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PANEL PERSPECTIVES ON SYSTEM ARCHITECTURES

Alexander H. Levis

George Mason University, C3I Center
4400 University Drive, Mail Stop 4D2
Fairfax, VA 22030-4444, USA

SUMMARY

In a changing world, the U.S. Department of Defense has to cope with increased uncertainty about requirements, rapid changes in technology, changes in organizational structures, and a widening spectrum of missions and operations. One way to deal with these uncertainties is to be able to rapidly mix and match organizations with composite capabilities to suit a particular situation. To do this requires an unprecedented level of interoperability in information systems. To achieve this flexibility, DoD has looked to information architectures that can provide current or future descriptions of a “domain” composed of components and their interconnections, actions or activities those components perform, and rules or constraints for those activities. These architectures, while they will change over time, will change at a much slower rate than the actual systems they represent. Because of their stability, they can act as important guides to acquisition decisions as well as defining operational concepts. One domain of *information systems* that directly supports military operations is Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR). The goal is to describe architectures using multiple views that answer operator’s questions regarding the operational capability that systems built conformant to the architecture can provide. Another goal is to support the acquisition community in its efforts to acquire interoperable system. A seamless process from knowledge elicitation to architecture design and evaluation is desired.

The C4ISR Architecture Framework document issued by the U.S. Department of Defense specifies three views, the operational, systems, and technical views, of an information architecture and defines a set of products that describe each view. These architecture views are to serve as the basis for C4ISR system development and acquisition. The Framework does not provide a process for architecture design, but provides guidance to the architect regarding the architecture design process. Furthermore, the emphasis on architectures has raised some questions regarding the roles of the architect and the systems engineer.

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