

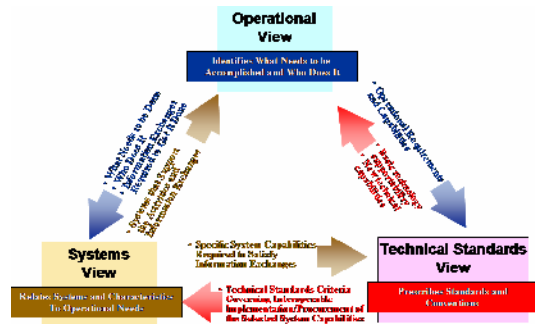


# Architecting with the DOD Architecture Framework (DODAF)

## A Two-Day Course

### *Designing complexity demands many views.*

Today’s systems do not stand alone; each system fits within an increasingly complex system-of-systems, a network of interconnection that virtually guarantees surprise behavior. Systems science recognizes this type of interconnectivity as one essence of complexity. It requires new tools, new methods, and new paradigms for effective system design. The DOD Architecture Framework (DODAF) provides an underlying structure to work with complexity.



This course provide knowledge and exercises at a practical level in the use of the DODAF. You will learn about architecting processes, methods and thought patterns. You will practice architecting by creating DODAF representations of a familiar, complex system-of-systems. By the end of this course, you will be able to use DODAF effectively in your work.

#### ***You should attend this tutorial if you are:***

- A key member of a system or system-of-systems development team
- Concerned about how your system product fits into the larger context
- Looking for practical methods to use

#### ***The course is aimed at***

- Systems engineers,
- Technical team leaders,
- Program or project managers, and
- Others who participate in defining and developing complex systems.

The challenges today are changing, because technology advances are leading to more complex and more interconnected systems. Operational users demand more capability than ever before. They demand connectivity so that systems can provide and respond to varied information from other systems. At the same time, they also demand higher operational reliability. They have seen such capability, connectivity and reliability in systems around them.

Yet these same demands create a system-of-systems complexity that has never before existed. With more systems interconnected, and with each system offering greater artificial intelligence over a greater number of functions, the resulting network of systems inherently has emergent behavior that often surprises the designers. Emergent behavior is a natural result of complexity, because it is functionality on a system-of-systems level that may or may not have been designed. When appropriate, such emergent behavior is a powerful force multiplier. When inappropriate, however, emergent behavior often appears as “bugs” or “faults” in the higher-order system that can be nearly impossible to find and fix.

### ***Topics Covered***

**Introduction** – System architecting concepts. How architecting fits with systems engineering. Terms and definitions. Roles of a technical leader in relation to architecture development.

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**Architecture** – Understanding of the components of an architecture. Origin of the terms within systems development. Defining architectures in operational, technical, and standards terms.

**Architectural Frameworks** – Methods to convey architectures. DOD Architecture Framework (DODAF). Zachman Framework. The Open Group Architecture Framework (TOGAF). Federal Enterprise Architecture Framework (FEAF). Hierarchies of architectures. Why frameworks exist, and what they hope to provide.

**Design Patterns** – What are patterns? How do we recognize them? Pattern definition language. Hierarchies of patterns. Extending patterns to new contexts. Using patterns in architecting.

**DODAF Overview** – Diagram types (products) within DODAF. Operational Views, System Views, Technical Standards Views.

**DODAF Operational Definition Processes** – Describing an operational environment, and then modifying it to incorporate new capabilities. Sequences of creation. How to convert concepts into DODAF products. Practical exercises on each DODAF product, with review and critique.

**DODAF Technical Definition Processes** – Converting the operational views into technical architecture. Matching the new architecture with legacy systems. Sequences of creation. Linkages between the technical views and the operational views. Practical exercises on each DODAF product, with review and critique.

**DODAF Migration Definition Processes** – How to depict the migration of current systems into future systems while maintaining operability at each step. Practical exercises on migration planning.

**Summary** - Review of the important points of the workshop. Interactive discussion of participant experiences that add to the material.

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### ***The Presenter:***

**Mr. Eric Honour** has been in international leadership of the engineering of systems for nearly a decade, part of a 37-year career of complex systems development and operation. His energetic and informative presentation style actively involves class participants. He is a former President of INCOSE (International Council on Systems Engineering) and served as Director of the Systems Engineering Center of Excellence (SECOE). He was selected in 2000 for Who's Who in Science and Technology and in 2004 as an INCOSE Founder. He is on the editorial board for *Systems Engineering*. He has been a systems engineer, engineering manager, and program manager at Harris Information Systems, E-Systems Melpar, and Singer Link, preceded by nine years as a US Naval Officer flying P-3 aircraft. He has led or contributed to the development of 17 major systems, including the Air Combat Maneuvering Instrumentation systems, the Battle Group Passive Horizon Extension System, the National Crime Information Center 2000, and the DDC1200 Digital Zone Control system for heating and air conditioning. Mr. Honour now heads Honourcode, Inc., a consulting firm offering effective methods in the development of system products. Mr. Honour has a BSSE (Systems Engineering) from the US Naval Academy and MSEE from the Naval Postgraduate School.

