

## MEMORANDUM

From: PEO IWS 7.0

Subj: Common Data Models and OA/Fn Experimentation

Domain interoperability is hindered by the proliferation of mutually unintelligible “languages” spoken by various tactical and operational systems. For example, tracks of a potential contact of interest from a surface surveillance aircraft may be incomprehensible to a situation awareness display on a submarine, limiting collaboration during a maritime interdiction mission. To improve domain interoperability, stakeholders must agree on common meanings and representations for important “words.” A common data model (or data schema) describes a set of universally-defined words for sharing relevant information such as location, time, and combat ID. As communities of interest expand, they must accommodate new information types either by enlarging existing common data models or by developing new ones. OA/Fn Experiment 06-1 will provide insight into the architectural and business aspects of this evolutionary process.

In OA/Fn Experiment 06-1, a diverse array of legacy tactical and operational systems will be linked together using an experimental common data model that leverages both the Joint Consultation Command & Control Information Exchange Data Model (JC3IEDM), which is compliant with NATO STANAG 5523, and the Cursor on Target (CoT) data model developed by MITRE. This reuse approach aims to fuse the simplicity of CoT, which has a small base vocabulary and can be implemented easily, with the expressiveness of JC3IEDM. Both data models are “open” technologies. A major part of the experimental integration will be developing and installing all of the necessary interfaces that will translate the various legacy tactical system messages into and out of the common data model.

OA/Fn Experiment 06-1 will quantify the impact of a common data model on cross-domain interoperability from architectural and business process perspectives. Architecturally, developing and executing the experiment will help identify which specific common data model characteristics are most important for tactical users, and which present the largest implementation challenges. From a business perspective, the lessons learned while adapting the legacy systems for cross-domain interoperability will help in estimating the attendant real-world costs and savings of a similar but larger-scale implementation, and will produce clear guidelines for an improved technology acquisition process in which future interoperability is a paramount consideration. Finally, conducting the experiment in a high-fidelity simulated operational environment will allow for the translation between gains in measures of interoperability performance and gains in warfighting effectiveness. This type of measurement will help programs weigh the potential costs and operational benefits associated with increased interoperability between domains, and ultimately, between the operational, tactical, and intelligence communities.

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