

# Fundamentals of Requirements

## A Workshop in Creating and Using Requirements

*One of the most significant impacts a systems engineer can have on a project is to ensure the successful identification, analysis and allocation of requirements. This course provides both lecture and practical work on the creation and use of requirements in a system development.*

### Summary

This one-day workshop presents the fundamentals of requirements: where they come from, how to develop them, how to write them, different forms of requirements, requirements analysis, and requirements allocation. It focuses on the practical and includes several class exercises during the day to practice the information taught.

*Participants in this workshop practice the processes on a realistic system development.*

### Instructors

**Eric Honour**, international consultant and lecturer, has a 38-year career of complex systems development & operation. Founder and former President of INCOSE. He has led the development of 18 major systems, including the Air Combat Maneuvering Instrumentation systems and the Battle Group Passive Horizon Extension System. BSSE (Systems Engineering), US Naval Academy, MSEE, Naval Postgraduate School, and PhD candidate, University of South Australia.



**Dr. Scott Workinger** has led projects in Manufacturing, Eng. & Construction, and Info. Tech. for 30 years. His projects have made contributions ranging from increasing optical fiber bandwidth to creating new CAD technology. He currently teaches courses on management and engineering and consults on strategic issues in management and technology. He holds a Ph.D. in Engineering from Stanford.



### What You Will Learn

- Four major types of requirements
- Defining the need in operational terms
- How to create and use requirements
- Requirements language and grammar
- Three ways to allocate requirements
- Format and contents of a specification
- Requirements management

### Course Outline

- 1. Requirements Overview** – What are requirements and how do they fit in to system development? Context of system development models. Role of requirements. Importance of requirements.
- 2. Defining the Need** – The basic steps in understanding a new system. How to define the need in operational terms. The Concept of Operations (ConOps) document as a basis for requirements. Application of UML diagrams (Use Case, Activity) for operational definition. Class exercise in operational definition.
- 3. Defining Requirements** – How to convert operational descriptions into technical requirements. Operational analysis as an engineering technique. The roles of functions and functional analysis. Requirements language and grammar. Specification writing methods and rules. New forms of requirements in agile and extreme development. Class exercise in writing requirements and in recognizing good/bad requirements
- 4. Requirements Analysis** – Graphical methods to ensure that systems requirements are complete, coherent, and cohesive. Summary of diagramming techniques. Introduction to UML and its use for requirements analysis. Strengths and weakness of each method. Class exercise in graphical requirements analysis.
- 5. Requirements Allocation** – Requirements as engineering tools during the system architecting and design phases. Allocation methods with examples – direct allocation, apportionment, derivation. Application of requirements management techniques to handle continuous change. Class exercise in requirements allocation.