DoD Architecture Framework Implementation

The course has undergone a major revision to prepare participants in developing and evaluating architectures that are conformant to DODAF 2.02.

The design of architectures has become a fundamental component of the architecture-based systems engineering approach required by DoD and other government agencies. The architectures should be described in accordance with the current version (2.02) of the DoD Architecture Framework. The course consists of lectures, interactive sessions, and work sessions in which participants, organized in small teams, work through an example problem and produce an architecture from which selected models and viewpoints described in DODAF 2.02 compliant form are generated. This course focuses on architecture design using a systems engineering approach based on object orientation and includes service orientation. The Unified Modeling Language (UML) is used as the architecture description language. In addition to the development of a DoDAF compliant architecture description that is Fit-for-Purpose, the derivation of executable models from the architecture data is presented and their role in architecture evaluation is illustrated. The approach will then be applied to the evaluation of system-of-systems architecture and resilient architectures for C2.

OBJECTIVES
(a) To address the process, tools and techniques for designing and describing architectures consistent with the guidelines of the current DoD Architecture Framework (2.02). (b) To present Service Oriented Architectures (SOA) and highlight their role in addressing net-centricity. (c) To provide a hands-on experience to the attendees in developing key models and views of a service based architecture using object orientation. The course is focused on developing an understanding of the architecture models and viewpoints and their linkages, explaining how the various models describe the architecture viewpoints, and addressing the practical aspects of generating the architecture data. Finally, the derivation of executable models from the DoDAF compliant designs is described as a foundation for architecture evaluation. Measures of Performance and Measures of Effectiveness are discussed and their computation from the executable model analyzed.

WHO SHOULD ATTEND
The course is designed for professionals who are or will be involved in developing architectures consistent with the DoD Architecture Framework for or in support of DOD organizations. It is also for professionals responsible for such architectures because, through the interactive and work sessions, it helps them gain an appreciation of the time and resources needed to bring an architecture effort to a successful conclusion. AFCEA 503 is a "hands-on" course; all participants are expected to join one of the teams.
COURSE TOPICS: DoD Architecture Framework Implementation

PART I: THE DOD ARCHITECTURE FRAMEWORK

Architecture-based Systems Engineering
The Evolution of the DoDAF
The DoD Architecture Framework v. 2.02

PART II: THE BASICS

Capability and Project Viewpoints
Operational Concept and Use Cases
Rule Modeling
Dynamics Modeling

PART III: UML AND THE OBJECT ORIENTED ARCHITECTURE DESIGN PROCESS

The Unified Modeling Language – Part 1
The Unified Modeling Language – Part 2
Architecture Design Approaches and the Object Oriented Architecture Design Process

PART IV: ARCHITECTURE DESIGN AND SERVICE ORIENTATION

OO Architecture Design: Operational and Data Viewpoints
Loosely Coupled Systems and Service Oriented Architectures
OO Architecture Design: Services Viewpoint
OO Architecture Design: Systems Viewpoint

PART V: ARCHITECTURE MANAGEMENT AND EVALUATION

Discrete Event Systems and Executable Architectures
Business Process Management
On Architecture Management
Architecture Evaluation Concepts
Arch. Evaluation: Resilient Architectures for C2
Architecture Evaluation: Systems of Systems
Closure

Lecturer
Dr. Alexander H. Levis
Course Coordinator and Lecturer
Dr. Alexander H. Levis is University Professor of Electrical, Computer and Systems Engineering at George Mason University where he heads the System Architectures Laboratory. He was educated at MIT where he received the BS, MS, ME, and Sc.D. degrees. He has thirty years experience in conducting research on Command and Control with focus during the last fifteen years on architectures for C2. He has co-edited the three volume set on the "Science of Command and Control" published by AFCEA and has published more than 250 papers and book chapters. From 2001 to 2004 he served as Chief Scientist of the US Air Force.