The course is focused on preparing participants in developing and evaluating architectures that are conformant to DODAF 2.02.

The design of architectures is 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 is illustrated through the design and 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 cloud architectures. (c) To provide a hands-on experience to the attendees in developing key models and views of an 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 or other organizations. It is also for professionals responsible for such architectures because, through the interactive and work sessions and the architecture management lectures, 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 2.02 Implementation

PART I: THE DOD ARCHITECTURE FRAMEWORK
Structure and Behavior: An Introduction to Architecture
Review of the DoD Architecture Framework: version 2.0

PART II: FRAMING THE PROBLEM
Object Oriented Architecture Design: Capability Viewpoint
Object Oriented Architecture Design: Operational Concept and Use Cases

PART III: UML AND THE OBJECT ORIENTED ARCHITECTURE DESIGN PROCESS
Review of the Unified Modeling Language (UML)
An Object Oriented Architecture Design Process

PART IV: ARCHITECTURE DESIGN AND SERVICE ORIENTATION
Object Oriented Architecture Design: Operational and Data Viewpoints
Loosely Coupled Systems and Service Oriented Architectures
Object Oriented Architecture Design: Services Viewpoints
Object Oriented Architecture Design: Systems Viewpoints

PART V: ARCHITECTURE EVALUATION AND MANAGEMENT
Discrete Event Systems and Executable Architectures
Business Process Modeling and Notation
Architecture Evaluation Concepts
Architecture Evaluation: Resilient Architectures for C2
Architecture Evaluation: Systems of Systems
On Architecture Management
Closure

Course Coordinator and Lecturer: Dr. Alexander H. Levis

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 of 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 290 papers and book chapters. From 2001 to 2004 he served as Chief Scientist of the US Air Force.