the Secretary of Defense; Dr. Jim Blake, Program Executive Officer at PEO STRI; and Capt. William "Roto" Reuter, then Commander, Naval Air Warfare Center Training Systems Division; were the senior executives traveling with the team, and they discussed modeling simulation and training visions and lessons learned from implementing the strategic roadmaps.

Other leaders such as Dr. Kristy Murray, Director of OSD's ADL Initiative hosted a panel on 'Building the People Dimension' during which Mr. DiGiovanni outlined his educational program called MODA (Ministry of Defense Advisors Training Program). MODA was implemented in 2010 to forge long-term relationships that strengthen and support capabilities of a partner state's defense ministry, and it added the critical civilian component to the military/contractor relationships to provide training to the civil-military team. The program prepares the teams through rigorous training, and concludes with an evaluation phase that measures the effectiveness of the training.

Other ITEC presentations included sessions on adaptive learning, mobile applications and medical simulation and training and more. The medical simulation component was also highlighted in the Team Orlando booth with a demonstration on the Multiple Amputation Trauma Trainer (MATT) which showcased the importance of combat medical training to prepare troops for the battlefield. MATT is a durable, realistic medical mannequin that simulates severe battlefield injuries with life-like responses to medical treatment. During the ITEC show, team members demonstrated the animatronics movement of injured limbs and the tourniquet application to halt bleeding.

In true Team Orlando form, the sense of partnership was evident as other organizations such as the National Center for Simulation, the Metro Orlando Economic Development Commission and several Orlando companies participated in the program and on the show floor. The benefits were only enriched by the ancillary meetings with NATO, international US military offices, and a SISO Simulation Interoperability Workshop. In the words of Capt. William 'Roto' Reuter, "We (Team Orlando) are here showcasing how our synergy works to help us, not only maximize the utility of the research, but to ensure that we only do something once. We share the technology, ideas and results across all the services; and that makes our efforts much more cost effective and

much more powerful." As we expand these ideas with our international partners, we expand our effectiveness as we operate as teams throughout the world.

Serious Games Showcase & Challenge

Mary Trier

June 2012

Team Orlando News

International Impact, Genesis for Technology Expansion in NATO ACT

Four years ago, gaming and virtual worlds technology was a concept, an idea, a study for NATO ACT (Allied Command Transformation) and the organization's simulation analyst and program manager, Wayne Buck. After some research and investigation into virtual worlds for the purpose of advancing educational programs, the NATO team hit a roadblock - that is until Buck saw the announcement for the IITSEC Serious Games Showcase & Challenge, and set out to discover the capabilities offered in gaming technology. He teamed up with Orlando's Engineering & Computer Simulations to develop a game called *Boarders Ahoy!* to create an immersive, team-based training game that teaches boarding and searching of merchant ship vessels to address some of the (then) current training challenges. The game won the Serious Games Showcase & Challenge People's Choice award at the 2010 IITSEC Conference.

"That game," stated Brig. Gen. Giovanni Fungo in an interview during the May 2012 ITEC, "was only the beginning for us - a starting point. It was the first time to exploit this type of training tool for specific activity, in this case *Border's Ahoy*, which is a procedural game designed to teach and rehearse boarding maritime vessels. One of the great benefits about the game is that incorrect actions can be corrected on the spot," he said.

Brig. Gen Fungo feels that games are very useful tools and they can be very effective in teaching our warfighters skills in individual and team environments. He indicated that gaming technology has become an essential part of NATO ACT's future training initiative.

The importance of using of modeling and simulation was further stressed as Brig. Gen. Fungo discussed the recent establishment of the modeling and simulation Center of Excellence in Rome earlier this year. He indicated that this elevated the importance of this technology area for NATO, aligning it with 16 other Centers of Excellence. Industry also has a role in this effort; they are invited to examine the framework that NATO has established for collaborative interaction.

"There are ways for industry to participate and NATO has already held one Industry Day," stated Brig. Gen. Fungo. He added that another Industry Day is schedule for the October timeframe in Riga, Latvia. For those in industry that are not able to attend, a website is available: [Click here to view the website.](#)

In the future, NATO ACT will be looking at software products to enable experiential learning. The use of games will continue to be important, as well. NATO ACT is investigating how games can be implemented and at what levels. They believe the next step will be to employ games with actors, and the areas of interest lie in cultural, behavioral and social interactions with non-military entities. Right now, the organization is doing an analysis of what currently exists. But, in the future, the possibility exists to team on virtual worlds interacting in MOU environments.

"We want to examine what has already been done in these areas and leverage the successful initiatives," stated BG Fungo. "We do not have to reinvent the wheel, but instead, we can take advantage of lessons already learned." BG Fungo indicated that the partnership with Team Orlando through the J7 in Hampton Roads has

been good for NATO ACT, and through these ties, the organization hopes to continue its modeling, simulation and training work.

Robinson Full Speed Ahead as New SimLEARN Leader

Dolly Rairigh Glass

June 2012

Team Orlando News

As the National Program Manager for SimLEARN, Harry Robinson is responsible for working with the cross-functional Veterans Health Administration staff in developing, procuring, deploying and maintaining simulation-based training solutions that meet VHA requirements to support clinical workforce development with the ultimate goals of improving the health care outcomes of our Veterans.

The program, which began in 2009 from an executive decision by the Under Secretary for Health, provided foresight on leveraging the capabilities and efficiencies that Modeling & Simulation has to offer in providing efficient training to a large, geographically distributed workforce of more than 250,000.

"At SimLEARN, we are in the building design process for a National Simulation Center that will be adjacent to the Orlando VA Medical Center in the Lake Nona Medical Center complex," said Robinson. "We've received stalwart support from Tim Liezert, the Orlando VAMC Director and his staff, as well as VA Construction Project Team, and this 'schoolhouse' will provide a high technology, immersive environment to train-the-trainers, enabling them to conduct local simulation-based training to meet the needs of their respective Medical Centers."

Prior to this appointment as the VA SimLEARN National Program Manager, Robinson was a senior associate with Booz Allen Hamilton, where he served as the Advanced Analytics Modeling and Simulation lead supporting Team Orlando, working to leverage simulation technology to improve employee performance. His focus was on providing live, virtual and constructive simulation to support training solutions to improve human performance and accomplish individual and team training requirements.

With his past experience and now in his new role with SimLEARN, Robinson knows the importance the Team Orlando alliance plays in leveraging simulation technology. "We are grateful for the opportunity to be a member of Team Orlando, and we see plenty of opportunities to leverage each other's strengths," said Robinson. "Unlike the purchase of an aircraft where each military service might have its own version, within the Medical Simulation for Training domain, the VHA and DOD are dealing with the same end user - a human patient."

"For us, a great example is the Inter-Agency Agreement (IAA) between VHA and PEO STRI," said Robinson. "We are strongly supported by an Integrated Product Team led by Lt. Col. Wilson Ariza and Rick Dunlap of PEO STRI's Medical Simulation Office."

A Veteran of the U.S. Navy, Robinson completed his active duty as the Commanding Officer of the Naval Air Warfare Center Training Systems Division, leading more than 1,100 personnel accomplishing full life-cycle acquisition of training solutions for the Navy. As a Naval Flight Officer, he primarily flew the E-2C Hawkeye and commanded both an operational squadron and type wing. His combat experience includes strike, close air support, and air superiority missions over Iraq, Afghanistan, and the Former Republic of Yugoslavia.

Robinson earned his commission through the Navy Reserve Officer Training Corps upon graduation from Pennsylvania State University in 1982 with a Bachelor of Science in Computer Science. He then earned a Master's of Science in Aviation Systems from the University of Tennessee and completed the Naval War

College Command and Staff Course. The Philadelphia native retired at the rank of captain after 28 years of military service and is currently pursuing a Ph.D. in Modeling and Simulation from Old Dominion University.

Robinson likes to spend his free time rowing and says he feels fortunate that he's still able to row. He also likes sculling, a form of rowing, in which a boat is propelled by one or more rowers, each of whom operates two oars. "Sculling in either a single or double shell is another passion I get to pursue," said Robinson. "Rowing is how I met my wife, and it turns out to be way I met Walt Augustin, who was serving as the Program Manager at Marine Corps Training Systems, prior to becoming NAWCTSD's Technical Director."

"He and I spent many early mornings on the water followed by meaningful discussions over coffee," said Robinson. "Walt and I often remarked that there were few better ways to start the day than with a good row."

Robinson has hit the ground running and notes that his personal goals at SimLEARN center on providing a collaborative environment for his team members to thrive in, while getting their products delivered and in service within the VHA. "We're very close to completing our staffing and recruiting," he said. "Since reporting onboard, I continue to be impressed with the motivation, drive and focus on tying our efforts to improving health care delivered to our Veterans."

And moving forward, it is important to Robinson that they continue the delivery of a mission set out by President Lincoln in his second inaugural address, "To care for him who shall have borne the battle and for his widow, and his orphan."

Along with his team, he is doing the same for an expanded veteran's population for both female and male Veterans. "It's an honor and privilege to be a part of bringing that goal to fruition."

Team Orlando Highlights Efforts in Medical Simulation at MT3 Conference - First in a Series

Dolly Rairigh Glass

June 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."

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."

NAWCTSD was named Outstanding Partner in Education with OCPS

Terri Bernhardt

May 2012

Team Orlando News

A partnership that began in 1988 has grown so significantly it has prompted Blankner Elementary School to publicly emphasize its overwhelming gratitude to the support it has received from the Naval Air Warfare Center Training Systems Division (NAWCTSD). Each year NAWCTSD employees have mentored several Blankner

students. "This year seven volunteers are serving as mentors to nine students," said Patricia Preston, PIE Coordinator, Blankner School (K-8). " They tutor students that need additional academic help, read with them, and present a positive role model. These students benefit both academically and socially from the interaction with these volunteers."

Four times per year NAWCTSD honors students who adhere to outstanding conduct and citizenship with the Naval Award. Representatives from NAWCTSD present these awards to a total of 36 students each grading period at Blankner's Award Ceremony. "Throughout the year a total of 193 students are honored," stated Ms. Preston. "Our students work hard to earn this recognition. Not only is this honor awarded to high academic achieving students but it also offers students who might struggle academically the opportunity to be recognized for their conduct and citizenship."

The awards aren't the only thing received by the school. NAWCTSD selected ten students in December to receive new bicycles. The bikes, donated by NAWCTSD, were personally presented by a NAWCTSD officer. "This generous gesture boosts the confidence of these students and gives them a sense of responsibility by learning how to take care of the bicycle," said Ms. Preston. "The joy of owning something of value was evident by the smiles on each of the students' faces."



NAWCTSD prepares new bikes to present to ten lucky students.

NAWCTSD sponsors a job shadow program in the spring for 25 eighth grade students who show an interest in Science and Math. Students are selected by their teachers. When they arrive they are briefed by the Commanding Officer and then introduced to their job shadow partner. The representative escorts the student on tours of the laboratories and view project demonstrations. Ms. Preston commented, "Throughout the Job Shadow Day, students experience how science, math, and technology are used in the real world."

In addition to helping guide these students academically, NAWCTSD recognized the need to reach out to economically disadvantaged students and set up and man a "Gift Shop" in December for 40 recipients. "Each student is assisted by a Naval Officer in selecting gifts for the students to give to family members during the holidays," stated Ms Preston. "NAWCTSD volunteers donate the gift items and run the store. This experience helps these students learn the spirit of giving, not just receiving. Additionally, this year the Chief Petty Officers Association made a cash donation to Blankner School to be used to assist economically disadvantaged Blankner families as the need arises.

Blankner School is grateful to NAWCTSD for their years of continuous efforts. Ms. Preston expanded, "Every year for twenty-three years the Naval Air Warfare Center Training System Division has shown a commitment to encouraging, motivating, and supporting our students. Nominating them for a Partners In Education Award is just one way of thanking them for all that they do for Blankner School."

Spotlight Person of the Month: Traci Jones

*Dolly Rairigh Glass
April 2012
Team Orlando News*

Assistant Program Executive Officer for Project Support at the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI).

Growing up with a father in the Air Force, Traci Jones always had an interest in working for the Department of Defense. Early on, she saw his service and dedication, and it inspired her to want to give back to the nation as well.

Her interest in working for the DoD never faded and when she was a junior at the University of Central Florida, the young engineering major applied for a co-operative education position and was selected for a Navy program that kick-started her now 28-year career working for the DoD.

"It was an awesome opportunity and I was immersed very quickly into the military environment, being on board with Navy military officers and civilians," Jones said about her co-op assignment with the Naval Ordnance Test Unit. "I saw the importance of the Fleet Ballistic Missile Program as one of three main tenets of our national security and it really got me invested in wanting to work for the government and for the DoD."

Following her co-op experience, Jones was hired by the Navy, then spent time working for the Naval Air Warfare Center Training Services Division, (NAWCTSD) before joining Project Manager for Training Devices (PM TRADE) as an engineer. Today, Jones is the Assistant Program Executive Officer for Project Support at the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI). In this role, she oversees the engineering, finance and acquisition logistics directorates and the Workforce Development Office. She also serves as the ombudsman and sponsor of the SETA and Wounded Warrior contracts.

"From the beginning, with my father serving in the Air Force, coupled with my time working for the Navy, and now my current position serving the Army, I consider myself purple because I've kind of touched all of the services," Jones said. She also spent time working for the Joint Simulation System as the Deputy Program Manager for Joint DA.

As well, Jones serves as the Acquisition Career Management Advocate for PEO STRI, an area she knows is extremely important to the continued growth and success of the employees. "We are responsible for the recruitment of the best and brightest that we can possibly get to work for PEO STRI," said Jones referencing PEO STRI's Acquisition Academy program.

The Academy, which introduces new people and fresh ideas into the federal government, is an 11-week course for developmental employees. "We do all the Acquisition Academy recruitment, the selection and then the placement of those people. But, we're also responsible for making sure those same people grow in their own careers, and we give them lots of opportunities to move across the organizations to serve in different roles throughout the PEO."

When Jones was in college as an engineering student, she was one of very few women pursuing an engineering degree. Today, as a leader at PEO STRI, Jones is helping to pave the way for female executives in the modeling and simulation community.



Spotlight Person of the Month: Traci Jones

"I feel I bring a unique perspective to the workforce," Jones said, citing her background as one of only a few without military experience. "It can be intimidating if you allow it, but with confidence and support, the more you do, the easier it becomes.

"I've had great, supportive and respectful role models who appreciate what I do," she said. "And I do work hard."

She also works hard at her "other duties as assigned." Jones serves as the Army Principal for the Interservice/Industry Training, Simulation and Education Conference (I/ITSEC), where she leads the Army's participation in I/ITSEC. She is also the civilian liaison for the Sunshine Chapter of the Association of the United States Army.

Having grown up in a military family, Jones moved every couple of years until she was 13. Although she's been in Florida since then, she enjoys an opportunity to travel with her family. She and her husband have two daughters, both in college, and their dog, Toby, who admittedly is their 'empty nest' dog. Jones enjoys being outside, at the beach, walking Toby or gardening, and recently took up golf. "I'm not very good at it, but I like being outside!" she said of her new hobby.

Jones said she feels very blessed with what life has handed her and now she feels it's even more important to give back to the community and to others. She is in a mentorship program with UCF and SAIC for women in science and engineering. The program pairs up professional women with UCF students, and through the relationships that are built, the mentors provide encouragement and support to the students.

"I'm very blessed in my life because I have been given so much," said Jones. "I do like to give back. I feel the more you're given, the more you should give back."



New Helicopter Sim Is Technological Halfway House

Alan Dron

June 27, 2012

Training & Simulation Journal

LONDON — Ryan Aerospace's new dual-control Helicrew helicopter cockpit simulator system is part of a growing segment of technological — but not too technological — training devices.

The new system consists of a base platform containing seats, cyclic sticks and pedals. Instructors can add a series of interchangeable modules such as instrument panels, avionics, aircraft-specific collective levers and overhead panels.

A variety of screens can be used to give an outside view, but there is no cockpit enclosure or motion system. For an added degree of realism and an additional cost, the simulator can be equipped with seat shakers or vibration devices.

The aim, said Managing Director Chris Ryan, is to provide a halfway house between the most basic procedural trainers and high-level simulators, with trainees able to undertake routines such as instrument scans, GPS exercises and multifunction display operation.

Helicrew uses commercial off-the-shelf components and this “pick-and-mix” approach to accessories to cut costs.

“Customers in this market space have said, ‘We need something better than a Wal-Mart gaming joystick, but we don’t need to go to the expense of procuring a fully certified simulator costing hundreds of thousands or even millions of dollars,” Ryan said. “We’re trying to find a niche. While the market is relatively small for devices such as this, it’s growing.”

There are, he said, very few competitors in the field. Ironically, this has been something of a drawback.

“So often, customers say to us things like, ‘This is something we could really use — however, since we didn’t know such a product existed, we have no immediate documented requirement for such a device.’ This means very long lead times from first bite to sale,” he said.

The initial cockpit configuration available represents the Bell 206/Kiowa helicopter, but cockpit modules are designed to be changed simply by loosening bolts and sliding the modules off the rails, allowing different types to be represented in the future.

The system is software agnostic and has a USB interface, allowing it to work with programs such as X-Plane or Lockheed Martin’s Prepar3D. The trainer also accommodates scenery enhancement kits such as ORBX and a sound system.

Helicrew typically uses three 42-inch screens to provide an external view, although at the ITEC trade show here last month, the company showed a 7-foot-wide curved screen from VDC Display Systems powered by five LED projectors and image-blending software. This gives a 110-degree horizontal field of view and about 40 degrees vertically.

“We’ve also identified a small but growing market of customers using VBS2 in combined arms training/collective training, where the training is not so much about the flying, it’s more about the procedures and interaction with other friendly forces,” Ryan said.

Ryan plans to have a Helicrew system running VBS2 at the I/ITSEC trade show in December in Orlando, Fla.

The Australian company said it already has a customer for Helicrew, an unnamed large military contractor providing training for army helicopter pilots.

Marine War Game Tackles Feuding Computer Systems

Michael Peck

June 25, 2012

Training & Simulation Journal

Frustrated by logistics and command-and-control systems that can’t communicate with each other, a recent Marine Corps war game showcased a new approach that allows systems in a Marine Air-Ground Task Force to share information.

The Expeditionary Logistics VI exercise demonstrated a shared data environment that allowed logistics systems to communicate with MAGTF mission command systems through the prototype Tactical Service-Oriented Architecture and Sense & Respond Logistics Information Architecture.

“Previously, every individual system that wanted to do something with track information would have to connect with a system of record like CPOF [Command Post of the Future], and each of those systems would have to individually connect and establish a one-to-one connection,” said Mark Adams, a senior development analyst for Lockheed Martin.

TSOA and Sense & Respond act as a kind of middleman that receives data from C2 systems. Logistics systems can query them for vital information such as the location of friendly and enemy forces when dispatching supply convoys.

“What we have is utilizing Sense and Respond and TSOA to establish a kind of publish-and-subscribe system where all this track information is published, and now it’s available for any system to subscribe and receive that information,” Adams said.

The new systems were able to handle 1.2 million messages during the four-day exercise, which ran June 11 to 14. The war game, conducted by the 2nd Marine Logistics Group, featured a fairly vanilla humanitarian relief scenario that combined command post exercises at Camp Lejeune, N.C., and Quantico, Va., in addition to live maneuvers. Though results are still being evaluated, Expeditionary Logistics VI validated the shared data concept, according to exercise coordinator Lt. Col. Mike Krohmer, Headquarters Marine Corps lead for command and control of logistics. In addition to eliminating point-to-point connections, the new approach means that each logistics and C2 system can be upgraded without having to modify the other systems they interact with.

The logistics war game is an attempt to address the problem of a multiplicity of systems — and not just logistics — that don’t play well together.

“A MAGTF has a bunch of standalone stovepipe systems that really don’t facilitate a good understanding of what’s going on the battlefield,” Krohmer said. For example, when an operator approves a supply request in the Common Logistics Command and Control System, the primary tactical request management system for the MAGTF, he also has to enter the same data into the Transportation Capacity Planning Tool. A shared data environment allows the operator to use the supply request data to automatically generate a transportation movement request.

“What we’re attempting to do is make each system interoperable so that we provide the right information for the commanders,” Krohmer said.

Security Concerns Hobble U.S. Army’s Mobile Learning

Joe Gould and Lauren Biron

June 20, 2012

Training & Simulation Journal

One minute, a U.S. Army recruit uses a smartphone to learn how to zero a rifle sight before hitting the range; the next, he browses a digital maintenance guide before changing an armored vehicle’s tire. Then he watches a video of a forced entry on his smartphone before kicking in a door and clearing a building. There’s a world of training at his fingertips, assuming there’s an iPad or smartphone beneath them.

Army officials outlined that dream scenario two years ago in a YouTube video. Called the “Army Learning Concept 2015,” it’s actually about catching up with the mobile technology revolution that began in 2007.

But the Army cannot realize its mobile training dreams until it figures out how to securely tap into the consumer devices driven by Google’s Android and Apple’s iOS operating systems.

“I have a dream, and the Army has this dream, of operating in a mobile environment, but we are concerned about the lack of security,” said Maj. Gen. Steven Smith, director of the Army Cyber Directorate.

The Army has its sights set on a concept dubbed “bring your own device,” or BYOD. Meant for the garrison and not the war zone, soldiers would use their own personal devices to access information for training and day-to-day business tools such as email, contact lists and calendars.

Moving training from actual equipment or expensive simulators to phones or tablets would likely reduce costs, but would also have the added benefit of being accessible 24 hours a day.

“The ramifications [of using mobile devices] are how we’re able to take advantage of the war fighters’ time breaks that they might have,” said Chester Kennedy, vice president of engineering at Lockheed Martin Global Training and Logistics. Such students would “be able to get some portions of their exercises completed in what would have otherwise been down time for them.”

The concept of BYOD is rooted in the recognition that smartphone manufacturers are making too much money in the consumer market to have an incentive to tailor-build a secure smartphone for just the Army, according to Smith. At the same time, the federal government’s processes for granting new security certifications for consumer mobile devices are being outpaced by technological advances, he said.

The Army is pursuing a solution that sidesteps the security issue in a sense, one that ensures that these consumer smartphones access data without storing it. This way, if a device winds up in the wrong hands, it cannot be hacked into and exploited.

“The process of trying to certify a hardware device and an operating system — that old process can’t keep up,” Smith said. “We need to be able to control you in the cloud. I’ll know it’s you, but we’re not going to let you keep anything on the device. When the session’s over, the session’s over.”

The Army and the Defense Information Systems Agency plan to issue a broad agency announcement by early summer for a third-party approach to securing mobile devices.

You Say You Want a Revolution

While the envisioned mobile world of training has not emerged, the Army has started to take advantage of the smartphone revolution in other ways.

To assist the Army, the defense research nonprofit Mitre has formed a Government Mobile Applications Group aimed at expanding the service’s various mobile technology pilot programs and finding security solutions.

“The U.S. soldier is the most adaptive, innovative-thinking soldier in the world, but smartphone technology isn’t yet part of standard-issue gear,” said Bob McKee, a senior principal systems engineer in Mitre’s Army Program Directorate. The key word there is “yet.”

Already, the Army’s Connecting Soldiers to Digital Applications program has launched some pilot programs through which soldiers can access apps on iTunes and Google Play. These provide publicly available information.

“Trainers are saying, ‘Give us tools and technologies and ways to train wherever we are, whenever we need it,’” said Gabe Batstone, CEO of Ngrain, a company that makes 3-D software for training. He notes that current and future service members come from a generation of digital natives. “They grew up with Nintendo and Xbox and mobile technologies. They expect and need those things, frankly, to train.”

The Army’s own marketplace, launched as a prototype in March, includes a variety of apps, many of them mobile versions of open source printed materials. Among the most popular are Pashto language materials, a tracking app for shipping containers, and the Army Social Media Handbook. However, many of the mobile apps based on generic uploads of documents miss out on the true potential of mobile, interactive technology.

“Converting software onto an iPad does not create an iPad application. You have to look at the user interface,” Batstone said.

Mitre is examining how to expand these pilot programs to get more training information into the hands of soldiers and employ the efficiencies smartphones provide. Of particular interest are the BYOD-focused pilots mentioned earlier.

“BYOD has made some early pilots and got some great data back, and I think we’re getting thumbs up to move out on it,” McKee said.

McKee called it “an innovative way to work within the system,” noting there is still concern about protecting soldiers’ identities and information, the data the soldier is accessing and the network the data reside upon.

Separate from its BYOD efforts, the Army is still pursuing the means to secure devices it has issued.

In October, the Army published a formal request for information about software to manage government-owned mobile devices remotely. The idea, according to the notice, is to take advantage of mobile devices that lack the security needed for Army use. The Army would track and monitor the devices through a central point, retaining the ability to control access to Army data and a provision to remove applications.

Among other capabilities, the solicitation expressed interest in the ability to remotely wipe or lock devices, filter Web content and disable functions like the Internet browser, Bluetooth and GPS systems.

Again, these are government-issued devices. “If we define you as a threat and erase your data, it better be the government’s phone, so you don’t sue the government for erasing your family photos,” McKee said.

Adapting the Tech

Until the Army’s smartphone future arrives, one place to get a glimpse of how it might look is the service’s Mobile Applications Branch, headquartered at the Signal Center of Excellence at Fort Gordon, Ga.

For the last few years, branch chief Lt. Col. Greg Motes and his team have been adapting training materials for iPhones, iPads and Android phones for use within Training and Doctrine Command.

Motes said the school’s Captains Career Course has been using iPads on a limited basis to access course materials. To be successful, such efforts need big commitments, Motes said, meaning local network connections, buy-in from leadership, loads of apps and a broad distribution of the devices.

“It’s a real chicken-and-egg situation,” Motes said. “Until everybody has a device, it makes it hard to expend the time and resources it takes to get any material translated, or any sort of simulations translated onto a smartphone or tablet.”

In the meantime, one of the more innovative apps Motes’ team has created is one that can read QR codes — essentially, square barcodes — placed on objects or landmarks to provide a video or text in a “museum-type learning environment.”

Instead of flipping through the pages of a manual, a soldier being trained to repair a generator might scan a cable on the generator to determine where it goes. The QR code would then link to that information.

“They’re essentially hyperlinking an object, which I find fascinating,” Motes said. “The next step is to scan a QR code on a cable from a router to a switch, and not only see where the cable goes, but — when authenticated — control the link.”

This, too, raises the unresolved question of security.

For Motes, one of the most promising efforts in the Army is to link mobile devices to the network using a Defense Department-issued Common Access Card and a card reader, just as some soldiers do using their home computers. The Army is sorting through how to create a secure connection like this for mobile devices, and Bluetooth CAC-readers have started to become available, Motes said.

“If we can get CAC authentication on smartphones, I think that will set the stage for being able to access more information,” Motes said, “but right now, to be clear, that is not allowed.”

Army War Game Confronts Anti-Access Challenge

Michael Peck

June 15, 2012

Training & Simulation Journal

Proliferating anti-access weapons and non-state actors bristling with advanced armaments will complicate U.S. military intervention overseas, according to the results of a major U.S. Army war game.

The “Unified Quest” game, held last week at the Army War College at Carlisle Barracks, Pa., thrust players into dual war games where American troops faced state and non-state actors, as well as a slew of complicated issues ranging from failing states to humanitarian crises and weapons of mass destruction.

“We were able to achieve some success in terms of using different approaches to getting into denied areas,” said Brig. Gen. William Hix, director of the Concept Development and Learning Directorate at the Army Capabilities Integration Center. “But we did find that in order to sustain and build momentum in those operations, we were hindered because we remain dependent or overly reliant on ports and airfields.”

Players were also dismayed by the conflict between the operational imperative to gain access ashore and the need to understand the byzantine human mosaic of political and tribal loyalties in the game.

“Speed matters,” Hix said. “But the other side of time is gaining knowledge. One blue commander struggled with understanding the human dynamics in his area. That takes a lot of time unless you can anticipate where you will be going.”

Another challenge was cyberspace. In one scenario, U.S. forces faced a relatively open society where American troops could remotely penetrate that nation’s network and disrupt its command-and-control apparatus. But the other scenario featured a closed society, so American troops had to maneuver on the ground to access the network. Complicating the matter for field commanders was their authority to disrupt enemy networks.

“We could get into their systems, but often, to have operational effectiveness and the ability to leverage this, we did not have the authority to act outside of our area of operations,” Hix said.

Immersive Training Hasn’t Reached the Holodeck

Lauren Biron

June 12, 2012

Training & Simulation Journal

The U.S. Army is about to get a new standard in immersive virtual training. The Dismounted Soldier Training System allows a squad of nine to practice everything from room clearing and IED disposal to checkpoint and combat operations — all in a virtual world. Each soldier gets a head-mounted display, mock weapon, sensor system and wearable computer pack.

“The feedback [from soldiers] has been, ‘This is the kind of training that we needed,’” said Floyd West, director of strategic programs for Intelligent Decisions, developer of DSTS, which incorporates Quantum3D’s

ExpeditionDI virtual environment training system. “It’s filling a gap in the training because the dismounted soldiers don’t have this kind of training.”

While DSTS was supposed to roll out to Fort Benning, Ga., for tests in January, it was delayed for a few weeks to get the newest upgrades in technology, such as the Intel quad-core processor and the latest Nvidia graphics processing units.

West still expects the systems to roll out in late June once user assessment is complete and the Army leadership green-lights the product. The Army is on contract to buy 102 suites and there are plans to field DSTS to more than 30 sites this year, including Forts Bliss and Hood in Texas and Joint Base Lewis-McChord, Wash.

Yet for all its leap-ahead technology, DSTS also shows how far sim makers have to go to truly replicate reality.

“Everyone wants the holodeck from ‘Star Trek,’ but they haven’t figured out how you fool the mind,” said John Foster, who oversees DSTS for the Army’s Program Executive Office for Simulation, Training and Instrumentation (PEO STRI).

In DSTS, soldiers can explore terrain, interact with civilians and enemy combatants, coordinate tactics and train much like they fight in the real world. Sensors on the body track whether the soldier is standing, kneeling or prone — and reflect it on his avatar in the virtual world viewed through the head-mounted displays.

Additional sensors in gloves track hand movements and can register if a soldier grabs a grenade or flare gun from his vest. DSTS will, many claim, change the way infantry soldiers can prepare for overseas deployments.



With all that in mind, however, researchers say better technology could add even more realism to the training.

It’s in the Way You Move

Currently, soldiers are connected to the virtual network wirelessly, allowing them to walk freely around the training room. However, to navigate in the virtual world, they still rely on a small joystick on their mock rifles.

West says that it hasn’t been a problem for soldiers trying the system.

“That was a question the general had for the squad leader there [at Fort Benning]. When asked how long it took him to get used to it, he said, ‘Four or five minutes, sir, and I’m not a gamer,’” West said.

As technology advances, however, the Army still seems likely to replace this component.

“We’re really looking at other technology for how we can make it more natural locomotion, so the soldier doesn’t have to use any sort of joystick or pressure pad,” said PEO STRI’s Foster. “It would replicate what he does in real life. But all those systems are very immature and very expensive, and take up a lot of space.”

One alternative is a 360-degree treadmill that would allow a soldier to walk virtually in any direction without moving in the training room. However, Foster estimates the cost of nine treadmills at \$250,000 — half of what it costs to purchase an entire DSTS suite right now. In a similar vein, there are also “hamster balls” that allow the soldier to walk in place in a self-contained sphere.

Another option is using pressure points in shoes or on the floor, but this is still a few steps away from natural locomotion.

“The problem is how you distinguish between someone walking versus jogging versus running,” Foster said. “You still have those distinctions to deal with, and not everyone runs at the same pace.”

There also is the ability to use camera-based systems to track soldiers as they move through the training exercise. However, these training areas are then limited to the size of the building. Currently, DSTS can simulate an area far larger than its required 1,600 square feet, which houses a squad of soldiers, a staff control station, an after-action review space and storage.

Researchers at the Institute for Creative Technologies (ICT) at the University of Southern California are working on ways to create a path in the virtual world that differs from the path taken in the real world, opening up a world of space inside a confined training room.

“Through software techniques and trickery, they can manipulate the environment in the head-mounted display so that as you are turning and walking, you are seeing yourself go straight — but in reality, you are walking in circles in the room,” said John Hart, the program manager for ICT at the Army Research Laboratory. “They can trick your mind into thinking you went somewhere you didn’t.”

Making Faces

The head-mounted display that transports soldiers into the virtual world clips onto a soldier’s helmet where night-vision goggles normally sit and provides 60 degrees of high-resolution vision. Participants can see one another’s avatars and talk through their headsets, but there is still nothing in place to capture their facial expressions and render them on their avatars.

“As far as semi-automated forces, be it civilians or enemy combatants, the game engines can support those kinds of facial expressions and body movements,” West said. “But as far as soldier-to-soldier right now, it’s not a piece of technology that’s in there.”

While it is possible to capture facial expressions, it would require a set of cameras or some additional kind of technology. Without it, however, soldiers miss out on valuable nonverbal communications that humans exchange regularly.

Foster also said the facial expressions for civilian and enemy avatars could improve. Part of the problem stems from the fact that different facial expressions can have different meanings in the U.S., Europe and the Middle East.

“We’re trying to build a database of expressions for different cultures,” Foster said. “It’s a very intensive task to collect all this data to be able to portray it right. The one thing we don’t want to do is give any kind of negative training to the soldier that would possibly get him hurt or, heaven forbid, killed.”

Avatars can be problematic, particularly those controlled through game engine interfaces. Foster said that because game engines — particularly commercial, off-the-shelf ones — were designed to control individual avatars, they don’t always have good ways of giving commands to computer-generated units. Commanders want a cognitive, organized enemy that can react to soldiers’ actions, functioning in an expansive world that soldiers can explore.

“That’s the biggest challenge we have right now: providing a good environment that can replicate what the soldiers encounter in the real world,” Foster said.

The Fifth Sense

In a world that is created almost entirely in the individual soldier’s mind, stimulating as many senses as possible is key — and a prime one of these is touch.

“The military has done a great job in focusing on the visual and audio sensory channels,” Hart said. “What we’re trying to do is look at some of the other elements, whether it be olfactory or haptic, the physical touch.”

There are many ways to simulate the physical feeling, though few have been incorporated into the current model of DSTS. Hart envisions an augmented reality that combines real-world items with virtual sight — meaning a soldier could put his hands on a real desk in the real world and see a virtual desk beneath his virtual

hands in his head-mounted display. Other groups are working on haptic gloves that provide pressure or vibration depending on soldier actions in the virtual world, such as banging on a door.

Intelligent Decisions plans to integrate further haptic feedback in newer releases of the system — particularly in response to soldiers getting shot. This could incorporate shock or vibration technology, something that the military has been recently interested in adapting for counter-improvised explosive device training scenarios.

“Our training is built to save lives,” West said. “As part of that, in making it more immersive, we want some kind of stimulus to make sure the soldier gets the appropriate negative feedback.”

As a result of the locomotion problem, it also is currently difficult for DSTS to replicate the fatigue that comes with having to physically walk and patrol an area. Simulation systems tend toward draining the mental rather than the physical capacity. Still, virtual reality offers many advantages and scenarios that can’t happen in the real world.

“You can’t drop shells around a soldier in live training,” Foster said. “They don’t like that.”

The Ultimate in Immersive

Blending real life into immersive training is on the horizon. For years, the Army has toyed with the idea of creating personal avatars for each soldier that would change based on their real-world performance, according to Maj. Michael Flatoff of the Army’s Training and Doctrine Command. If a soldier were a particularly fast runner or good marksman, that could be incorporated into his virtual persona and applied in different games and virtual training exercises.

If, on the other hand, a soldier failed a physical test, that disadvantage would also be replicated. The avatar would accompany the soldier throughout his career, but for now, soldiers can keep their real and gaming personas separate. The program is still in the middle stages of development.

With technology such as Google Glasses making recent news, it’s possible the military will adapt augmented reality sooner rather than later. West anticipates combining similar goggles with live training scenarios such as MOUT — military operations on urban terrain. Soldiers could then navigate through real buildings or streets but see enemy combatants or other features overlaid on the scene through their head-mounted displays.

“You can see a merging of the virtual and the physical,” West said.

That virtual display should experience increased realism and ease of use in the coming years. While graphics have gotten better and better, Foster says he won’t be satisfied until there are leaves and sand blowing realistically through the scene.

“That’s why we go to the commercial game industry,” Foster said. “The graphical part of it is the linchpin.”

And for the generation of digital natives who grew up on PlayStations and Xboxes, great graphics and intuitive technology are essential.

“They’ve come to expect that kind of technology,” West said. “If we have it for 10- and 12-year-olds in their houses, why wouldn’t we have these kinds of technologies for our soldiers to leverage and use?”

USAF: Old and New Planes Drive Switch to Sims

Alan Dron

June 8, 2012

Training & Simulation Journal

LONDON — Preserving the remaining flying hours of aging military aircraft means substituting simulator training for live sorties, according to a civilian official at the U.S. Air Force's Air Combat Command.

For example, the E-3 Sentry airborne warning and control systems (AWACS) depended on airframes that were upwards of 30 years old, said Mark Williams, distributed mission program manager.

Because of the need to maximize those old aircrafts' available flying hours for operational sorties, live training was dropping, he told an ITEC panel on meeting current and future operational needs.

His presentation, "Taking the Virtual Leap of Faith," suggested that some aircrews had to more fully embrace virtual training. In 2010, he noted, the main AWACS operating base, Oklahoma's Tinker AFB, conducted more simulator training than live training for the first time. Last year, Tinker crews were averaging 40 to 50 distributed mission system sorties a week.

Budget restrictions have also contributed to fewer live training missions by decreasing the number of aircraft available for E-3 crews to control on training sorties.

Williams also acknowledged that some older crews were less enthusiastic about training in simulators than their younger colleagues, "but they need to know that 'good enough' is better than nothing at all. 'Good enough' has changed a lot in recent years. Live, simulated and distributed mission training must go hand-in-hand."

At the other end of the spectrum, he said, some of the most modern aircraft in the U.S. inventory would also require greater amounts of simulator-based training than their predecessors, but for different reasons.

Pilots on the fifth-generation F-22 Raptor fighter already undertake some 50 percent of their training on simulators because the scale of the threat needed to give them a decent workout — opposing aircraft, surface-to-air missiles and electronic countermeasures, for example — can no longer be put into the air for reasons of cost.

The U.S. Air Force Air Combat Command's 2012 plans noted that there would be an emphasis on distributed training in the service "for the foreseeable future," he said.

ITEC: Blended Training Is 'The Way Ahead'

Lauren Biron

May 23, 2012

Training & Simulation Journal

LONDON — Smartphones and iPads may figure prominently in military visions of the future of training, but such devices won't replace instructor-led learning anytime soon.

During a panel on using mobile applications to train effectively at ITEC 2012, members of the military and industry agreed that mobile learning is most effective as part of a blended learning strategy.

"Blended is the way ahead," said Col. Andy King, of the U.S. Army directorate of education and training services.

King said the Army recently issued devices with Alelo language training software to 12 lieutenant colonels who needed to learn Pashto and Dari in a matter of days. Mobile training allowed more flexibility than a traditional course.

“Sending guys away for a year course to learn Pashto and Dari ain’t going to cut it,” he said.

The officers showed improvement in both languages, but they also declared their appreciation for instructors’ guidance during the lessons.

The instructors were able to “draw on experience from theater,” explaining how the training would be relevant once overseas — something that the technology alone did not provide. King recognized the small sample size, but added that 250 devices are already out in the field, and another 250 were to be issued to soldiers today.

King said that feedback from this training, which accompanies warfighters into theater and blurs the line between training and job performance, will hopefully provide insight into the most effective way to use mobile learning.

Maj. Rebecca Harrison of the British Army echoed support for blended learning, citing a mobile research project used to help soldiers prepare for their MATTs, or Military Annual Training Tests.

The mobile app included a physical fitness tracker, a game to teach and test security awareness online, a different game about the laws of armed conflict, information (such as podcasts, documents, and scrollable scenarios) on battlefield casualty drills, and an interactive segment on equality and diversity training.

Cranfield University conducted a 425-student study into whether mobile learning is a feasible and effective alternative, setting up control groups in e-learning and classroom-based instruction. The results indicated that e-learning and mobile learning were as effective as classroom learning. Mobile learning earned the highest rankings for associated “positivity.”

However, students also said that mobile learning was better for training with clear right-and-wrong answers, while topics that were open to interpretation were better learned in class environments.

Current recruits have expectations of interactivity and digital learning. They aren’t necessarily used to “chalk and talk,” Harrison said. “That’s not how they learn.”

Harrison noted that mobile training could also benefit soldiers without an instructor when used as a refresher on everything from numeracy and literacy to operations procedures and language.

Underwater Trainer Prepares Troops for Vehicle Escape

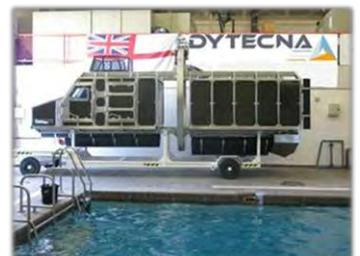
Alan Dron

May 17, 2012

Training & Simulation Journal

It might seem strange to train in a dunk tank, but that’s how U.K. Royal Marines will learn to escape from an amphibious vehicle, the BvS 10 Viking. U.K.’s Dytecna Engineering has delivered an underwater escape trainer based on the BAE Systems Sweden tracked vehicle to the U.K. Ministry of Defence.

The Viking Underwater Escape Trainer will be based at the Underwater Escape Training Facility at Royal Naval Air Station Yeovilton in southwest England, where Royal Marines already undergo helicopter escape training. The VUET can be picked up by a gantry crane and “dunked” in the facility’s water tank, giving up



to 12 trainees the chance to familiarize themselves with the emergency escape drills that would be required should the vehicle be swamped by heavy seas and sink.

The Viking is an all-terrain vehicle that has a ship-to-shore swimming capability and is used primarily for beach landings, although it was also deployed to Afghanistan.

Dytecna made the shell of the VUET from stainless steel to enable it to withstand repeated immersions over its planned 25-year service life. It is configured to replicate the interior of the operational vehicle, including escape routes. Plans for the vehicle's dimensions and structure were provided by the MoD.

The VUET is a first for Dytecna, whose previous products include C-130 fuselage trainers and fast-jet part-task trainers.



Medical Simulation Center Provides Harsh Training Realities

Spc. Tyler Meister, 117th Mobile Public Affairs Detachment

June 30, 2012

af.mil

6/30/2012 - KANDAHAR AIRFIELD, Afghanistan -- The feedback students receive at the Medical Simulation Training Center from the site's realistic mannequins can be very harsh and exacting.

If students don't apply a tourniquet properly or open an airway quickly in training scenarios, an "injured" mannequin with simulated vital signs can quickly deteriorate into a "lifeless" mannequin.

Experiencing a simulated death can be a tough lesson for a student. But it's better to experience the lesson on a training site than the battle field, said Gerald Smith, MSTC site leader.

"The training here is special because it features realistic scenarios for students," said Smith. "We feature \$50,000 medical mannequins that breathe and bleed just like a real person."

Smith teaches all service members here life-saving skills ranging from standard Combat Life Saver courses to advanced, battle-simulated medical training.

"Our training allows medical personnel to practice realistic treatments on life-like mannequin casualties that breathe and bleed," said Smith. "(A) training (facility) like this is rare, especially in Afghanistan."

Aside from this MSTC, Bagram is the only other location in Afghanistan that has a MSTC. There were six MSTCs throughout Afghanistan but only two remain due to troop draw downs, Smith said.

Smith trains about 250-300 service members each week but said the MSTC had the capability to train even more troops each week. The MSTC can also validate medical certificates for emergency medical trainers and medical providers.

Smith and the MSTC's staff provide a curriculum that balances the basics as well as the latest battlefield techniques.

Smith emphasized the center is eager to share important medical-treatment knowledge with all service branches.

"We are here to support everyone," Smith said. "The opportunities for unique, high-quality training exist here. Some units just don't know who we are and what we have to offer."

New AFNIC' Offers Cyberspace Advantage

Katherine Kebisek, Air Force Network Integration Center

June 27, 2012

af.mil

6/27/2012 - SCOTT AIR FORCE BASE, Ill. -- "Cyber Innovation. Mission Success." This is how the "New" Air Force Network Integration Center officials sum up what their organization provides to the Air Force and other mission partners.

It's a phrase representing a new direction for a not-so-new organization. AFNIC, established from what was formerly the Air Force Communications Agency, stood up in 2009 as a direct reporting unit to Air Force Space Command. The center's roots trace back even farther with the establishment of the Army Airways Communications Service in 1938.

The term "New AFNIC" emerged in the past several months as the center's personnel implemented a massive restructure of the organization based on recommendations from a 2011 Headquarters AFSPC study. AFNIC officials requested the study after being realigned to AFSPC.

"We had a very broad mission that included everything from standards and architecture, to writing Air Force policy, even doing some operations work," said Brad Ashley, AFNIC's technical director. The restructure aligned some command functions to AFSPC, network operations and maintenance functions to 24th Air Force and network integration to AFNIC.

With the restructure complete, AFNIC officials are focused on providing cyber solutions for Air Force Network integration, cyber simulation and network standards, architecture and engineering. Through these core services, the center establishes what the Air Force network looks like and determines how to get cyber capabilities integrated into the network, helping Airmen achieve their mission with the "power of cyberspace."

"Almost everything we do in the Air Force today relies on the network," Ashley said. "If the combatant commander and the warfighter can't leverage the network for their unique mission set, then we're not getting the full power of cyberspace."

Knowing what the network looks like, and what it will look like in the future, is important. There have been instances where major information technology systems were built according to how the network was structured at the beginning of the project, but when it came time to connect to the Air Force network, sometimes years later, the systems didn't work as designed because the network architecture had evolved. AFNIC aims to prevent those situations.

"When we're engaged early in a project we can help identify potential issues and provide guidance to ensure systems and applications are developed compatibly with the AFNet," Ashley said. "The end result is a capability that works as intended, a secure network, and an empowered Airman ... that's the advantage we provide."

Fueling new AFNIC is a renewed emphasis on innovation, an ethos AFNIC's commander is passionate about.

"Innovation is the true fuel for our national economy and our nation's military prowess," said Col. Riz Ali, the AFNIC commander. "Innovation is more than just new technology; it's finding new ways to communicate, collaborate and do business. This mindset is very important to have and foster ... it's what drives progress."

As part of this effort, the center has made it a priority to be more transparent and improve communications. Personnel now regularly use tools like blogs, discussion forums and online working groups to connect and exchange ideas with mission partners around the world.

AFNIC also recently launched an internal program through which its personnel can submit and pursue ideas to improve center operations, the Air Force enterprise, or both.

"The ultimate goal is to introduce operationally viable, innovative cyber solutions to our Airmen," Ali said. "We are faced with serious challenges in cyberspace. The domain and the threats to it are constantly changing. We can't stay a step ahead unless we're thinking outside the box."

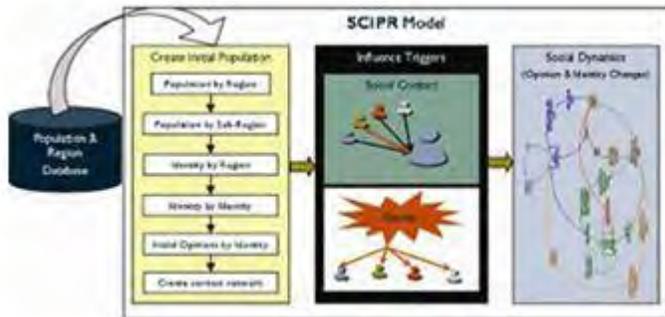
Innovation, combined with the decades of experience, technical expertise and commitment to customer service AFNIC personnel possess are what Ali said provide mission partners an advantage.

"Our cyber professionals have the knowledge, skills and innovative outlook to tackle even the most complex, demanding technical issues," Ali said. "We do what it takes to provide high-quality, decisive and secure cyber solutions ... an advantage that positions our partners for mission success."

Simulation Model Predicts Cultural Attitudes, Responses

*Lt Michelle L. King, 711th Human Performance Wing
June 20, 2012
af.mil*

6/20/2012 - WRIGHT-PATTERSON AIR FORCE BASE, Ohio -- A wealth of behavioral research describes normative differences between individuals from different cultures. Researchers report qualitative and quantitative differences in such areas as cognition, interpersonal processes and belief structure; several researchers have developed taxonomies of cultural differences. For example, Hofstede (2001) proposed several cultural dimensions which affect behavior, and those dimensions have been explored for their applicability to military command and control. Research to date, however, has not determined which cultural factors are most statistically relevant as performance moderators. The predictive role of culture in interaction with other variables such as organizational training, stress or fatigue remains unclear. This lack of sufficient data on culture as a performance moderator stands as a barrier to accurate human behavior representation (Silverman, 2001). Innovative approaches are needed to empirically determine the most relevant and influential cultural factors for a range of human behaviors. Furthermore, moderating variables that shape or bound the influence of culture need to be identified. Innovation is needed to move from theory to statistically supported application.



Aptima, Inc., developed the Simulation of Cultural Identities for Prediction of Reactions (SCIPR) model to allow planners to predict how attitudes may change in response to certain events. SCIPR is an agent-based computer simulation that forecasts the effects of actions on peoples' opinions and cultural identities. SCIPR utilizes a number of principles that are well substantiated by research, including the principle that communications takes place more often among people who are alike and physically close. Addressing the root causes of state failure and instability requires the cooperation of local populations and governments. To win this cooperation, military decision makers need to predict changes in the opinions of local populations. Cultural

identity is a critical factor in this process; however, cultural identities are multi-layered and dynamic. Each individual has multiple identities and these identities change over time. Attitudes also change based upon people's contact with other individuals. When attitudes change, people's participation in groups changes as well. Understanding and predicting these complex dynamics are extremely difficult, yet critical to success.

Aptima has received a Phase II Small Business Innovation Research (SBIR) Enhancement for additional development of SCIPR and its application to operational domains.

Military Surgeons General visit the Medical Education & Training Campus

*Lisa Braun, Medical Education and Training Campus Public Affairs
June 4, 2012*

6/4/2012 - FORT SAM HOUSTON, Texas -- For the three military surgeons general to be in the same country at the same time is unusual. For all three to be in the same room at the same time is a rare event.

Instructors and staff of the Medical Education & Training Campus (METC) received an extraordinary opportunity when Lt. Gen. Charles Green, surgeon general of the Air Force; Vice Adm. Matthew Nathan, surgeon general of the Navy and chief, Bureau of Medicine and Surgery; and Lt. Gen. Patricia Horoho, surgeon general and commanding general, U.S. Army Medical Command conducted two All Hands calls (open forum) on the same stage at the same time during a visit to METC on May 30.

The three surgeons general and their senior enlisted leaders addressed the METC audience and answered questions in the Big Area Tent on Fort Sam Houston. The purpose of the visit was to ensure that METC continues on the path to joint success, and to ask what they can do to help maintain efforts to integrate training among the services.

"The six of us are here for a couple of reasons. The first is to say 'thank you'," Nathan told the METC audience during the All Hands Call. "We want to support integrated training, iron out wrinkles and smooth out seams. You represent the future and set the culture for integration."

Nathan said they are here to ask "why not interoperability", not "why."

"We want to remove the barriers," he added. "You're doing a great job of training our people. Joint is where it's at."

Horoho agreed. "Where we can be interoperable, where we can be joint we need to do that," she said.

To stimulate the discussion Horoho later turned the floor to the audience, asking "if you were to be surgeon general for the day, what would you do?"

In addition to the All Hands calls, the surgeons held discussions with senior leaders from METC and the Army, Navy and Air Force component commands that support METC. They also toured METC's Basic Medical Technician Corpsman Program and Department of Combat Medic Training where they observed students engaged in the classroom, laboratory simulation, and a live training exercise.

The six surgeons and senior enlisted leaders expressed their unification in support of what METC has accomplished and its future as the leader in joint military medical training.

As the pendulum swings from individual service medical training to consolidated training, METC is moving toward fully integrated training.

"You are giving us a wonderful product," Green told the METC audience. "We couldn't be more pleased."

58 SOW to Open Two New Simulators

*Stefan Bocchino, 377th Air Base Wing Public Affairs
June 1, 2012
af.mil*

6/1/2012 - KIRTLAND AFB, N.M. -- The 58th Special Operations Wing will cut the ribbon 1:30 p.m. Monday at Building 958 unveiling two new flight simulators.

The devices are a UH-1N weapons system trainer and a fully integrated HH-60G aerial gunner scanner simulator and weapon systems trainer. They will be used in initial qualification, upgrade training and refresher training for Air Combat Command and Air Force Global Strike Command aircrews.

"They are brand-new state-of-the-art simulators," said Lt. Col. John Taylor, 58th Training Squadron HH-60G program manager. "Because of their higher fidelity, we can take some of the sorties off the flightline and into the simulator. The cost per hour of using a simulator is much less than using actual aircraft."

Cost savings are a key component of simulator use.

"I can do a lot of things in the simulator that I can't do in an aircraft," said Taylor. "This is especially true on emergency procedures. That benefit is huge."

The UH-1N simulator cost \$11 million, while the HH-60G simulator cost \$17.1 million, said Taylor. The annual savings in using the UH-1N simulator is estimated at \$6.7 million, while the savings using the HH-60G simulator is approximately \$32 million a year in flying hours.

"The UH-1N simulator does not have the flight engineer position," said Taylor. "However, we are trying to have modifications done to the simulator to add it."

According to the Air Education and Training Command fact sheet for the UH-1N simulator, it is capable of flight simulation with a high-quality visual system. It also allows the introduction of emergency procedures, adverse weather situations and night vision goggle training. This helps prepare crew members for flight in actual adverse conditions.

The AETC fact sheet for the HH-60G simulator states that the training function of the simulator has stations for all crew positions, including the aerial gunner and flight engineer.

"Having positions for the gunner and flight engineer brings in the total crew concept," said Taylor. "This will allow us to take even more flights off the flightline."

Taylor said that the 58 TRS will start with small steps in taking the flights off the flightline and into the simulator. If the situation warrants it, he said they would take more flights into the simulator.

"These simulators represent a transformational change for Air Force personnel recovery, missile site support and distinguished visitor aircrew training," said Taylor. "Crews will now train as an integrated element, developing critical crew resource management skills."

JCSE Training Exercise: As Close to Real as You Can Get

Nick Stubbs, Thunderbolt Editor

May 31, 2012

af.mil

5/31/2012 - MACDILL AIR FORCE BASE, Fla. -- When it comes to training for actual battlefield conditions, location is everything.

That's why the 2nd Joint Communications Support Element based at MacDill, packed up and headed for the dense forest of Myakka State Park for a training exercise designed to prepare them for the kinds of medical emergencies team members are likely to face on the battlefield.

Held last month, the forest and Mother Nature gave no quarter, blasting the team with heat and rain over the course of the two-day simulation, said Capt. Ada Hernandez, Fox Trot Troop commander and a coordinator on the exercise.

One of the primary objectives of the training was to ensure new JCSE members were up to speed, and to evaluate the more senior members of the team, said Hernandez.

"We have new members who need the training, and we also wanted to evaluate and focus on the warrior skills essential to the JCSE (to perform its missions)."

The mission was defined by a set of tasks, the scenario or conditions, and standards for combat lifesaving and first aid as practiced by JCSE units.

The identified task of the exercise was to, "Ensure all members of the 2nd JCSE are familiar with lifesaving interventions for injuries that are most likely to occur and fall within their scope of practice," said Hernandez.

The scenario involved a simulated patient and a medical team with supplies and equipment suited to the situation. Standard medical practices were employed, with the objective being to evacuate the patient without causing further injury, said Hernandez.

Over the two days of the exercise, three scenarios were played out.

Scenario 1 involved the electrocution of a team member who was setting up communications equipment. He suffered burns and had to be treated in a "volatile situation."

In scenario 2, a land mine detonated injuring two members. The third scenario involved a snake bite.

All emphasis was on realism to ensure the exercise mimicked reality. In the case of the mine explosion, one of the simulated injured members was impaled to a tree and screaming.

"We want to simulate actual conditions as closely as possible," said Hernandez, who added that the Myakka environment was the closest location to MacDill that provided the backdrop needed.

Overall, the exercise went well, though weather conditions provided an unplanned element of realism.

"It went very well overall," said Hernandez, who noted that the team did what is expected in a real battlefield scenario - "adapted and overcame."

ATA's University Intern and Coop Program Promotes Technical Excellence at AEDC

Philip Lorenz III, AEDC/PA

May 9, 2012

af.mil

5/9/2012 - ARNOLD AIR FORCE BASE, Tenn. -- An ongoing challenge to the future of flight simulation testing at Arnold Engineering Development Center is recruiting and retaining the best and brightest engineering students who will form the workforce of the future, according to Laurie Winton, ATA's University Programs Coordinator.

Winton, who has been the program's coordinator since 2009, is excited about the opportunities students are provided during their assignments and the relationships the students develop with each other and with professional mentors and managers.

Since ATA's contract began in 2003, the program has brought 172 students to AEDC from more than 25 universities in more than 12 states. Seventy-seven percent of the students have successfully completed the program and 57 have been hired as regular full-time employees.

The goal at present is to keep between 20 and 25 students in the program at any given time.

"[ATA's university intern and co-op program] is an opportunity for the students to have a paying summer job while obtaining real-world experience in their chosen field of study to help them solidify their career goals, find out if they're interested in the kind of work we do, and determine if they're a good fit with our company and this environment," Winton said. "We treat it as a long-term interview and utilize the program to give the students an opportunity to show us what kind of workers they're going to be prior to hiring them as regular full-time employees."

Students are paired with an AEDC employee who acts as a technical mentor to the student. An effort is made to match each student with a mentor whose job is related to the student's field of study and interests.

Winton said matching students with their AEDC mentor is more nuanced than it may appear.

"We try to match the students' broad interests," she said. "For instance, we'll ask mechanical engineering students if they are more interested in doing systems engineering, project management, hardware design, or data analysis type work. For electrical engineering students, we may ask if their interests are in instrumentation, design, systems and maintenance or power distribution."

Winton also serves as a type of mentor in assisting the students with the transition from school to the work environment and coaching on business communication, resume building and presentation skills.

There are few differences in the two parts of the program.

"Co-op students can apply once they've completed 45 semester hours and generally work either in the spring (January to May) or the fall (August to December)," Winton said. "They receive college credit in addition to being paid for their time working."

In contrast, the interns, who are college juniors or seniors, work at AEDC for approximately 12 weeks during the summer months and while paid, they receive no college credit for their work assignment.

Dr. Rob McAmis, Deputy Director of ATA's Integrated Test and Evaluation Department, has mentored many college students during his 28 years at AEDC. He said working with the program's students has been "a great experience."

McAmis, who earned his mechanical engineering degrees from Tennessee Technological University (B.S.), the University of Tennessee at Knoxville (M.S.), and the University of Tennessee Space Institute (Ph.D.) said, "I enjoy passing along the passion for science and the breadth of opportunities that exist at AEDC to apply our engineering skills.

"[This program] is important for the student and ATA and AEDC. The student gets exposure to real-world engineering problems and begins to understand the difference between homework problems and industry-based problems.

"One significant difference the students see quickly is that most of the difficulty in industry-based problems exists in defining the problem. In college, the students are most often given problems and their efforts are focused on the solutions. However, problem definition is never that simple in industry."

Scott Bartlett, AEDC's Chief Engineer and alum of Tennessee Technological University (BSME) and the University of Tennessee Space Institute (MSME), was a former intern at Pratt & Whitney and secured a summer job at AEDC with Sverdrup in 1980.

"I had interesting and challenging (read that as 'not busy work') assignments in both places," Bartlett said. "These jobs and how they affected my view of the engineering profession are why I am interested in the co-op and intern program now."

His interest is more than just talk. Bartlett has mentored several students in his 28 years at the base and views the opportunity to witness student intellectual curiosity as one of the most important aspects in evaluating a future engineer.

"AEDC and ATA are a multi-discipline operation, and each year engineering disciplines are becoming more integrated," he said. "We have a great opportunity to allow students to diversify their technical exposure here and find great fits between the students' needs and ours."

Winton encourages feedback from the students who participate in the university co-op and intern program.

"We have an in-depth exit interview questionnaire that we obtain from each student each time they work to help evaluate the students' experience with the program," she said. "We also ask them to assess their experience with their mentor, manager, and the University Programs Team to find out what we're doing right and what we can do better.

"We feel good about some areas of what we're doing, but know there are areas for improvement as well."

Tom Northcott, an ATA Mission Support Utility Systems Engineering group lead, first came to work at AEDC during the summer of 2001 as an intern and worked a total of three terms.

He graduated from Tennessee Technology University in December 2003 with a B.S. degree in electrical engineering.

Northcott said Tennessee Tech had posted information about the newly developed intern program at AEDC.

"That was where I ultimately wanted to work, so I thought it would be a good opportunity to get my foot in the door," said the former enlisted Marine. "I think it [the intern program] greatly helped my ability to obtain a full-time position in January of 2004."

He added, "Joe Capps was the engineer who I worked with the most. I worked with several engineers and electricians in the PWT area and learned a lot about the facility and electrical work in general. It reaffirmed my desire to continue pursuing my electrical engineering degree and come to AEDC for a full-time position."

Dana Alexander, a system engineer with ATA roads and grounds, worked for ATA as an engineering intern during the summers of 2008 and 2009.

"I first found out about AEDC and ATA at an engineering career fair at TTU," she recalled. "I spoke with the ATA University Programs representative at the career fair and was able to set up an interview."

In May 2012, Alexander graduated from Tennessee Tech with a bachelor's degree in civil engineering.

"My internship allowed me to connect the dots between what I was learning in school and how it can be used in real life," she said. "It also helped me see the big picture of what being an engineer will really be like."

"My internship made transitioning to a full-time ATA employee much easier. After two summer internships, I knew I was going to work at a company that I was already comfortable with. The adjustment period was very short, which allowed me to jump in and get to work."

She said her mentor, Erin Robinson, did a great job "and really helped me see what a day in the life of an engineer is like."

"One of the most important things I learned as an intern was the importance of communication between co-workers. Everyone benefits from the intern/co-op program at ATA," Alexander said. "Students have a chance to learn real life engineering skills, and ATA has the chance to preview potential new hires."

WashingtonTechnology

NCI Tasked With Network Ops Support for Army

By David Hubler

June 26, 2012

Washington Technology

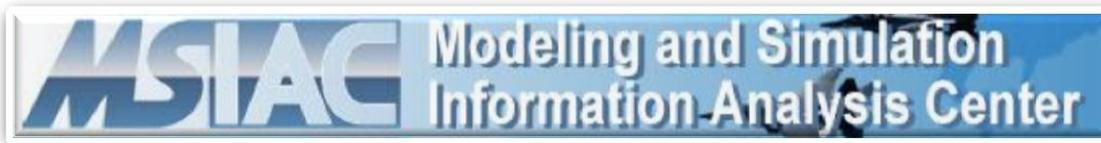
NCI Inc. has been awarded a three-year competitive task order from the Army worth \$6.4 million to provide modeling, simulation and network operations security center engineering support, the company announced June 26.

The contractor will provide the Army's Signal Center of Excellence, Capabilities Development Integration Directorate, Experimentation Division at Fort Gordon, Ga., with modeling, simulation and network operations security center engineering support.

The task includes developing modeling and simulation tools, information-dissemination management tools, data, products, analysis methods and deliverables to use for the Army's communications experimentation and analytical requirements.

NCI also will maintain the network operations security center for the Battle Lab Collaborative Simulation Environment, which supports the Training and Doctrine Command's distributed experimentation events in a secure classified environment, the announcement said.

Links



Modeling and Simulation Information Analysis Center (MSIAC) M&S Newsletter.

<http://www.dod-msiac.org/newsletters.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.teamorlando.org/newsletter/>



The M&S Journal is a quarterly published electronic document of technical papers written by experts within the DoD communities and services enabled by M&S who wish to publish in order to generate interest, exchange information, and increase collaboration on concepts vital to M&S tools and capabilities.

<http://www.dod-msiac.org/journals.html>

Conferences & Events

July 31-August 2, 2012

ADL iFEST 2012

Orlando, FL

August 16-17, 2012

Human Patient Simulation Network (HPSN) Southeast/Gulf Coast Regional Conference

Sumter, SC

September 10-14, 2012

Simulation Interoperability Standards Organization (SISO) Fall SIW

Orlando, FL

September 25-27, 2012

Modeling & Simulation Multi-Con

Suffolk, VA

October 4-5, 2012

Human Patient Simulation Network (HPSN) Northeast Regional Conference

Hershey, PA

October 22, 2012

15th Annual Systems Engineering Conference

San Diego, CA

October 31-November 2, 2012

Swiss Conference on Standardized Patients and Simulation in Health Care

Lausanne, Switzerland

November 5-8, 2012

Physics-Based Modeling in Design & Development for U.S. Defense

Denver, CO

November 6-8, 2012

Association for Simulation Practice in Healthcare (APSiH) Conference 2012

Oxford, UK

November 9-10, 2012

Human Patient Simulation Network (HPSN) Europe Conference

Mainz, Germany

December 3-6, 2012

Interservice/Industry Training, Simulation and Education Conference (I/ITSEC)

Orlando, FL

For Additional Copies, Please Contact:

Margaret Callahan (Callahan@visitech.com)

or

Dr. Ivar Oswald (Oswald@visitech.com)

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 compiled in Simulation Highlights have been obtained from non-subscription websites.



G A O

Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

June 29, 2012

Congressional Committees

Subject: *Navy Training: Observations on the Navy's Use of Live and Simulated Training*

The Department of Defense uses live training, simulators, and other virtual training devices to prepare its forces to conduct military operations. Virtual training can help the services mitigate obstacles to training, such as the high cost of conducting live training or range access issues, while allowing military personnel to replicate many of the interactions and procedures they may encounter on the battlefield. In an effort to achieve greater efficiency, maximize training opportunities, and potentially reduce training costs, each military service is in various stages of developing concepts and training programs that mix live and synthetic training (which is how the Navy typically refers to training that relies significantly on simulators or virtual training devices).¹ The Navy, in particular, believes that effective training requires an efficient balance of live and synthetic approaches.

H.R. Rep. No. 112-78 (2011), which accompanied a bill for the National Defense Authorization Act for Fiscal Year 2012, directed GAO to review the status of the military services' training programs and report the results to the House and Senate Armed Services committees. It also stated that in reporting on each of the services, we may take a phased approach in undertaking our review and reporting to the Senate and House Armed Services committees.² This Navy review is the first engagement in our phased approach, and an Air Force review is also underway. For this review, we assessed (1) the principles the Navy considers in determining whether to use live or synthetic training to meet its training requirements, (2) how the Navy's mix

¹ For the purposes of this report, "simulators" will be used to describe specific devices that mimic actual equipment, such as a flight simulator, while "synthetic training" will refer to any training that takes place in a virtual environment.

² H.R. Rep. No. 112-78 (2011), which accompanied H.R. 1540, a bill for the National Defense Authorization Act for Fiscal Year 2012.

of live and synthetic training has changed over time, and (3) how the Navy prioritizes its synthetic training investments.

To address our objectives, we interviewed officials and reviewed and analyzed data from Navy headquarters and Navy commands, including the Office of the Chief of Naval Operations, as well as the U.S. Fleet Forces and Pacific Fleet Commands; commanders from the aviation, submarine and surface platform communities; resource sponsors for these platform communities; and the Naval Reserve Command. We reviewed Navy and command policy guidance, including the Fleet Training Simulator Strategy³ which provides detailed objectives for investments in simulators and synthetic training. We also reviewed the Fleet Synthetic Training Program Instruction⁴ and the Fleet Training Continuum Instruction⁵ which provides guidance on how to successfully execute fleet training. We reviewed Navy's Aviation Simulator Master Plan, which included information on planned investments in aviation simulators.

We conducted this performance audit from August 2011 to June 2012, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence provides a reasonable basis for our findings and conclusions based on our audit objectives.

Summary

To determine whether to use live or synthetic training to meet its training requirements, the Navy relies on guiding principles outlined in its Overarching Fleet Training Simulator Strategy. These principles are intended to provide flexibility in determining the appropriate solution for a specific training requirement or gap, while maintaining readiness levels and capitalizing on technical advances in modeling and simulation. In applying these principles, Navy decision makers

³ *Overarching Fleet Training Simulator Strategy in support of Synthetic Training in Program Objective Memorandum 2013 and beyond* (Jan. 25, 2011).

⁴ Commander, U.S. Fleet Forces Command and Commander, U.S. Pacific Fleet Instruction 3500.3, *Fleet Synthetic Training Program* (Mar. 31, 2011).

⁵ Commander, U.S. Fleet Forces Command and Commander, U.S. Pacific Fleet Instruction 3501.3C, *Fleet Training Continuum Instruction* (Mar. 31, 2011).

consider the circumstances surrounding each individual requirement. For example, the Navy may choose to use synthetic training where regular live training is not feasible due to operational, cost, or safety concerns, such as training for ballistic missile defense.

Over the last decade, the Navy has increased its emphasis on the use of synthetic training. For example, between 2003 and 2011, the Navy has taken certain steps, such as establishing organizations to focus on synthetic training and issuing a concept of operations. The Navy's platform communities currently use different mixes of live and synthetic training. For example, the submarine community conducts all of its pre-deployment training in shore-based simulators. Navy surface ships have the capability to conduct just over half of their training synthetically, but the mix of actual training varies by ship-type and by mission area. Navy makes significant use of simulation for new pilot training and pilot practice once personnel are assigned to operational units, but Naval aviation makes limited use of synthetic training for graded events⁶ due to concerns about simulation realism and safety. According to Naval Reserve Command officials, there are no significant differences between the anticipated tasks that active and reserve component forces conduct when using simulators.

The Navy's Overarching Fleet Training Simulator Strategy also provides 12 investment priorities for synthetic training. For example, aviation, littoral combat ship, and future platform simulator procurement takes precedence over legacy platform simulator investments. The Navy applies these priorities to guide decisions on simulator procurement and upgrades at both the platform and fleet levels. At the platform level, the aviation community has an investment strategy, contained in its naval aviation simulator master plan; the surface community is working on a master plan, which is expected to be complete by the end of the year; and the priority in the submarine community is ensuring that upgrades to the actual submarines are made to the corresponding simulators. At the fleet level, a fleet training integration panel prioritizes investments across the platforms and fleets and provides a forum where the priorities of each platform community compete against each other. For additional details on our results, see enclosure I.

⁶ Graded training events are those that are reported through the Navy's readiness reporting system.

Agency Comments

In commenting on a draft of this report, the Department of Defense concurred with our report and observations. The Department's comments are reprinted in their entirety in enclosure II.

We are sending copies of this report to the Secretary of Defense, the Secretary of the Navy, and to the appropriate congressional committees. The report also is available at no charge on the GAO website at <http://www.gao.gov>. Should you or your staff have any questions on the matters discussed in this report, please contact me at (202) 512-9619 or pickups@gao.gov. Contact points for our offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who contributed to this report are listed in enclosure III.

A handwritten signature in black ink that reads "Sharon L. Pickup". The signature is written in a cursive, flowing style.

Sharon L. Pickup
Director
Defense Capabilities and Management

Enclosures – 3

List of Committees

The Honorable Carl Levin
Chairman
The Honorable John McCain
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Howard P. McKeon
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

Enclosure I



Navy Training: Observations on the Navy's Use of Live and Simulated Training

Briefing for the Senate and House Armed Services Committees

Background

- The Navy uses a combination of live and synthetic¹ training to prepare its forces to conduct military operations.
 - Live Training: Navy personnel and units conduct live training using actual platforms (ship, submarine, aircraft) **at sea or on a live training range.**
 - Synthetic Training: Navy personnel and units conduct synthetic training **in a virtual or simulated environment.** This training often involves the use of simulators, computer software that is embedded in a weapon system, or hardware and networks which can be used to conduct training while ships are pierside or underway.

¹ The Navy uses the term “synthetic” rather than “simulated”.

Background (cont'd)

-
- The Navy has a phased plan (called the Fleet Response Training Plan) that identifies the types of training needed to prepare its forces to deploy for military requirements. Most live and synthetic training occurs within the basic and integrated phases, but some training occurs in all phases.
 - Basic Phase: By the end of this phase, units are expected to exhibit unit level proficiency (e.g., effectively employ weapons and equipment). Type Commanders for each of the Navy's **platform communities** (surface, submarine, and aviation) schedule, plan, and execute unit-level synthetic training events.
 - Integrated/Advanced Phase: During this phase, unit warfare skills are combined so units form a cohesive strike group. The Navy's two **fleet commands** – US Fleet Forces Command and the US Pacific Fleet – train and equip forces during the integrated/advanced phase.

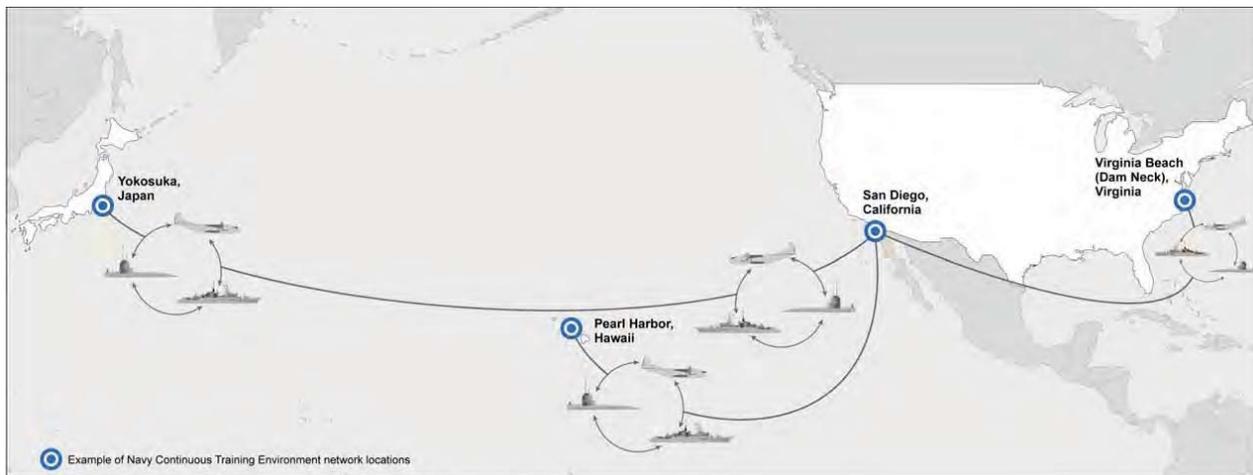
Background (cont'd)

Notional Fleet Response Training Plan Timeline



Background (cont'd)

- The Navy has developed a network called the Navy Continuous Training Environment to distribute synthetic training to its ships, submarine simulators, and aircraft simulators.
- While connected to the network, units that are separated by hundreds of miles or more can train as though they were operating in close proximity to one another.



Source: GAO analysis of Navy data.

Background (cont'd)

- H.R. Rep. No. 112-78 (2011), which accompanied a bill for the National Defense Authorization Act for Fiscal Year 2012, directed GAO to review the status of the military services' training programs and report the results to the House and Senate Armed Services committees.
- This review covers the Navy. We are reporting separately on the Air Force, Army, and Marine Corps.

Objectives

- 1) What principles does the Navy consider in determining whether to use live or synthetic training to meet its training requirements?
- 2) How has the Navy's mix of live and synthetic training changed over time?
- 3) How does the Navy prioritize its synthetic training investments?

Obj 1: Determining the Training Mix

- To determine whether to use live or synthetic training to meet its training requirements, the Navy uses the *Overarching Fleet Training Simulator Strategy*, which includes ***guiding principles***.
- These ***guiding principles*** are intended to provide flexibility in determining the appropriate solution for a specific training requirement or gap, while maintaining readiness levels and capitalizing on technical advances in modeling and simulation.

Obj 1: Determining the Training Mix (cont'd)

Guiding Principles (1 of 2)

- 1) Effective training requires an efficient balance of live and synthetic approaches.
 - 2) Simulator decisions are complex and require thoughtful and thorough analysis.
 - 3) Train in port and validate at sea, or train on the ground and validate in the air, or train at home base and validate in the field.
 - 4) Training simulators should be used to replace live training to the maximum extent possible where training effectiveness and operational readiness are not compromised.
 - 5) Some live training events cannot or should not be replaced by a simulator.
 - 6) If a skill or talent **can be** developed or refined, or if a proficiency **can be** effectively and efficiently maintained in a simulator, then these skills/talents/proficiencies **should be** developed/refined/maintained in a simulator.
-

Obj 1: Determining the Training Mix (cont'd)

Guiding Principles (2 of 2)

- 7) If a qualification or certification can realistically and economically be accomplished in a simulator, do it in a simulator.
 - 8) Simulator training objectives must be directly linked with specific Navy Mission Essential Tasks or individual personnel qualification standard requirements.
 - 9) Simulators that are intended to interface with other simulators during Fleet Synthetic Training² events must be compatible with the Navy Continuous Training Environment network.
 - 10) Simulators that could conceivably be used for multi-platform or cross-platform mission area training should be designed with integration as a primary goal.
 - 11) Simulators should provide the appropriate level of fidelity required to effectively and economically train to the specified task(s).
 - 12) Simulator procurement needs to stay aligned with Fleet-wide technical innovation to deliver timely, cost effective solutions.
-

² Fleet Synthetic Training is an event for multiple platforms of various types (air, surface, submarine) or individual units with training audiences connected at different locations through the network, which could be local or worldwide.

Obj 1: Determining the Training Mix (cont'd) Examples of Applying Guiding Principles (1 of 2)

- The Navy's **guiding principles** provide decision makers with a measure of flexibility that allows them to customize simulator decisions based on the individual circumstances surrounding each training requirement. The following are examples of how the Navy applies its guiding principles:
 - Guiding principle 6 states that if a skill or talent can be developed in a simulator, then it should be developed in a simulator. Based on that principle, Navy decision makers have chosen to use synthetic training in areas where regular live training is not feasible due to operational, cost, or safety concerns, such as training for ballistic missile defense.
 - Guiding principle 5 states that some live training events cannot or should not be replaced by a simulator. In 2008, the Navy found that lowering the number of live flying hours below 10 per month resulted in increased risk of accidents while flying. Therefore, Navy decision makers choose live training when the use of synthetic training would cause pilot live flying hours to fall below 10 hours per month.
-

Obj 1: Determining the Training Mix (cont'd) Examples of Applying Guiding Principles (2 of 2)

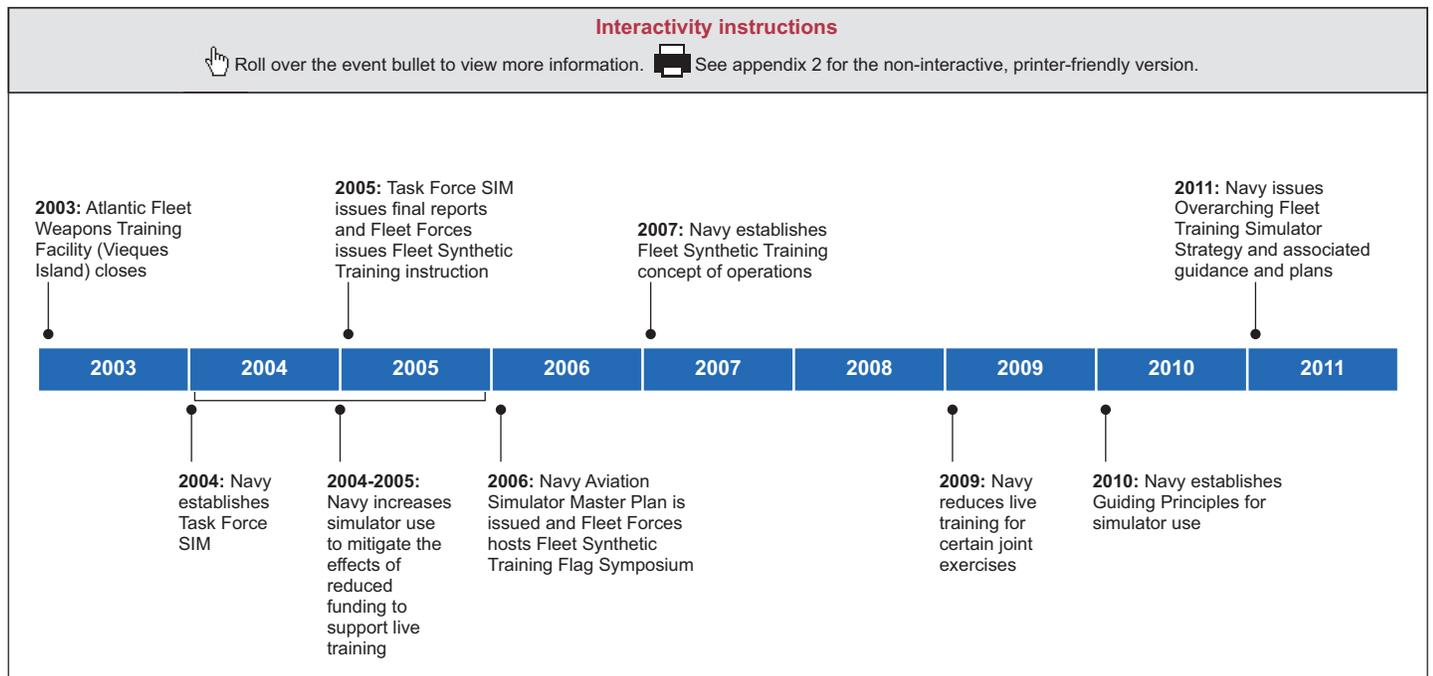
- Guiding principle 1 states that effective training requires an efficient balance of live and synthetic approaches. Based on the principle of efficient balance, the incremental costs associated with a live training event (e.g., fuel, ammunition) must be compared to the incremental costs associated with conducting the event synthetically (e.g., simulators, technical support). Although synthetic training is generally less expensive than live training, decision makers may opt to conduct live training in some cases because the incremental cost of conducting that live training is very low. For example, because a ship's crew typically conducts multiple live training events while underway, moving a single live event to synthetic training would not reduce underway time or fuel costs and it could add to simulator costs, thus making it more expensive to conduct the event synthetically.

Obj 2: Changes in the Training Mix

- The Navy has increased its emphasis on and use of synthetic training over the last decade, as shown on the following slide.
- Currently, the use of synthetic training varies within and among the platform communities because of differences in their training needs.

Obj 2: Changes in the Training Mix (cont'd)

Timeline of Key Milestones



Source: GAO analysis of Navy data.

Obj 2: Changes in the Training Mix (cont'd)

-
- The Navy's **platform communities** (i.e., surface, submarine, and aviation) use different mixes of live and synthetic training.
 - **Submarine forces:** Submarines use shore-based simulators for all of their pre-deployment training. Some submarines have two rotating crews,³ which led the Navy to procure simulators to synthetically train the at-home crew because live training was not possible. These simulators were then used to train the entire submarine community. This level of synthetic training is possible because the hardware and software in the simulators is the same as that in the actual submarines.
 - **Surface forces:** Surface ships have the capability to conduct just over half of their training synthetically, but the mix of actual training varies by ship type and mission area. For example, some of the oldest ships do not have the type of computer infrastructure needed to support extensive synthetic training and require special technical assistance during Fleet Synthetic Training events. Conversely, simulators for one of the newest ships, the Littoral Combat Ship, are intended to provide crews with full certification prior to deployment, much like submarine crews.

³ To maximize the presence of these submarines, one crew is always at sea, while the other is at home.

Obj 2: Changes in the Training Mix (cont'd)

- **Aviation forces:** Naval aviation currently relies more heavily on live training due to concerns about simulation realism and safety. Fleet Forces Command and Naval aviation command officials noted that Navy makes significant use of simulation for new pilot training and pilot practice, once personnel are assigned to operational units. They also noted, though, that pilots currently do not complete a significant portion of their graded⁴ training events in a synthetic environment. The use of synthetic training in the aviation community varies significantly depending on airframe and mission area. For example:
 - At present, synthetic training accounts for:
 - 18 percent of all F/A-18E/F (fighter) training.
 - Over 50 percent of all P-3 (surveillance aircraft) electronic warfare training.
 - Although the aviation community expects synthetic training to increase in the future, it expects live training to remain a majority of total training for key airframes through 2020.

⁴ Graded training events are those that are reported through the Navy's readiness reporting system.

Obj 2: Changes in the Training Mix (cont'd)

- According to Naval Reserve Command officials, there are no significant differences between the anticipated tasks that active and reserve component forces conduct when using simulators. According to these officials:
 - Reservists have access to simulators either in classroom training environments or when they are training with their active component counterparts.
 - The preferred and most common training for a reservist is side-by-side with active component personnel.

Obj 3: Prioritizing Synthetic Training Investments

- The Navy's *Overarching Fleet Training Simulator Strategy* also provides ***investment priorities*** for synthetic training.
- The Strategy states that it is imperative that all training simulator and synthetic training system investments be made in a cost-conscious manner with careful consideration for how those investments will contribute to platform or integrated readiness. In particular, it states that the Fleet must invest in areas that will close the most critical training capability gaps and improve warfighting readiness while providing the highest return on those investments.

Obj 3: Prioritizing Synthetic Training Investments (cont'd)

Investment Priorities (1 of 2)

- 1) Training simulators and synthetic training systems that have the greatest potential to improve mission performance.
 - 2) Investments focus on operator/team training more than staff level training (i.e. training that improves a specific skill as opposed to training in decision-making).
 - 3) Investments that enable cross-platform and multi-platform synthetic training that improve collective warfare area proficiency and readiness.
 - 4) Navy Continuous Training Environment network reliability and sustainability upgrades.
 - 5) Aviation, Littoral Combat Ship, and future platform simulator procurement takes precedence over legacy platform simulator investments.
 - 6) Integration of simulators for current platforms.
 - 7) Investments that procure new or upgraded simulators with greater fidelity.
-

Obj 3: Prioritizing Synthetic Training Investments (cont'd)

Investment Priorities (2 of 2)

- 8) Fleet Training Integration Panel approved warfare area training priorities.
- 9) Training simulators and synthetic training systems that fill gaps in existing live training.
- 10) Investments that provide common data (compiled from historical, worldwide environmental data) for use during cross-platform integrated training, which realistically replicates conditions that affect sensor/communications/weapon system performance.
- 11) Investments that provide a common synthetic training architecture using common security protocols and databases that integrate and can be easily updated as simulators are upgraded.
- 12) Training simulators and synthetic training systems that have the greatest potential to generate savings over live training.

Obj 3: Prioritizing Synthetic Training Investments (cont'd)

- The Navy applies these investment priorities to guide decisions on simulator procurement and upgrades. These decisions are made at both the platform (i.e., surface, submarine, and aviation) and fleet levels (i.e., Fleet Forces Command and Pacific Fleet).
 - At the platform level:
 - Naval aviation has a master plan investment strategy for simulator upgrades to key airframes.
 - The surface community is working on a master plan for synthetic training, which is expected to be complete by the end of the year.
 - The submarine community's training is fully synthetic; its priority is ensuring that upgrades to the actual submarines are also made in the corresponding simulators.
 - The surface and submarine communities also use stakeholder committees to help make simulator procurement and upgrade decisions.
 - At the fleet level, a fleet training integration panel prioritizes investments across the platforms and the fleets.
-

Obj 3: Prioritizing Synthetic Training Investments (cont'd)

- Although the aviation community has, to date, made limited use of synthetic training for graded events, it has seen opportunities for potential savings and has developed an investment plan to prioritize simulator investments, with the intent of reducing live training costs and achieving better overall training through development and use of high-fidelity simulation.
 - The Navy Aviation Simulator Master Plan lays out anticipated simulator upgrades for key existing airframes that are expected to remain in service through 2030. The aviation community identified which simulator upgrades could reduce the most flight-hours and provide the best return on investment. They concluded that an investment of roughly \$500 million over 7 years starting in fiscal year 2012 could lead to a return of \$119 million per year beginning in fiscal year 2020.
 - The Navy plans to apply a similar analysis to all new-production systems, including the P-8A, E-2D, and Navy F-35C.
-

Obj 3: Prioritizing Synthetic Training Investments (cont'd)

- By airframe, Navy's expectations are that the use of synthetic training, as a percentage of unit training, will be as follows:

Synthetic training as a percentage of total training

Aircraft Platforms	Current state	In 2020
F/A-18E/F	18	32
EA-18G	20	34
MH-60R	39	48
MH-60S	41	49

Obj 3: Prioritizing Synthetic Training Investments (cont'd)

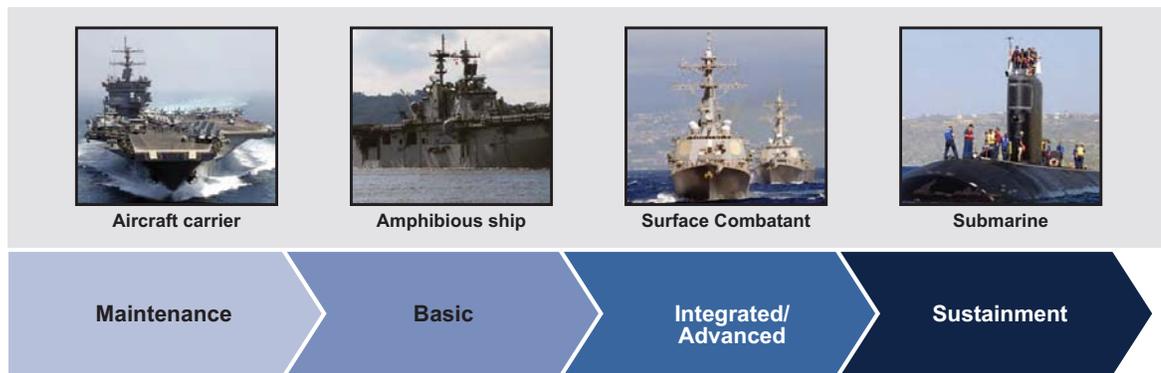
- The surface and submarine communities use platform committees to involve relevant stakeholders in investment decisions.
 - The Surface Warfare Training Committee is responsible for completing and implementing the surface training master plan and assessing training systems and devices for inclusion into the plan. The committee also produces analyses and cost estimates to help guide simulator decisions.
 - The submarine community manages its simulator upgrades to ensure that they align with upgrades to the actual submarines and weapon systems. They also use the Undersea Warfare Training Committee to prioritize training requirements. A member of the committee told us that its analyses are focused on mission essentiality, cost, and delivery mechanisms.

Obj 3: Prioritizing Synthetic Training Investments (cont'd)

- At the fleet level, the Fleet Training Integration Panel, co-chaired by the Atlantic and Pacific fleets, provides a forum where the priorities of the platform communities compete against each other.
 - The panel receives inputs from many organizations, including the platform communities, resource sponsors, and contracting offices, among others, and is intended to ensure an integrated training effort as well as establish accountability for fleet training. It also identifies corrective action plans that require additional resources.
 - The panel has predominantly focused on platform area synthetic training in accordance with the Fleet Strategy, and less on multi-platform integration.
 - According to the Strategy's guiding principles, simulators that could be used for multi-platform or cross-platform mission area training should be designed with integration as a primary goal. The Fleet commands have thus drafted "roadmaps" to identify cross-community synthetic training integration capabilities needed to enable warfare area training.
-

Appendix 1: Notional Fleet Response Training Plan Timeline

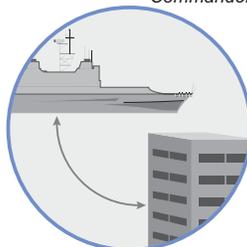
Notional Fleet Response Training Plan Timeline



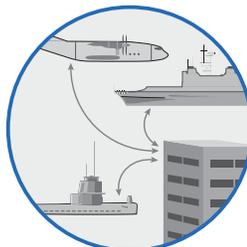
- *Fundamentals*
- *Unit level training focus*
- *Managed by Type Commanders*
- *Increasing complexity*
- *Group level training focus*
- *Managed by Fleets*



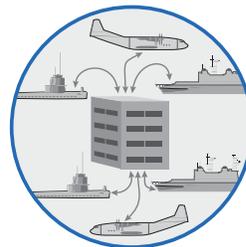
Sailor at schoolhouse training while platform is undergoing maintenance



Unit training may be live, distributed or in a standalone simulator



Integrated Force may be distributed or live



Advanced Distributed force training (joint and coalition integration)



Sustaining proficiency or deployment

Appendix 1: Notional Fleet Response Training Plan Timeline



Aircraft carrier



Source: GAO analysis of Navy data.

Appendix 1: Notional Fleet Response Training Plan Timeline



Amphibious ship



Source: GAO analysis of Navy data.

Appendix 1: Notional Fleet Response Training Plan Timeline



Surface combatant

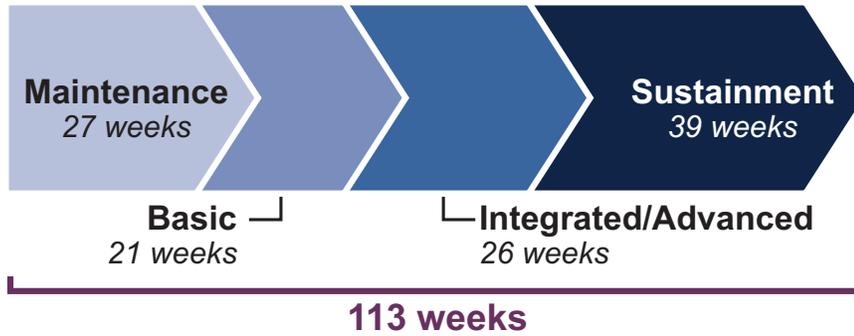


*The Integrated/Advanced training phase includes an average of 14 weeks for Carrier Strike Group escorts and 12 weeks for independent deployers

Appendix 1: Notional Fleet Response Training Plan Timeline



Submarine



Source: GAO analysis of Navy data.

Appendix 2: Timeline of Key Milestones

Year	Event
2003	<p>Atlantic Fleet Weapons Training Facility (Vieques Island) closes</p> <ul style="list-style-type: none"> The closure of the Vieques live training range left the Navy with a gap in its training capabilities. This closure was announced in 2001.
2004	<p>Navy establishes Task Force SIM</p> <ul style="list-style-type: none"> The Chief of Naval Operations established Task Force SIM (simulation) to provide guidance and a framework for the use of modeling and simulation in the Navy. The task force focused on strike group training and multi-platform, mission-linked tactical flight training, among other things.
2004-2005	<p>Navy increases simulator use to mitigate the effects of reduced funding to support live training</p> <ul style="list-style-type: none"> Navy begins to increase simulator use to mitigate reduction in flying hours and steaming days and loss of availability of the Vieques range.
2005	<p>Task Force SIM issues final reports and Fleet Forces issues Fleet Synthetic Training Instruction</p> <ul style="list-style-type: none"> In April and May 2005, Task Force SIM reported on its efforts to promote fleet readiness and joint interoperability by providing a strategic framework and guidance for Navy-wide use of modeling and simulation to support training, acquisition, experimentation, and analysis conducted in synthetic and live environments. In its report, the task force identified initial savings strategies. In November 2005, U.S. Fleet Forces issued the Fleet Synthetic Training Instruction to provide specific responsibilities and procedures for surface ships, submarines, and air squadron personnel regarding Fleet Synthetic Training events.
2006	<p>Navy Aviation Simulator Master Plan is issued and Fleet Forces hosts Fleet Synthetic Training Flag Symposium</p> <ul style="list-style-type: none"> In April 2006, the Navy Aviation Simulator Master Plan was issued as a strategy to upgrade simulator-based training. In May 2006, Fleet Forces hosted the Fleet Synthetic Training Flag Symposium to articulate a requirement for synthetic training and chart the course for the Navy's Synthetic Training program.
2007	<p>Navy establishes Fleet Synthetic Training concept of operations</p> <ul style="list-style-type: none"> In April 2007, the Navy issued the Fleet Synthetic Training concept of operations for the Navy Continuous Training Environment. In this concept, the Navy noted that, due to cost, environmental, and political concerns, live range availability was more limited than it had been in the past. The Navy believed that fleet synthetic training could mitigate the impacts of this by substituting, where appropriate, synthetic training for some live training requirements.
2009	<p>Navy reduces live training for certain joint exercises</p> <ul style="list-style-type: none"> The Navy reduced live underway training for certain joint task force exercises from 3 weeks to 2 weeks per event.
2010	<p>Navy establishes Guiding Principles for simulator use</p> <ul style="list-style-type: none"> The Chief of Naval Operations approved the guiding principles for simulator use, which established fleet-wide policy.
2011	<p>Navy issues Overarching Fleet Training Simulator Strategy and associated guidance and plans</p> <ul style="list-style-type: none"> In January 2011, the Navy Fleet commanders issued the Overarching Fleet Training Simulator Strategy, which included the guiding principles established in 2010 as well as investment priorities. Following this, the Navy updated the Fleet Synthetic Training Program Instruction and issued the Fleet Training Continuum Instruction. The Commander, Naval Air Forces also updated the 2006 Aviation Simulator Master Plan with guidance for specific synthetic training investments.

Enclosure II: Comments from the Department of Defense



PERSONNEL AND
READINESS

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WASHINGTON, D.C. 20301-4000

Ms. Sharon L. Pickup
Director, Defense Capabilities and Management
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

JUN 19 2012

Dear Ms. Pickup,

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-12-725, "NAVY TRAINING: Observations on the Navy's Use of Live and Simulated Training, dated June 1, 2012 (GAO Code 351646)."

Thank you for opportunity to comment on your Draft Report. The Department agrees with the report and observations. The Navy has a comprehensive program providing the affordable mix of live and synthetic training, as appropriate to each platform community. The Navy program has been analyzed and established in accordance with Navy wide criteria and priorities documented in broad plans and guidelines. Their efforts are commendable.

Sincerely,

A handwritten signature in black ink, appearing to read "Laura J. Juror".

Laura J. Juror
Deputy Assistant Secretary of Defense
Readiness

Enclosure III: GAO Contact and Staff Acknowledgments

GAO Contact

Sharon Pickup, (202) 512- 9619 or pickups@gao.gov.

Staff Acknowledgments

In addition to the contact named above, key contributors to this report included Michael Ferren, Assistant Director; Clarine Allen; Grace Coleman; James Lackey; Amie Steele; Maria Storts; and Nicole Willems.

(351646)

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