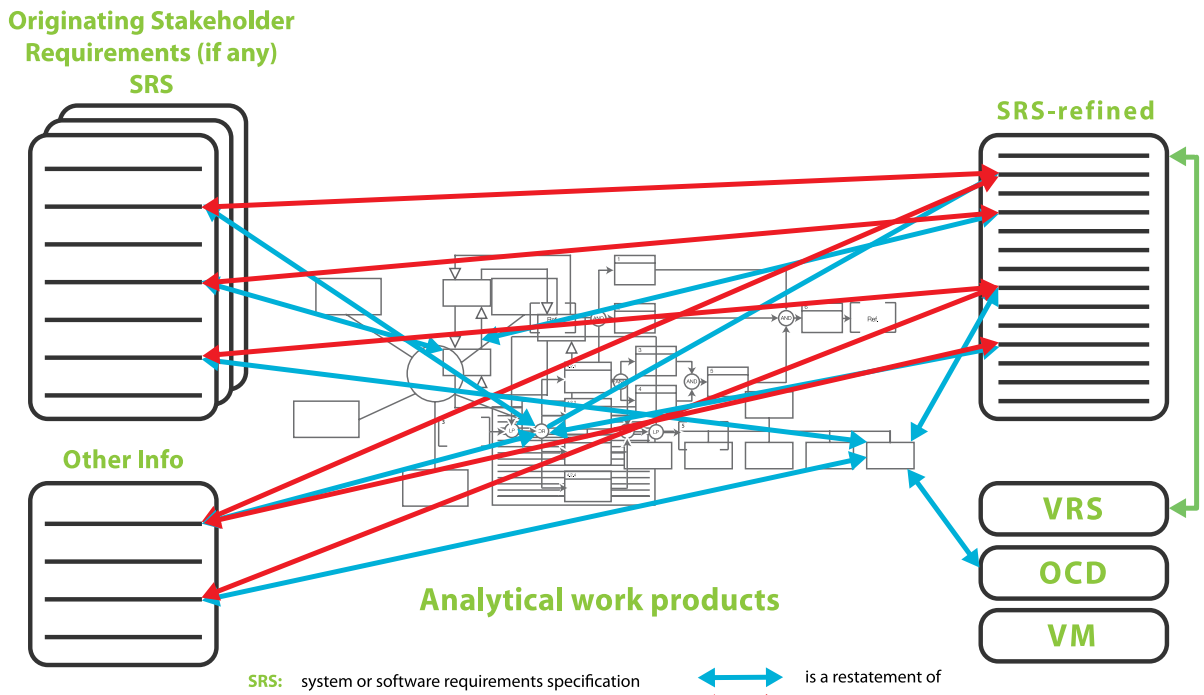
REQUIREMENTS ANALYSIS & SPECIFICATION WRITING

ACHIEVE A VERY HIGH ROI THROUGH BETTER REQUIREMENTS

5-DAY COURSE

The Requirements Analysis module provides highly effective tools for both the capture of requirements, and for validation of those requirements, in any scenario involving the receipt of requirements from one or more stakeholders who have a need. A workshop approach is used extensively in this module, to maximize learning and practical application. Effectiveness of the techniques, collectively comprising a complete methodology, is independent of the domain of application, and independent of the specifics of the need. These techniques have been used with great success.The Specification Writing module provides detailed instructions on the conversion of requirements into highly effective requirements specifications. Issues of structure (organization of information) and the use of (English) language throughout a requirements specification are examined in considerable detail. Public domain specification standards are overviewed and compared. High quality templates/guides, with examples, are provided for the specification of systems, software, interfaces and services, respectively.



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"We should have had this training years ago. It is directly applicable to the work we do, and the knowledge gained can be put to practical use almost straight away in many facets of our business."

- participant, Transurban, Australia

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COURSE OUTLINE

1. Why Emphasize 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 modeling boundary
- the systems engineering process
- development of system architecture and detail design, related to requirements
- requirements traceability
- summary of terms relating to requirements
- baselines and their use
- the waterfall life cycle paradigm
- incremental acquisition/ development
- evolutionary acquisition/ development
- ***workshop - principles of requirements engineering***
- common requirements pitfalls in the system life cycle

3. Types of Requirements
- definitions and views
- relationship to design
- relationship to baselines
- why categorize requirements by type?
- eight basic types
- differences between requirements for physical systems/hardware, software, services
- non-requirements
- ***workshop - types of requirements***
- other categories - architectural design drivers, critical, global, priority, importance, stability

4. The Quality of Requirements
- correctness
- completeness
- consistency
- clarity
- non-ambiguity
- traceability
- testability
- singularity
- feasibility
- balance
- freedom from product/ process mix

5. Requirements Analysis Methodology
- contexts within which requirements analysis is performed
- stakeholder identification
- initial assessment by document (if any) review, and planning
- measuring requirements quality
- context flow analysis
- context analysis
- ***workshop - context analysis***
- design requirements analysis
- ***interactive exercise - design requirements analysis***
- states & modes analysis
- ***workshop - states and modes analysis***
- requirements parsing analysis
- ***workshop - parsing analysis***
- functional analysis - needs analysis, operational analysis, use cases
- ***workshop - functional analysis in requirements analysis***
- rest of scenario analysis
- ***optional workshop - rest of scenario analysis***
- out-of-range analysis
- ***optional workshop - out-of-range analysis***
- Entity-Relationship-Attribute (ERA) analysis
- other constraints search
- stakeholder value analysis
- methods of engaging in requirements dialog
- verification requirements development
- operational concept description
- clean-up - keyword-based searching for residual requirements defects
- special issues of the human interface
- supplementary methods and notations
- common pitfalls in requirements analysis

6. 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

7. Tool Support to Requirements Analysis
- tools supporting requirements analysis
- tools supporting requirements management
- examples of available tools
- common pitfalls in using tools

8. Verification of Requirements Analysis Work Products
- requirements reviews
- keyword search techniques
- use of metrics

9. Management of Requirements Analysis
- management issues
- using and managing "TBDs"
- designing a requirements codification scheme
- managing resolution of requirements issues
- defining reviews and reports

10. Preparing for Transformation of Requirements into Requirements Specifications
- what is a requirements specification?
- how requirements specifications relate to requirements
- how requirements specifications relate to configuration baselines
- preparing for the transition from requirements to requirements specification
- using a requirements database to automate requirements specification production

11. Requirements Flowdown into System Element Requirements Specifications
- the specification tree
- special considerations for interface requirements

12. Requirements Specification Types
- types of requirements specification
- Institution of Electrical and Electronic Engineers (IEEE) specification standards
- United States (US) Military and other international specification standards
- score sheet for public domain specification standards

13. Structuring your Requirements Specification
- what to put in your system requirements specification, the statement of work (or equivalent) and the conditions of contract
- ***workshop - allocating requirements to solicitation documents***
- structuring a statement of work
- structuring a system requirements specification
- dealing with variants
- ***workshop - writing a scope section to deal with variants***
- states and modes
- ***workshop - structuring a specification to deal with states, modes and functions***
- functional versus design oriented specifications
  - differences
  - when to use each type
- function and performance
- ***workshop - classifying specified requirements as functional or design***
- ***workshop - writing a functionally-oriented requirements specification***
- ***workshop - writing a design-oriented requirements specification***
- other requirements types
- annexes, appendices and applicable documents

14. Requirements Specification Writing
- review of requirements quality
- requirement structural template
- ***workshop - writing requirements using the parsing template***
- requirements constructs
  - shall, should, will, and may
  - linking
  - cross-referencing
  - ***workshop - using precedence***
  - defining terms
  - ***workshop - defining terms***
  - context dependence
  - reference to applicable documents
- use of precedence
- ***workshop - linking and cross-referencing***
- using success criteria to express otherwise vague requirements
- ***workshop - using success criteria***
- ***workshop - a requirement specification in a sentence***
- 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
- verification specifications
- ***optional workshop - evaluation of example specifications***

15. In Closing
- additional reference material

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