



Requirements Specification

Workshop Configuration Guide



Whether you're buying a car or building a multi billion dollar "thing" such as a space shuttle or an air traffic control system, describing what your desired product must do is an essential first step before setting out on the product development or procurement trail. Although it seems like common sense, failure to adequately discover and document product requirements routinely results in the purchase of unusable goods, wastage of millions on products that are not fit for purpose or, in the extreme case of safety critical systems, loss of life.

The depth of knowledge and skill required to effectively capture your essential requirements varies with the size and type of acquisition. For example, if you are purchasing a commercial off the shelf product such as a home theater system or word processing software, a back-of-an-envelope list of required features may be sufficient. By contrast if you are tasked with specifying the needs of an air traffic control system you may be planning to dedicate the next several years of your life to requirements engineering and have a need for substantial depth of knowledge in requirements elicitation, analysis, specification, validation and management.

This configuration guide lists the essential skills required to specify requirements in any environment, it identifies the subject areas covered in each module of our training course and describes what you should be able to do when you have completed each module. Please mark up the skill areas that are most important to you. This will assist us in focusing the content of our standard course to provide you with the information you need to capture complete, correct, unambiguous and verifiable requirements.

We look forward to working with you.

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	1. Requirements engineering fundamentals	Understand the basic principles that guide the requirements engineering discipline.	
	1.1 What is a requirement?	Describe the internationally accepted definition of the “system/software requirement”.	
	1.2 Types of requirements	Differentiate between functional and nonfunctional requirements.	
	1.3 Non requirements	Identify information that is not relevant to requirements specifications.	
	1.4 Derived requirements	Describe how high level requirements may be decomposed into lower level “derived requirements”.	
	1.5 Separating requirements from design	Differentiate between what a product must do as opposed to how it is done.	
	2. Justifying requirements capture	Be an effective advocate of the requirements capture process, justifying funding and influencing others on the importance of complete, correct and unambiguous requirements.	
	2.1 “The Horror” – disasters through bad requirements	Value the process of requirements capture through review of classical real life failure scenarios.	
	2.2 Classical requirements capture benefits	List the benefits of having accurate requirements in place at the commencement of a project.	
	2.3 Quantifying the benefits	Describe and quantify the losses triggered by bad requirements.	

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	3. The requirements capture process	Create a strategy for capturing software requirements for any target project.	
	3.1 Project management	Describe the integration of requirements capture activities into the overall management of a project.	
	3.2 Eliciting requirements	Describe the objectives of requirements elicitation and list elicitation techniques.	
	3.3 Analysing requirements	Describe the objectives of requirements analysis and list analysis techniques.	
	3.4 Specifying requirements	Describe the tasks required to document requirements.	
	3.5 Validating requirements	Describe the process of determining that requirements are complete and correct. Describe the role of requirements specification in validating the delivered product.	
	3.6 Managing requirements	Describe the tasks required to manage and maintain the integrity of a body of requirements throughout its lifetime.	
	4. Planning for requirements capture	Plan, staff, direct and control a requirements capture project.	
	4.1 Planning for requirements capture	Develop a plan for requirements capture and specification.	
	4.2 Staffing the requirements capture team	Describe the essential knowledge and skills required by project team members.	
	4.3 Estimating requirements capture effort	Estimate the level of effort required to complete requirements capture.	
	4.4 Managing risk	Recognize and deal with the classical risks associated with requirements capture.	

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	5. Eliciting requirements	Discover sources of requirements and use effective techniques to elicit requirements from subject matter experts.	
	5.1 Sources of requirements	Identify people and other resources that can be a source of requirements.	
	5.2 Identifying product vision and project scope	Discover the underlying rationale behind the need for the target product.	
	5.3 Conducting interviews	Ask the right questions to discover essential requirements in one-on-one interviews.	
	5.4 Conducting requirements workshops	Setup and run requirements elicitation workshops.	
	5.5 Requirements workshop elicitation techniques	Apply elicitation techniques such as brainstorming, storyboarding, mind mapping and partitioning, abstraction and projection.	
	5.6 Developing use scenarios	Discover requirements by analyzing the various ways the product is used.	
	5.7 Developing prototypes	Use a prototype to discover requirements.	
	5.8 Using questionnaires	Validate requirements assumptions with questionnaires.	
	5.9 Capturing requirements attributes	Record information about requirements. For example, rationale, stability and priority.	

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	6. Analyzing requirements	Classify, organize and improve the precision of requirements.	
	6.1 Analysis objectives	Describe the objectives of the analysis process.	
	6.2 Using requirements models	Describe the benefits of using a model for requirements analysis.	
	6.3 Selecting the correct model	List the models used in requirements analysis together with their application to various classes of problem. For example, the Finite State Model is most commonly used in control systems analysis.	
	6.4 Requirements models	Apply one or more modelling techniques to requirements analysis. For example, functional decomposition diagrams, process flow diagrams, SADT diagrams, data flow diagrams , control flow diagrams, state transition diagrams, Petri nets, entity relationship diagrams , object models , flow charts, structured English, Nassi Shneiderman charts, decision trees, decision tables, dialogue scripts, event traces and event trees.	
	6.5 Negotiating conflicting requirements	Resolve problems with conflicting requirements, prioritize requirements and scrub gold plated requirements.	
	6.6 Requirements allocation	Allocate requirements to architectural components/subsystems and discover derived requirements.	

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	7. Specifying requirements	Select an appropriate document format for a requirements specification, write complete and unambiguous statements of requirement and evaluate the quality of requirements statements.	
	7.1 Documenting basic concepts	Prepare a document describing fundamental system concepts.	
	7.2 The software requirements specification document	Select an appropriate format for a system or software requirements specification.	
	7.3 Requirements specification techniques	Apply industry standard techniques for specifying the various classes of requirements. For example, functional requirements, non-functional requirements, business rules and product features.	
	7.4 Recording requirements attributes	Specify information about requirements such as rationale, stability and priority.	
	7.5 Evaluating the quality of requirements statements	Apply standard quality criteria to the process of identifying good and bad statements of requirement.	
	7.6 Avoiding requirements weasel words	Identify words commonly used in requirements specifications that are meaningless or ambiguous (examples: user friendly, support, efficient, appropriate).	

	8. Validating requirements	Determine that requirements are correct and confirm that the delivered system satisfies the requirements.	
	8.1 The requirements validation process	Determine that requirements are complete and correct by conducting requirements reviews and inspections.	
	8.2 Product validation process	Determine that the product while under construction and when delivered is compliant with stated requirements.	
	8.3 System and acceptance testing	Describe the role of the requirements specification in the development of system and acceptance tests.	

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	9. Managing requirements	Secure the integrity of a body of requirements over time.	
	9.1 Requirements management fundamentals	List the essential requirements management activities.	
	9.2 Labeling requirements	Describe techniques for tagging individual requirements with unique labels, version identifiers and product release level indicators.	
	9.3 Creating requirements views	Define the different ways that various user communities view requirements.	
	9.4 Managing changes to requirements	Apply requirements change management techniques.	
	9.5 Tracing requirements	Describe the purpose and process of traceability analysis and its application to project control, product validation and change management.	
	9.6 Requirements management tools	List the commercially available software products that provide requirements storage, filtering and sorting, change management and traceability functions.	

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	10. The requirements capture process and procurement contracts	Apply the requirements specification and validation processes to contracted development projects and product acquisitions.	
	10.1 Procurement planning	Describe the role of conceptual requirements in determining what to procure and when.	
	10.2 Solicitation planning	Use the content of the requirements specification to identify sources of supply.	
	10.3 Solicitation	Describe the mandatory elements of a requirement specification necessary for inclusion in tender documentation.	
	10.4 Source selection	Use the requirements specification as a checklist for tender evaluation.	
	10.5 Contract administration	Use the requirements specification as a controlling document in the administration of contracted development.	
	10.6 Acceptance	Summarize the role of the requirement specification in the product acceptance process.	
	10.7 Contract closeout	Describe the role of the requirement specification in issuing certificates of completion together with activities in the warranty period.	