

SOA Governance

Governing Shared Services On-Premise & in the Cloud

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Chapter 1



Introduction

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Imagine driving along a winding road. On the one side you have sheets of blasted rock that lead up into a mountain range, on the other side you have a steep cliff, with a freefall of several hundred feet, leading into a deep ocean. The faster you drive, the sooner you will reach your destination, but the more risky the drive. For example, you may need to swerve to avoid obstacles or adjust quickly to volatile weather conditions—risk factors that are elevated when moving at higher speeds. But, it's still tempting, because the sooner you reach that destination, the more successful your drive will be considered, by everyone.

When we design a roadmap for our SOA initiative, we lay out a direction that determines our route and a schedule that determines our rate of speed. We try to anticipate and plan for obstacles, but we know to expect the unexpected. With the necessary stakeholder support and financing in place (let's call it our "fuel in the tank"), we determine it's time to hit the road.

But before we do, let's go back to that decision point about choosing our route. A winding road with an open cliff constantly at our side represents the continuous risk of plunging over the edge, especially when maneuvering to avoid unanticipated obstacles. Such a road requires minimal work to put together and therefore a perceived opportunity to reach our goals in less time and with less expense. But, there's that risk factor we need to consider, especially of concern after we take a preliminary look over the edge to see the accumulated wreckage of the many vehicles that previously, unsuccessfully attempted this drive. We therefore reconsider.

The best analogy of IT governance I encountered was by Leo Shuster who, in his podcast interview for the International SOA + Cloud Symposium, stated that governance is like guardrails along a road. A governed roadmap is one that has, from beginning to end, controls that establish rules that we must comply with and parameters that we must function within, as we progress throughout SOA project stages.

In other words, we need to build a road with solid guardrails that keep our initiative from veering off its path. For many organizations, this realization was the result of losing significant investments to the heaps of wreckage already floating in the ocean below the cliffs of unregulated project plans. It has been a painful lesson that has, for some,

shaken their very confidence in SOA. Fortunately, out of the numerous projects and efforts that have gone into establishing SOA governance as its own field of expertise, we now have a set of proven rules and parameters that provide a stable and healthy starting point for organizations to create successful SOA governance systems.

This book is the accumulated result of many years of practice and insight provided by SOA experts, IT governance experts, and technology innovation experts. It's about the nuts and bolts of guardrail construction, maintenance, and enforcement. It's also about helping us understand that establishing a sound system of governance requires an investment and an expected return on that investment. What we put into creating those guardrails will protect the greater investment we put into the overall SOA projects that will venture down that road.

Finally, this book is about highlighting the fact that once those guardrails are in place, that governed road we built can be used over and over again, each time allowing us to drive faster, without compromising our safety. Establishing a mature system of SOA governance within our IT enterprise gives us a form of regulated agility—a robust state whereby we can rapidly respond to on-going business change without assuming unnecessary risk.

—*Thomas Erl*

1.1 About this Book

This book has a very simple objective. Its focus is solely on IT governance as it applies to the adoption of SOA and service-orientation. To that effect, it makes a clear distinction between governance and management and methodology, and then proceeds to establish a generic governance system, comprised of a series of common precepts, processes, and associated organizational roles. It further addresses governance topics that pertain to specific forms of service technology innovation, including cloud computing.

The purpose of this book is to give SOA practitioners a concrete framework that can be further augmented and extended into custom SOA governance systems and programs.

Who this Book is For

There is much discussion about the role of the SOA Governance Specialist in the upcoming chapters. While this type of IT professional will need to become an expert at everything covered in this book, the actual intended audience is much broader.

Specifically, this book will be useful to:

- IT managers and project managers that need to understand how a governance system can and should be incorporated into an SOA initiative, its impacts, requirements, and benefits.
- Architects and analysts who will be in the midst of SOA governance activities, including contribution to governance precepts and standards, as well as participation in review and audit processes.
- Enterprise architects and those involved with the authoring and maintenance of custom design standards. These individuals will be part of governance activity in almost every SOA project stage.
- Business analysts that are part of analysis teams for service modeling and for the definition of enterprise business models, such as business dictionaries, ontologies, and business processes.
- Developers, administrators, quality assurance professionals, and security specialists, who all will find themselves participating in or being affected by various SOA governance controls.
- Cloud computing professionals interested in learning about IT governance considerations specific to SOA and service-oriented solutions that encompass one or more cloud-based services or resources.

What this Book Does Not Cover

This is Not a Book About SOA Management

SOA governance has historically often been mistaken or confused with SOA management. This is a book about SOA governance only, although related management requirements and project stages are occasionally referenced. See Chapter 6 for an explanation that helps clarify the difference between governance, management, and methodology.

This is Not a Book About Cloud Computing Governance

Wherever appropriate, this book references SOA governance considerations that can pertain to cloud computing. However, it is important to note that this is not a general book about cloud computing governance—only considerations specific to applying service-orientation within cloud-based environments are mentioned. General cloud computing governance is a much broader topic that delves beyond the service level, into the various mechanisms and IT resources that can comprise cloud environments.

1.2 Recommended Reading

To further ensure that you have a clear understanding of key terms used and referenced in the upcoming chapters, you can visit the online master glossary for this book series at www.soaglossary.com to look up definitions for terms that may not be fully described in this book.

Even if you are an experienced SOA practitioner, we suggest you take the time to have a look at this online resource. A great deal of ambiguity has surrounded SOA and service-oriented computing and these explanations and definitions will ensure that you fully understand key terms and concepts in relation to this book and the book series as a whole.

Here are some recommendations for additional books that elaborate on some of the topics covered by this title:

- *SOA Principles of Service Design* – A comprehensive documentation of the service-orientation design paradigm with full descriptions of all of the principles referenced in this book.
- *SOA Design Patterns* – This is the official SOA design patterns catalog containing descriptions and examples for most of the patterns referenced in this book. You can also look up concise descriptions for these patterns at www.soapatterns.org and in Appendix D.
- *Service-Oriented Architecture: Concepts, Technology, and Design* – The coverage of service-oriented analysis and design processes in this title supplements this book with more detailed methodology-related topics.
- The title *Web Service Contract Design & Versioning for SOA* provides a great deal of technical content that may not be relevant to governance topics, except for those that aim to establish technical design and development standards. However, this book does include four chapters dedicated to Web service contract versioning topics that will be useful when dealing with governance precepts associated with the Service Versioning and Retirement project stage (see Chapter 11 and Appendix F).
- *SOA with REST* – This book documents the convergence of REST and SOA by establishing how REST services can be realized in support of service-orientation. Salient topics are reinforced with comprehensive case studies using modern REST frameworks in combination with contemporary SOA models, patterns, practices, and concepts.

For the latest information regarding these and other titles in the *Prentice Hall Service-Oriented Computing Series from Thomas Erl*, visit www.soabooks.com.

1.3 How this Book is Organized

This book begins with Chapters 1 and 2 providing introductory content and case study background information respectively. All subsequent chapters are grouped into the following parts:

- Part I: Fundamentals
- Part II: Project Governance
- Part III: Strategic Governance
- Part IV: Appendices

Part I: Fundamentals

The first four chapters cover various introductory topics in preparation for the chapters in Parts II and III.

Chapter 3: Service-Oriented Computing Fundamentals

This chapter provides an overview of key terms and concepts associated with SOA, service-orientation, and cloud computing.

Chapter 4: SOA Planning Fundamentals

Foundational critical success factors (pillars), funding models, and basic maturity levels are described in this chapter. The “Pillars of Service-Orientation” are referenced in several subsequent chapters, especially in relation to maturity assessment and the SOA Adoption Planning project stage.

Chapter 5: SOA Project Fundamentals

This chapter provides introductory coverage of SOA project lifecycle stages, organizational roles, and the usage of service profiles. The project stages and organizational roles in particular are revisited through chapters in Parts II and III, as they relate to various SOA governance precepts and processes.

Chapter 6: Understanding SOA Governance

This must-read chapter establishes fundamental terminology and concepts pertaining to IT governance and SOA governance. Topics include an explanation of precepts and processes, the involvement of people and organizational roles, the SOA governance system, the SOA governance program, and the SOA Governance Office (SGPO).

Part II: Project Governance

This part of the book provides a series of chapters that step you through the SOA project lifecycle by exploring how and where various governance controls can be incorporated within different project stages. In many cases, governance controls provide entrance and exit criteria for the regulated transition from stage to stage.

Chapter 7: Governing SOA Projects

Part II begins with topics that explain how SOA project governance is approached, along with a series of overarching SOA governance precepts that apply to various project stages. This chapter concludes with a section dedicated to SOA Adoption Planning and establishes governance controls specific to this stage.

Precepts and processes covered in this chapter:

- Service Profile Standards
- SOA Governance Technology Standards
- Preferred Adoption Scope Definition
- Organizational Maturity Criteria Definition
- Standardized Funding Model
- Organizational Governance Maturity Assessment
- Adoption Impact Analysis
- Adoption Risk Assessment

Chapter 8: Governing Service Analysis Stages

A set of SOA governance controls, rules, and regulations are provided for the analysis and modeling of individual service candidates, as well as collections (or inventories) of services that need to be modeled in relation to each other.

Precepts and processes covered in this chapter:

- Service Inventory Scope Definition
- Service and Capability Candidate Naming Standards
- Service Normalization
- Service Candidate Versioning Standards
- Business Requirements Prioritization
- Service Candidate Review

Chapter 9: Governing Service Design and Development Stages

The physical design of service contracts and service architecture and logic are addressed in this chapter in relation to SOA governance precepts, processes, and organizational roles that are involved primarily to establish various standards, conventions, and compliance review processes.

Precepts and processes covered in this chapter:

- Schema Design Standards
- Service Contract Design Standards
- Service-Orientation Contract Design Standards
- SLA Template
- Service Logic Design Standards
- Service-Orientation Architecture Design Standards
- Service Logic Programming Standards
- Custom Development Technology Standards
- Service Contract Design Review
- Service Contract Registration
- Service Access Control
- Service Logic Design Review
- Legal Data Audit
- Service Logic Code Review

Chapter 10: Governing Service Testing and Deployment Stages

Quality assurance and testing activities are covered, along with steps required to deploy and maintain service implementations. For each of these topics, further governance controls and approaches are documented.

Precepts and processes covered in this chapter:

- Testing Tool Standards
- Testing Parameter Standards
- Service Testing Standards
- Cloud Integration Testing Standards
- Test Data Usage Guidelines
- Production Deployment and Maintenance Standards
- Service Test Results Review
- Service Certification Review
- Service Maintenance Review

Chapter 11: Governing Service Usage, Discovery, and Versioning Stages

We conclude this part with a look at governance topics and controls that regulate the runtime usage of services, as well as their post-implementation discovery and versioning. The Service Usage and Monitoring stage in particular is where a range of metrics are documented and further links to upcoming SOA governance vitality triggers and activities are established.

Precepts and processes covered in this chapter:

- Runtime Service Usage Thresholds
- Service Vitality Triggers
- Centralized Service Registry
- Service Versioning Strategy
- SLA Versioning Rules
- Service Retirement Notification
- Service Vitality Review

- Service Registry Access Control
- Service Registry Record Review
- Service Discovery
- Shared Service Usage Request
- Shared Service Modification Request
- Service Versioning
- Service Retirement

Part III: Strategic Governance

The next part of this book provides further governance topics that have broad or long-term applicability and are primarily relevant from a strategic perspective.

Chapter 12: Service Information and Service Policy Governance

Several additional SOA governance precepts and processes are documented in this chapter, primarily focused on the modeling, design, and standardization of business data and related models. Many of the artifacts advocated by these governance controls relate back to early SOA project stages.

Precepts and processes covered in this chapter:

- Enterprise Business Dictionary/Domain Business Dictionary
- Service Metadata Standards
- Enterprise Ontology/Domain Ontology
- Business Policy Standards
- Operational Policy Standards
- Policy Centralization
- Data Quality Review
- Communications Quality Review
- Information Alignment Audit
- Policy Conflict Audit

Chapter 13: SOA Governance Vitality

The concept of governance vitality is described in this chapter, along with explanations of common vitality triggers and vitality process activities. These are associated primarily with product service usage, but are also of strategic relevance for the on-going evolution of services and collections of services.

Chapter 14: SOA Governance Technology

This chapter begins by establishing primary categories of SOA governance technologies, and then proceeds to document common types of tools and products used to help automate various governance tasks throughout SOA project stages.

Part IV: Appendices*Appendix A: Case Study Conclusion*

This appendix provides a brief conclusion of the case study storyline.

Appendix B: Master Reference Diagrams for Organizational Roles

Throughout the chapters in Parts II and III, SOA governance precepts and processes are mapped to each other and to organizational roles within a given project stage and beyond. However, the mapping of an organization's roles is limited to a given project stage because many of the same roles are associated with multiple project stages.

This appendix provides a global, cross-project stage mapping diagram for each organizational role.

Appendix C: Service-Orientation Principles Reference

This appendix provides the profile tables (originally from *SOA Principles of Service Design*) for the service-orientation design principles referenced in this book.

Appendix D: SOA Design Patterns Reference

This appendix provides the profile tables (originally from *SOA Design Patterns*) from the official SOA design patterns catalog.

Appendix E: The Annotated SOA Manifesto

This appendix provides the annotated version of the SOA Manifesto declaration, which is also published at www.soa-manifesto.com.

Appendix F: Versioning Fundamentals for Web Services and REST Services

As a supplement for Service Versioning topics and related governance precepts, a revised version of the Fundamental Service Versioning chapter from the *Web Service Contract Design & Versioning for SOA* book is provided here, updated with new content and examples for both Web services and REST services.

Appendix G: Mapping Service-Orientation to RUP

A newly published paper that provides concrete mapping of various aspects of service-orientation with the rational unified process (RUP).

Appendix H: Additional Resources

A list of relevant Web sites and supplementary resources.

1.4 Symbols, Figures, and Style Conventions

Symbol Legend

This book contains a series of diagrams that are referred to as *figures*. The primary symbols used throughout all figures are individually described in the symbol legend located on the inside of the front cover.

Mapping Diagrams

Chapters 7 through 12 provide concrete mapping of governance controls, as follows:

- SOA governance precepts are mapped to related processes and roles
- SOA governance processes are mapped to related precepts and roles
- relevant organizational roles are mapped to related SOA governance precepts and processes specific to the current chapter

This mapping is visually illustrated via a series of diagrams, such as the one shown in Figure 1.1.

As previously explained, Appendix B further provides a series of cross-project stage mapping diagrams for organization roles.

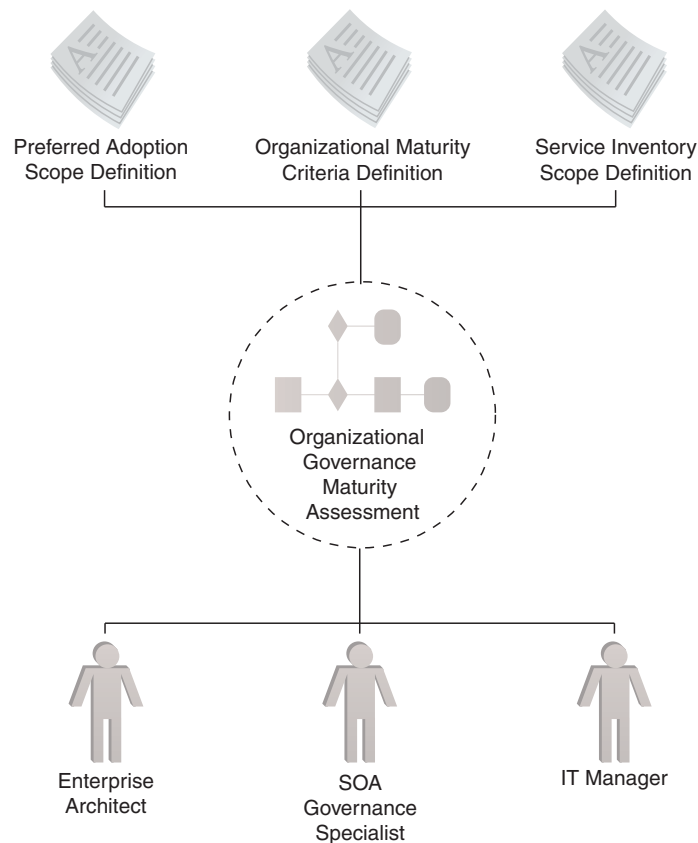


Figure 1.1

An example of a mapping diagram. The item in the center is an SOA governance process that is being mapped to three precepts (top) and three organizational roles (bottom).

SOA Principles & Patterns Sections

As a further supplement, this book occasionally references service-orientation principles and SOA patterns relevant to various governance topics. These references are generally isolated to separate *SOA Principles & Patterns* sections and provided primarily for those readers familiar with the principles and patterns covered in *SOA Principles of Service Design* and *SOA Design Patterns* series titles. Prior knowledge of these principles and patterns is not required and the corresponding references can be disregarded if they are not of interest.

Principle and pattern names are always capitalized and followed by a page number that points to their profile. Profile tables for principles are provided in Appendix C and

those for patterns are in Appendix D. In order to maintain a distinction between principles and patterns, the page number for each principle is placed in rounded parenthesis, and for patterns, square brackets are used.

For example, the following statement first references a service-orientation design principle and then an SOA design pattern:

“...the Service Loose Coupling (477) principle is supported via the application of the Decoupled Contract [517] pattern...”

Capitalization

The following are categories of topics for which terms are consistently capitalized throughout this book:

- service-orientation pillars
- SOA project stage names
- organizational roles
- organizational maturity levels
- funding models
- SOA governance precept names
- SOA governance process names

This usage of capitalization is intended to help with the identification of key terms, especially those for which mapping is provided.

1.5 Additional Information

These sections provide supplementary information and resources for the *Prentice Hall Service-Oriented Computing Series* from Thomas Erl.

Updates, Errata, and Resources (www.soabooks.com)

Information about other series titles and various supporting resources can be found at www.soabooks.com. You are encouraged to visit this site regularly to check for content changes and corrections.

Master Glossary (www.soaglossary.com)

To avoid content overlap and to ensure constant content currency, the books in this series do not contain glossaries. Instead, a dedicated Web site at www.soaglossary.com provides a master glossary for all series titles. This site continues to grow and expand with new glossary definitions as new series titles are developed and released.

Referenced Specifications (www.soaspecs.com)

The www.soaspecs.com Web site provides a central portal to the original specification documents created and maintained by the primary standards organizations.

SOASchool.com® SOA Certified Professional (SOACP)

This text book is an official part of the SOA Certified Professional curriculum and is used in conjunction with courses and exams for the SOA Governance Specialist Certification program. The course materials that are part of this program provide additional content and lab exercises that further explore topics covered in this book.

For more information, visit www.soaschool.com.

CloudSchool.com™ Cloud Certified Professional (CCP)

Various SOA governance topics covered in this book address cloud computing considerations. Content pertaining to the governance of cloud-based services, as well as introductory content of general cloud computing topics and concepts, was provided by course material donated by the CloudSchool.com™ Cloud Certified Professional curriculum.

For more information, visit www.cloudschool.com.

The SOA Magazine (www.soamag.com)

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