IIBA® - International Requirements Definition and Change Request Management Training

Duration: **2 Day**

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Overview

Requirements engineering is practiced by many, mastered by surprisingly few. And yet, the payoff from achieving excellence in this field of project activity is large.

Requirements engineering may be considered to embrace:

- the recording (specification) of requirements, as requirements are first created
- the capture of requirements not already recorded, and the validation of requirements which exist, whether or not they have been recorded, or have been recorded adequately (requirements analysis)
- the re-specification of requirements which have been inadequately specified
- the maintenance of traceability between different expressions of the same requirement
- the maintenance of traceability between requirements of different objects in design
- the management of the above activities.

The course recognizes throughout, other dimensions of the problem domain, including measures of effectiveness (MOEs), goals, and related value relationships.

Prerequisites

There are no prerequisites for this course.

Who Should Attend

Being independent of specific problem domains and solution technologies, and being language independent, this course is relevant to a wide range of enterprises, and roles within those enterprises, worldwide.

Relevant application sectors include defence, aerospace, telecommunications, public infrastructure, entertainment and medicine. Relevant organization types include military, public sector, contractors, product-oriented firms, consultants, research and development enterprises.

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What You Will Learn

- It is expected that, on completion of the course, participants will:
- understand the principles of requirements engineering
- understand the role of requirements analysis (requirements capture and requirements validation) in achieving successful project outcomes
- understand the concept of requirements quality. Be able to measure the quality of a requirements specification, increasingly more accurately as skills in requirements analysis improve through on-the-job experience
- understand the basic types of requirements (functional, performance, external interface, environmental, resource, etc), and the significance of these distinctions. Be able to recognise requirements of each type, a prerequisite for effective specification writing
- be able to perform, at a basic level of skill at least, the techniques which collectively constitute an effective and efficient methodology for performing requirements analysis.
- have some basic capability to tailor the application of the techniques of requirements analysis to different scenarios
- be capable of extensive further on-the-job learning, within a sound conceptual framework, in the field of requirements analysis
- understand the role of specification writing in achieving successful project outcomes
- understand the principles of good specification structure, for specification of systems, software and services
- be familiar with the range of public domain standards for different types of requirements specifications.

Outline

1. Why Emphasise Requirements

- Issues and terminology
- Lessons from real projects

2. Requirements Within the System Life Cycle

- The Origin of Requirements
- Concept of the system boundary
- The modelling boundary
- The systems engineering process
- Development of system architecture and detail design
- Requirements traceability
- Summary of terms relating to requirements
- Baselines and their use
- The waterfall life cycle paradigm
- Incremental acquisition/development
- Evolutionary acquisition/development
- The spiral model
- Workshop - requirements engineering principles
- Common requirements pitfalls in the system life cycle

3. What are Requirements?

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- Definitions and views
- Relationship to design
- Relationship to baselines

4. Types of Requirements

- Why categorise requirements by type?
- Eight basic types
- Differences between requirements for hardware, software, services
- Non-requirements
- Workshop - categorising requirements by type
- Other categories - design drivers, critical, global, priority, importance, stability

5. The Quality of Requirements

- Correctness
- Completeness
- Consistency
- Clarity
- Non-ambiguity
- Traceability
- Testability
- Singularity
- Feasibility
- Freedom from product/process mix

6. Requirements Analysis Techniques

- Primary, Secondary, Tertiary stakeholders
- Initial assessment and planning
- Measuring requirements quality
- Methods of engaging in requirements dialogue
- Context analysis
- Workshop - context analysis
- Design requirements analysis
- States & Modes analysis
- Workshop - states and modes analysis
- Requirements parsing
- Workshop - parsing
- Functional analysis - needs analysis, operational analysis, use cases
- Workshop - functional analysis
- Rest of scenario analysis
- Optional Workshop - rest of scenario analysis
- Out of range analysis
- Optional Workshop - out-of-range
- ERA analysis
- Other constraints search
- Value analysis
- Verification requirements development
- Operational Concept Description
- Clean-up
- Special issues of the human interface
- Supplementary methods and notations

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- Common pitfalls in requirements analysis

7. Coping with the Real World

- What to do when the user "doesn't know"
- How to respond to "moving goalposts"
- Protecting yourself from the communication chasm

8. Tool Support to Requirements Analysis

- Tools supporting requirements analysis
- Tools supporting requirements management
- Examples of available tools
- Common pitfalls in using tools

9. Requirements Verification

- Requirements reviews
- Use of metrics

10. Management of Requirements Analysis

- Management issues
- Using and managing "TBDs"
- Designing a requirements codification scheme
- Managing resolution of requirements issues

11. Specification Writing

11.1 Transforming Requirements into Requirements Specifications

- What is a requirements specification?
- How requirements specifications relate to requirements
- How requirements specifications relate to configuration baselines
- Using a requirements database

11.2 Requirements Flowdown into Requirements Specifications

- The specification tree
- Special considerations for interface requirements

11.3 Requirements Types and Formats

- Basic types of requirements specification
- Using DIDs and templates
- IEEE specification standards
- US Military and other national and international specification standards

11.4 Structuring Your Specification

- Solicitation or agreement documents - what to put in system and software requirements specifications, statements of work /service level agreements and the like, conditions of contract
- Structuring a statement of work
- Structuring a system specification
- Structuring a software requirements specification

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- Structuring an interface requirements specification
- Introduction and Scope
- Dealing with variants
- Listing applicable and other referenced documents
- Definitions, acronyms and abbreviations
- Requirements Section
- Identification of Required External Interfaces
- Dealing with States and Modes
- Functional, functional and performance, functionally oriented, versus design -oriented requirements specifications
- Differences
- When to use each type
- Sequencing and indenting of specification of function and performance
- Specification of external interface requirements
- Specification of environmental, resource, physical and other qualities requirements
- Structuring the specification of any design direction
- Specification of Verification/Qualification/Test Requirements
- Notes
- Annexes, appendices and applicable documents

11.5 Specification Writing

- Review of requirements quality
- Requirement structural template
- Workshop – expressing strong requirements
- Requirements constructs
- Shall, should, will, and may
- Linking
- Cross-referencing
- Workshop – linking and cross-referencing
- Defining terms
- Workshop – defining terms
- Context dependence
- Reference to applicable documents
- Use of precedence
- Workshop – using precedence
- Using success criteria to express otherwise vague requirements
- Workshop – using success criteria
- Workshop – specification of key requirements for a system
- Paragraph headings
- Use of supporting data
- Mission profiles/use cases
- Baseline designs
- Benchmarks
- Linking the specification to the statement of work or conditions of contract
- Test specifications
- Workshop – evaluation of example specifications

12. Bibliography

- Additional reference material

13. Summary and Conclusion

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