Requirements Formulation
A Hands-on Course on Capturing, Analyzing, Deriving, and Managing Requirements

Summary

- Three-day course (customizable)
- Provides a systemic approach on how to capture, analyze, derive, and manage requirements
- Focuses on how stakeholder requirements, system requirements, and system element requirements are used to communicate, coordinate, track, verify, and validate system solutions
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- The key characteristics and types of requirements
- How to formulate excellent requirements
- Common pitfalls in formulating requirements
- How to recognize, review, and correct poor requirements
- How requirements, functions, and system architecture/design are interconnected
- How to use requirements to effectively verify and validate your systems
- The latest requirements lessons learned

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Course Outline & Topics

1. Requirements Concepts and Principles. Key Requirements Concepts. Types of Requirements. Requirements in the Context of the Systems Engineering Process. Characteristics of Good Requirements. Requirements Lessons Learned.

2. Stakeholder Requirements Formulation. Stakeholder Identification and Requirements Gathering Techniques. Context Diagrams, Concept Documents, Scenarios, and Use Cases. Life Cycle Considerations. Measures of Effectiveness. Analysis and Validation of the Stakeholder Requirements.

3. System Requirements Formulation. Translation and Derivation of Stakeholder Requirements into System Requirements. Formulating System Requirements from System Functions, Interfaces, and the System Environment. Life Cycle Considerations. The Role of Modeling and Simulation in Requirements Development. Measures of Performance. Analysis and Verification of the System Requirements.

4. System Element Requirements Formulation. Allocation and Derivation of System Requirements into System Element Requirements. Formulating System Element Requirements from System Requirements and the System Architecture/Design. Analysis of the System Element Requirements. Acceptance of System Element Requirements.

5. Requirements Management. Planning, Monitoring, and Control of Requirements. Requirement Inspections and Reviews. Specifications and other Requirements Documents. Requirements Baselines. Support for Ongoing Change and Evolution of the Requirements. Project Requirements. Requirements Measures. Supplier Requirements Management. Requirements Management Tools. Course Wrap-up.

> **Typical Course Duration - 3 Days**
> **Typical Schedule 8:30am-4:00pm**
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> **Earn up to 18 INCOSE PDUs!**
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> Please contact Sysnovation for availability, customization, and pricing.

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