



SOFTWARE REQUIREMENTS ENGINEERING

MASTER SOFTWARE REQUIREMENTS ...

3-DAY COURSE

... REDUCING DEVELOPMENT TIME BY AVOIDING REWORK AND INCREASING STAKEHOLDER SATISFACTION

Software requirements analysis and specification writing are sciences practiced by many, mastered by surprisingly few. And yet, the payoff from achieving excellence in these areas is large. The two aspects, software requirements analysis (capture and validation) and software requirements writing, producing a Software Requirements Specification in some form, are treated as separate but related topics in this workshop-oriented course.



1. Software Requirements Analysis

- What are requirements?
- **Workshop 1 – principles of requirements engineering**
- The origin of requirements
- Types of software requirements, and how they relate to analysis, specification and design
- Software requirements quality attributes
- Verification requirements and their relation to software requirements
- Software requirements and automated testing
- Software requirements and model-based software engineering
- Requirements languages other than natural: operational, formal
- Software requirements analysis (SRA) – how to do it
- **Workshop 2 – context analysis**
- **Workshop 3 – design requirements analysis (interactive whiteboard exercise)**
- **Workshop 4 – states and modes analysis**
- **Workshop 5 – parsing analysis**
- Requirements quality metrics
- **Workshop 6 – functional analysis in requirements analysis**
- ERA analysis, rest of scenario analysis, out-of-range analysis, other constraints search, stakeholder value analysis
- The Operational Concept Description (OCD) for software

- Managing SRA
- Requirements analysis and management software tools
- Example applications of AI to SRA
- Common pitfalls in performing SRA

2. Transforming Software Requirements into Software Requirements Specifications

- Requirements vs requirements specifications
- The eight types of software requirements and their significance to specification writing

3. Requirements Specification Types

- The ten types of requirements specification
- Score sheet for public domain software requirements specification standards

4. Structuring Your Software Requirements Specification

- Principles of structuring
- Dealing with variants
- **Workshop 7 – writing a Scope section**
- Dealing with states and modes
- Functional versus design oriented requirements specifications
- Structuring to specify function and performance
- Specifying other software requirements types – environmental, resource, other qualities

- Structuring the specification of any design direction in software requirements
- Structuring an Interface Requirements Specification

5. Writing Software Requirements in English – Use of Language

- Requirement writing template
- **Workshop 8 – using the parsing template – writing a software requirement of each type**
- Requirements constructs
- 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 9 – using success criteria**

6. In Closing

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