

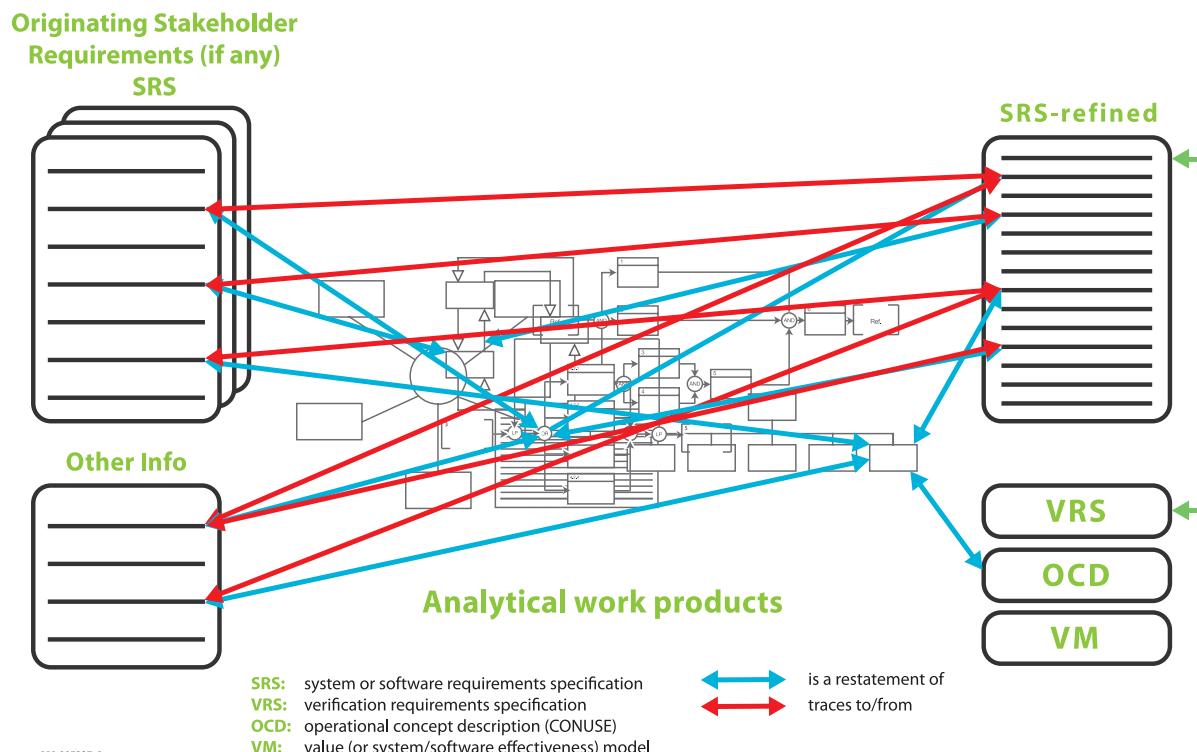


# REQUIREMENTS ENGINEERING FUNDAMENTALS

## ACHIEVE A VERY HIGH ROI THROUGH BETTER REQUIREMENTS

3-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.



*"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*

# COURSE OUTLINE

## 1. Requirements Analysis (14.25h)

- what are requirements?
- types of requirements, and how they relate to analysis, specification & design
- requirements quality attributes
- requirements languages other than natural: operational, formal
- requirements analysis (RA) - how to do it
- **workshop - context analysis**
- **workshop - design requirements analysis (interactive whiteboard exercise)**
- **workshop - states and modes analysis**
- **workshop - parsing analysis**
- requirements quality metrics
- **workshop - functional analysis**
- lean concepts in functional analysis for the product-oriented enterprise
- entity relationship analysis (ERA) analysis, rest of scenario analysis, out-of-range analysis, other constraints search, stakeholder value analysis
- the Operational Concept Document (OCD) (equivalent to Operational Concept Description)
- managing RA
- requirements analysis and management software tools
- common pitfalls in performing RA

*This module provides, through discussion, explanation and considerable workshop activity, an effective methodology for dealing with the single greatest cause of project problems, viz, requirements problems, as evidenced by scores of studies across all sectors. The module commences with examination of the types of requirements and their significance to the requirements analyst, the specification writer, and the designer. Participants then learn how to measure the quality of a set of requirements (on a technical scale), and compare that quality with the requirements quality*

*needed in the circumstances, to determine whether or not there is "a requirements problem", and if so, how big that problem is.*

*Most of the module is devoted to exposure of, and building skills in applying, a methodology for taking inadequate requirements and turning them into adequate requirements. A single system is used for most of the requirements analysis workshops.*

*A refined requirements specification for the workshops system, now to the standard needed, is distributed towards the end of this module.*

*Representative software tools supporting requirements analysis and requirements management are then overviewed.*

## 2. Requirements Specifications (0.5h)

- the eight types of requirements and their significance to specification writing
- differences for software and services

*This short introduction makes the distinction between requirements and requirements specifications, and provides guidance on preparing, within requirements analysis, for the transition of requirements in a database form to requirements in a document-based requirements specification form.*

## 3. Specification Types (0.3h)

- the ten types of requirements specification
- score sheet for public domain requirements specification standards

*Ten types of requirements specification are described in this module. High quality templates in the form of Data Item Descriptions (DIDs) are distributed for system requirements specifications, software requirements specifications, interface requirements specifications, interface design descriptions, statements of work/ task descriptions, and verification requirements specifications.*

*Public domain standards are summarized, including major pitfalls, and advice is provided on their use.*

## 4. Structuring Your Requirements Specification (4.1h)

- structuring a system requirements specification
- dealing with variants
- **workshop - writing a Scope section**
- dealing with states and modes
- functional versus design oriented specifications
- structuring to specify function and performance
- **workshop - structuring a specification to deal with states, modes and functions (optional)**
- **workshop - classifying requirements as functional or design**
- **workshop - writing a functionally-oriented requirements specification**
- **workshop - writing a design-oriented requirements specification**

- specifying other requirements types - environmental, resource, physical and other qualities
- structuring the specification of any design direction in requirements
- structuring an Interface Requirements Specification
- structuring a Statement of Work

*This module provides, through discussion, explanation and workshop activity, the principles and methods for structuring a requirements specification to be effective. The emphasis is on system requirements specifications (the most demanding case), with differences explained for software requirements specifications. The structuring of specification of services is addressed mainly by reference to the template distributed under module 3.*

*For all deliveries of the course, a system requirements specification is then structured from start*

*to finish. This session deals comprehensively with one of the three determinants of the effectiveness of a requirements specification: information content, organization of the information, and writing of individual requirements.*

## 5. Requirements Specification Writing in English - Use of Language (4h)

- requirement writing template
- **workshop - using the parsing template**
- requirements constructs
- cross shall, should, will, and may
- syntax in general - the helpful, the problematic, work-arounds
- linking
- cross-referencing
- defining terms
- context dependence
- reference to applicable documents
- use of precedence
- using success criteria to express otherwise vague requirements
- **workshop - using success criteria**

*This module provides, through discussion, explanation and workshop activity, extensive guidance on writing both non-requirements sections of a requirements specification, and on writing individual requirements. In the latter respect, many pitfalls, pointers and work-arounds are addressed, to increase requirements writing skills in English.*

*This session deals comprehensively with one of the three determinants of the effectiveness of requirements specification: information content, organization of the information, and the writing of individual requirements.*

## 6. In Closing (0.1h)

To register visit our website or call our friendly registration team:

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