

## INFORMATION PAPER

DAMO-MS  
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SUBJECT: Interoperability of geospatial standards between the NGA products and Army simulations

1. Purpose. To provide information concerning interoperability between operations and modeling and simulation terrain data representations

2. Facts.

a. The National Geospatial Agency (NGA) is the lead systems architect for geospatial data and services for the US, and therefore feeds US battle command applications on the battlefield. The geospatial data NGA provides to the Army and it is what we use to fight with. NGA provides the same data to the other services, NATO groups, and other US executive agencies. The Army DCS G-2 has input to the NGA standards as a voting member of the NGA led Geospatial Intelligence Standards working Group. The NGA determined several years ago that it was moving to a new standard as part of its evolutionary path to providing the whole NSG with products. Operational mapping and ISR will conform to these battle command standards.

b. Many systems today have environmental representation requirements and those systems represent such requirements using a dictionary of terms or concepts. For the representation of environmental concepts there are several dictionaries that contain environmental terms and concepts. Each of these dictionaries usually provides a definition for the concepts it lists.

c. Several years ago, the modeling and simulation community embraced a common set of representation and interchange standards, called SEDRIS. Within that the M&S community established an Environmental Coding and Data Coding Specification (EDCS) data dictionary (a part of SEDRIS) to create geospatial data interoperability within federations of constructive simulations and/or virtual simulators and associated applications. SEDRIS has been highly successful in the M & S community. An FCS test case in 2006 showed that EDCS could actually represent a greater percentage of battlespace environment features than NGA's Feature and Attribute Data Dictionary (NFDD). Models and simulations require this high fidelity because within models, data features need to be modified to reflect agent or player actions, or to represent what-if adjustments.

d. Many of our current training simulations are based on the EDCS. FCS has established their FCS-internal battle-command applications to be seamless with their training applications, since one of the requirements of FCS is to have embedded training. Therefore, FCS architecture is based on EDCS. However, NGA currently provides data to the Army in DFDD format and will provide data in NFDD format in the near future. This will be provided to all services on the battlespace, including all the non-FCS brigades that currently do not use EDCS. We in the Army can't change this.

e. Because of the rapid emergence and evolution of the digital TOC on the battlefield, M&S is becoming a critical enabler of TOC training (e.g. BCTCs), and it is a near-term goal to provide M&S within TOCs to enable real-time course of action

development, planning, and mission rehearsal activities. If the future M&S tools will directly access the battlefield geospatial data, units will be able to rapidly create scenarios on their own tactical terrain without needing to first translate their tactical data into EDCS.

f. The recent initiative to reconcile standards between the NGA products and EDCS does not "do away" with either standard. It directs users to identify a future migration path so that future M&S and training tools can directly import NGA data when the M&S EDCS data has the same basic function as the specific NGA data element provides. EDCS will still retain a more robust, and richer, data set, enabling users to represent objects and conditions not represented in NFDD. However, current geospatial data and future NFDD, which is or will be readily available to the NSG, will ultimately be able to interface directly with our evolving models and simulations, allowing M&S to directly support the warfighter.

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