

Working With Stakeholders Using Viewpoints and Perspectives

NICK ROZANSKI · EOIN WOODS

SOFTWARE SYSTEMS ARCHITECTURE

SECOND EDITION

Software Systems Architecture: Working with Stakeholders Using Viewpoints and Perspectives

Table of Contents

CONTENTS

PREFACE TO THE SECOND EDITION

Acknowledgments for the Second Edition

PREFACE TO THE FIRST EDITION

Acknowledgments

CHAPTER 1 INTRODUCTION

Stakeholders, Viewpoints, and Perspectives

The Structure of This Book

Who Should Read This Book

Conventions Used

PART I: ARCHITECTURE FUNDAMENTALS

CHAPTER 2 SOFTWARE ARCHITECTURE CONCEPTS

Software Architecture

Architectural Elements

Stakeholders

Architectural Descriptions

Relationships between the Core Concepts

Summary

Further Reading

CHAPTER 3 VIEWPOINTS AND VIEWS

Architectural Views



Viewpoints

Relationships between the Core Concepts

The Benefits of Using Viewpoints and Views

Viewpoint Pitfalls

Our Viewpoint Catalog

Summary

Further Reading

CHAPTER 4 ARCHITECTURAL PERSPECTIVES

Quality Properties

Architectural Perspectives

Applying Perspectives to Views

Consequences of Applying a Perspective

Relationships between the Core Concepts

The Benefits of Using Perspectives

Perspective Pitfalls

Comparing Perspectives to Viewpoints

Our Perspective Catalog

Summary

Further Reading

CHAPTER 5 THE ROLE OF THE SOFTWARE ARCHITECT

The Architecture Definition Process

The Role of the Architect

Interrelationships between the Core Concepts

Architectural Specializations

The Organizational Context

The Architects Skills

The Architects Responsibilities

Summary

Further Reading

PART II: THE PROCESS OF SOFTWARE ARCHITECTURE



CHAPTER 6 INTRODUCTION TO THE SOFTWARE ARCHITECTURE PROCESS

CHAPTER 7 THE ARCHITECTURE DEFINITION PROCESS

Guiding Principles

Process Outcomes

The Process Context

Supporting Activities

Architecture Definition Activities

Process Exit Criteria

Architecture Definition in the Software Development Lifecycle

Summary

Further Reading

CHAPTER 8 CONCERNS, PRINCIPLES, AND DECISIONS

Problem-Focused Concerns

Solution-Focused Concerns

Other Real-World Constraints

What Makes a Good Concern

Architectural Principles

Architectural Decisions

Using Principles to Link Concerns and Decisions

Checklist

Summary

Further Reading

CHAPTER 9 IDENTIFYING AND ENGAGING STAKEHOLDERS

Selection of Stakeholders

Classes of Stakeholders

Examples

Proxy Stakeholders

Stakeholder Groups

Stakeholders Responsibilities



Checklist

Summary

Further Reading

CHAPTER 10 IDENTIFYING AND USING SCENARIOS

Types of Scenarios

Uses for Scenarios

Identifying and Prioritizing Scenarios

Capturing Scenarios

What Makes a Good Scenario?

Applying Scenarios

Effective Use of Scenarios

Checklist

Summary

Further Reading

CHAPTER 11 USING STYLES AND PATTERNS

Introducing Design Patterns

Styles, Patterns, and Idioms

Patterns and Architectural Tactics

An Example of an Architectural Style

The Benefits of Using Architectural Styles

Styles and the Architectural Description

Applying Design Patterns and Language Idioms

Checklist

Summary

Further Reading

CHAPTER 12 PRODUCING ARCHITECTURAL MODELS

Why Models Are Important

Types of Models

Modeling Languages



Guidelines for Creating Effective Models

Modeling with Agile Teams

Checklist

Summary

Further Reading

CHAPTER 13 CREATING THE ARCHITECTURAL DESCRIPTION

Properties of an Effective Architectural Description

Glossaries

The ISO Standard

Contents of the Architectural Description

Presenting the Architectural Description

Checklist

Summary

Further Reading

CHAPTER 14 EVALUATING THE ARCHITECTURE

Why Evaluate the Architecture?

Evaluation Techniques

Scenario-Based Evaluation Methods

Evaluation during the Software Lifecycle

Validating the Architecture of an Existing System

Recording the Results of Evaluation

Choosing an Evaluation Approach

Checklist

Summary

Further Reading

PART III: A VIEWPOINT CATALOG

CHAPTER 15 INTRODUCTION TO THE VIEWPOINT CATALOG CHAPTER 16 THE CONTEXT VIEWPOINT

Concerns



Models

Problems and Pitfalls

Checklist

Further Reading

CHAPTER 17 THE FUNCTIONAL VIEWPOINT

Concerns

Models

Problems and Pitfalls

Checklist

Further Reading

CHAPTER 18 THE INFORMATION VIEWPOINT

Concerns

Models

Problems and Pitfalls

Checklist

Further Reading

CHAPTER 19 THE CONCURRENCY VIEWPOINT

Concerns

Models

Problems and Pitfalls

Checklist

Further Reading

CHAPTER 20 THE DEVELOPMENT VIEWPOINT

Concerns

Models

Problems and Pitfalls

Checklist

Further Reading

CHAPTER 21 THE DEPLOYMENT VIEWPOINT



Concerns

Models

Problems and Pitfalls

Checklist

Further Reading

CHAPTER 22 THE OPERATIONAL VIEWPOINT

Concerns

Models

Problems and Pitfalls

Checklist

Further Reading

CHAPTER 23 ACHIEVING CONSISTENCY ACROSS VIEWS

Relationships between Views

Context and Functional View Consistency

Context and Information View Consistency

Context and Deployment View Consistency

Functional and Information View Consistency

Functional and Concurrency View Consistency

Functional and Development View Consistency

Functional and Deployment View Consistency

Functional and Operational View Consistency

Information and Concurrency View Consistency

Information and Development View Consistency

Information and Deployment View Consistency

Information and Operational View Consistency

Concurrency and Development View Consistency

Concurrency and Deployment View Consistency

Deployment and Operational View Consistency

PART IV: THE PERSPECTIVE CATALOG



CHAPTER 24 INTRODUCTION TO THE PERSPECTIVE CATALOG CHAPTER 25 THE SECURITY PERSPECTIVE

Applicability to Views

Concerns

Activities: Applying the Security Perspective

Architectural Tactics

Problems and Pitfalls

Checklists

Further Reading

CHAPTER 26 THE PERFORMANCE AND SCALABILITY PERSPECTIVE

Applicability to Views

Concerns

Activities: Applying the Performance and Scalability Perspective

Architectural Tactics

Problems and Pitfalls

Checklists

Further Reading

CHAPTER 27 THE AVAILABILITY AND RESILIENCE PERSPECTIVE

Applicability to Views

Concerns

Activities: Applying the Availability and Resilience Perspective

Architectural Tactics

Problems and Pitfalls

Checklists

Further Reading

CHAPTER 28 THE EVOLUTION PERSPECTIVE

Applicability to Views



Concerns

Activities: Applying the Evolution Perspective

Architectural Tactics

Problems and Pitfalls

Checklists

Further Reading

CHAPTER 29 OTHER PERSPECTIVES

The Accessibility Perspective

The Development Resource Perspective

The Internationalization Perspective

The Location Perspective

The Regulation Perspective

The Usability Perspective

PART V: PUTTING IT ALL TOGETHER

CHAPTER 30 WORKING AS A SOFTWARE ARCHITECT

Architecture in the Project Lifecycle

Supporting Different Types of Projects

APPENDIX: OTHER VIEWPOINT SETS

Kruchten 4+1

RM-ODP

Siemens (Hofmeister, Nord, and Soni)

SEI Views and Beyond Views

Garland and Anthony

IAF

Enterprise Architecture Frameworks

Other Enterprise Architecture Frameworks

BIBLIOGRAPHY

ABOUT THE AUTHORS



INDEX

