

# **Managing Software Requirements**

## **I : Introduction**

### **1. The Requirements Problem**

The Goal

A Look at the Data

Root Causes of Project Success and Failure

### **2. Introduction to Requirements Management**

Definitions

Application of Requirements Management Techniques

The Road Map

### **3. The Software Team**

Software Development as a Team Activity

The Case Study

## **II : Team Skill 1: Analyzing the Problem**

### **4. The Five Steps in Problem Analysis**

Step 1: Gain Agreement on the Problem Definition

Step 2: Understand the Root Causes—The Problem Behind the Problem

Step 3: Identify the Stakeholders and the Users

Step 4: Define the Solution System Boundary

Step 5: Identify the Constraints to Be Imposed on the Solution

### **5. Business Modeling**

Purpose of Business Modeling

Using Software Engineering Techniques for Business Modeling

From the Business Models to the Systems Model

When to Use Business Modeling

### **6. Systems Engineering of Software-Intensive Systems**

What Is Systems Engineering?

Requirements Allocation in Systems Engineering

The Case Study

### **III: Team Skill 2: Understanding User Needs**

#### **7. The Challenge of Requirements Elicitation**

Barriers to Elicitation

Techniques for Requirements Elicitation

#### **8. The Features of a Product or System**

Stakeholder and User Needs

Features

#### **9. Interviewing**

The Interview Context

Value-Added Context

The Moment of Truth: The Interview

Compiling the Need Data

A Note on Questionnaires

#### **10. Requirements Workshops**

Accelerating the Decision Process

Preparing for the Workshop

Role of the Facilitator

Setting the Agenda

Running the Workshop

#### **11. Brainstorming and Idea Reduction**

Live Brainstorming

Idea Reduction

Web-Based Brainstorming

The Case Study: The HOLIS 2000 Requirements Workshop

#### **12. Storyboarding**

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What Storyboards Do

Tools and Techniques for Storyboarding

Tips for Storyboarding

### **13. Applying Use Cases**

Building the Use-Case Model  
Applying Use Cases to Requirements Elicitation  
Case Study: The Use Cases for HOLIS  
Summary

### **14. Role Playing**

How to Role Play  
Techniques Similar to Role Playing

### **15. Prototyping**

Types of Prototypes  
Requirements Prototypes  
What to Prototype  
Building the Prototype  
Evaluating the Results

## **IV: Team Skill 3: Defining the System**

### **16. Organizing Requirements Information**

Organizing Requirements of Complex Hardware and Software Systems  
Organizing Requirements for Product Families  
On "Future" Requirements  
Business and Marketing Requirements versus Product Requirements  
The Case Study

### **17. The Vision Document**

Components of the Vision Document  
The "Delta Vision" Document

### **18. The Champion**

The Role of the Product Champion  
The Product Champion in a Software Product Environment  
The Product Champion in an IS/IT Shop  
Team Skill 3 Summary

## **V: Team Skill 4: Managing Scope**

### **19. The Problem of Project Scope**

Components of Project Scope  
The Hard Question

## **20. Establishing Project Scope**

- The Requirements Baseline
- Setting Priorities
- Assessing Effort
- Adding the Risk Element
- Reducing Scope
- The Case Study

## **21. Managing Your Customer**

- Engaging Customers to Manage Their Project Scope
- Communicating the Result
- Negotiating with the Customer
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## **22. Scope Management and Software Development Process Models**

- The Waterfall Model
- The Spiral Model
- The Iterative Approach
- What to Do, What to Do ...
- Team Skill 4 Summary

## **VI: Team Skill 5: Refining the System Definition**

### **23. Software Requirements**

- Definition of Software Requirements
- Relationship between Features and Software Requirements
- The Requirements Dilemma: What versus How
- More on Requirements versus Design
- A Further Characterization of Requirements
- Using Parent-Child Requirements to Increase Specificity
- Looking Ahead

### **24. Refining the Use Cases**

- Questions to Ask
- Refining Use-Case Specifications
- The Case Study: Anatomy of a Simple Use Case

### **25. A Modern Software Requirements Specification**

- The Modern SRS Package
- Documenting Functional Requirements

## **26. On Ambiguity and Specificity**

Finding the "Sweet Spot"  
Mary Had a Little Lamb  
Techniques for Disambiguation  
What to Do?

## **27. Quality Measures of Software Requirements**

Nine Quality Measures  
Quality Measures for the Use-Case Model  
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## **28. Technical Methods for Specifying Requirements**

Pseudocode  
Finite State Machines  
Decision Trees and Decision Tables  
Graphical Decision Trees  
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Entity-Relationship Models  
Object-Oriented Modeling  
Data Flow Diagrams  
Maintenance of Specifications  
Case Study

## **VII: Team Skill 6: Building the Right System**

### **29. Building the Right System Right: Overview**

Continually Confirm that the Development Is on Track  
Confirm that the Development Results Are Correct  
Learn How to Cope with Change that Occurs during the Development Process

### **30. From Requirements to Implementation**

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Realizing Use Cases in the Design Model  
From Design to Implementation

### **31. Using Traceability to Support Verification**

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Using Traceability Tools  
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## **32. Validating the System**

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Testing Discrete Requirements

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## **33. Using ROI to Determine the V&V Effort**

Depth versus Coverage

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## **34. Managing Change**

Why Do Requirements Change?

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A Process for Managing Change

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Dedication

What We've Learned So Far

Your Prescription for Requirements Management

Now, On to the Next Release!