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—Stephen G. Bennett

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all of whom supported the creation of this book.
—Thomas Erl

Many fine adventures for the past, present, and future for my wife, Amy,
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Thanks to all of the great people that I've worked with on SOA and governance.
I've learned a lot from you.
—Robert Laird

In memory of my father, Stanley Moores, who died at 45
and whose company and counsel I miss more each year.
—Robert Moores

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and to my colleagues for putting up with my endless rants and pontification.
—Chris Venable

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Contents at a Glance

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Foreword by Massimo Pezzini

"What are the three key ingredients for successful SOA?" I was asked (in Sweden, if I remember well) by a pretty senior application architect several years ago. It was the time, circa 2004, when SOA was at the peak of what we at Gartner call "the hype cycle." Every vendor was busily trying to reposition as a SOA player, and users were struggling to understand what SOA was and why they should care about it.

When that application architect asked me the fatal question, I had luckily already investigated SOA, especially its key "dos" and "don'ts," for quite a while, starting in the late 1990s. I had by then spoken with quite a number of large organizations, in both North America and Europe, that had gone through the painful process of figuring out, through trial and error, how to manage a large-scale and business-critical set of SOA-based projects. Therefore, my answer was spontaneous and also came out with a rather unquestionable tone: "Discipline, discipline, and discipline!"

From my conversation with these leading-edge organizations, it was in fact pretty evident to me that what was later to be called SOA governance was a critical success factor for SOA initiatives. If you think about it for a second, this is obvious: The basic goals of SOA are

1. Reducing application development and maintenance costs, through run-time sharing of services across multiple applications
2. Increasing business agility, by effectively managing service and application lifecycle (discovery, definition, design, implementation, testing, deployment, management, maintenance, and retirement)

There is no way to achieve these goals without applying a proper set of rules and processes, which we now call SOA governance. SOA governance is in charge of making sure that services are designed and implemented to be truly reusable, that there are facilities in place (e.g., a *service repository* or *service inventory*, as it is called in this book) to enable a "reuse first" approach to application development, that ownership of (and accountability for) services is well defined and unambiguous, and that it is clear "who pays for what." (You would be surprised to know how many SOA initiatives I analyzed came to a stalemate because of cost allocation issues….) SOA pioneers also discovered it was not sufficient to define SOA governance rules and processes. Without an organizational entity (the *SOA Center of Excellence* or *SOA Governance Program Office*, as it is called in this book) in charge of not only defining but also enabling and enforcing these rules and processes, they simply don't happen.

You will find in this book a comprehensive and richly detailed interpretation of what these rules and processes are all about and how they can be concretely implemented. You may adopt and adapt these suggestions to your actual business and technical requirements, level of SOA maturity, organizational settings, and your company's business and IT culture. The variety of case studies discussed in the book will also give you a sense of how concretely SOA governance can be implemented to achieve real-life business goals.

Let me conclude with a final "lesson learned" from the SOA governance trenches: Your SOA initiative may be killed by lack of governance, but too much governance can be deadly, too. Figuring out what is the "just enough" amount of governance appropriate for your company is a difficult, but worthwhile task. This book will help you accomplish that goal.

—*Massimo Pezzini*
VP and Research Fellow, Gartner, Inc.

Foreword by Roberto Medrano

We have spent the better part of the last decade working on SOA governance programs at some of the world's largest and most complex IT organizations. We are very pleased, therefore, to see this important topic addressed in detail by Thomas Erl, one of this generation's truly great software architecture authors. Thomas' book is beyond timely, in our view, as it captures a serious truth that has crept up on even some of the most savvy CIOs. That is, SOA has gone from "nice to have," to "have to have," to today's reality that SOA is *just here*. Period. You have it. You don't have any choice but to have it. And now that you have, you have to govern it.

How did this happen? How did SOA emerge from the egghead shadows to become the de facto enterprise architecture across the globe? Many factors contributed to this situation, but perhaps most important has been the ascendancy of cloud computing. Though still in its infancy, cloud computing has been absolutely transformative in the role that SOA plays in day-to-day enterprise computing. The cloud is inherently service-oriented. Whether an organization is totally cloud-based, a hybrid of on-premise and cloud, or using a private cloud, its applications are now reaching out to consume and expose Web services in ways that would have been hard to imagine even a few years ago. Even organizations that shunned SOA now have one. It's called the cloud, and it's here to stay.

SOA governance and the cloud are vital companions, for better or worse. In a nutshell SOA governance is about making sure the enterprise builds the right things, build them right, and makes sure that what it has built is behaving right. With proper SOA governance, the cloud can be a strategic bonanza, smoothing the way for improving agility,

reducing risks, reducing costs and economies that everyone should want. Companies realizing the most success are those that have built a Unified SOA Governance infrastructure that governs a wide range of assets and artifacts through their entire lifecycle. Without SOA governance, the cloud threatens operational disaster and exposure to multiple levels of risk. And now, we have a thorough and well thought out book on the subject. Thomas has done the industry a great service by delving deeply into this topic in a way that readers of many different backgrounds can understand.

This book works because it gives the reader a sense of SOA governance across the full IT lifecycle and spans the organizations that are charged with managing the SOA. Thomas offers valuable insights and pragmatic tips on how to implement governance that is sensible yet effective, touching on managerial and business issues as much as technology. He probes into the nature of rules and organizations, even human nature, as he lays out the groundwork for good governance. Thomas understands that all of these aspects of governance are relevant to the success of a program. Enjoy this book. If you are involved in IT management, you will find it an indispensible companion in your quest for success with SOA.

—*Roberto Medrano*
EVP, SOA Software

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Chapter 6

Understanding SOA Governance

The expectation when adopting service-orientation is the realization of a number of specific strategic business benefits, as explained in Chapter 3. To accomplish this requires not only sound technology, mature practices, and sufficient stakeholder support, but also a firm grasp of the strategic target state being realized by the adoption and a firm system of ensuring its attainment and sustainment. Such a system cannot be purchased with technology products labeled as governance tools; it is a system that requires careful definition specific to overarching goals and requirements.

Structured governance is required to carry out and see through the commitments made when embarking on an SOA roadmap. It helps organizations succeed with SOA adoption efforts by mitigating risks through predefined constraints, rules, and the allocation of necessary authority. This chapter provides an introduction to general governance concepts and terms, as well as fundamental topics regarding governance systems for SOA projects.

6.1 Governance 101

Governance is the act of governing or administrating something. By far the most common form of governance is that of an organization. A system of governance is therefore generally a type of organizational system. For example, a society uses an organizational system to govern a public community. A company uses an organizational system to govern its own internal community.

A system for organizational governance exists as a meta-decision system. In other words, it is not just a means by which the organization makes decisions, it is the means by which the organization makes decisions *about* decision-making.

Within this context, a governance system:

- places constraints on decisions
- determines who has responsibility and authority to make decisions
- establishes constraints and parameters that control, guide, or influence decisions
- prescribes consequences for non-compliance

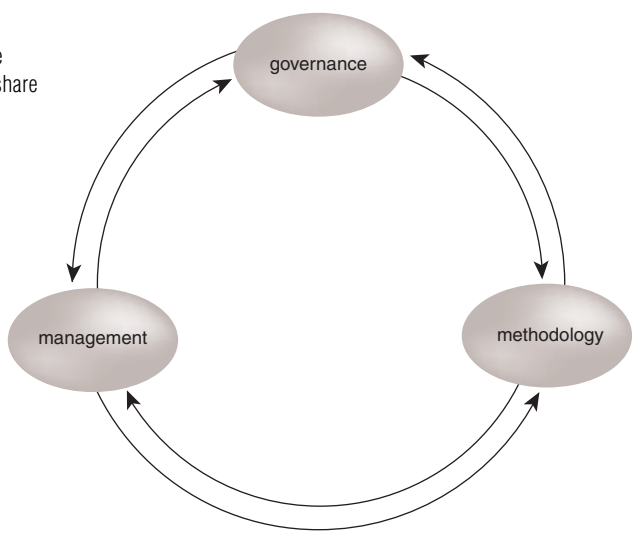
At the highest level in society, governance is established by a constitution. Within a company, it may be declared in the form of a business charter. Founding documents such as these establish a parent level of authority and constraints from which all other decision-making authorities and structures are derived. At deeper levels within the organization, a governance system can further influence the definition of policies, standards, and processes that guide and control day-to-day decision-making activities.

A good system of governance helps the members of an organization carry out responsibilities in a manner supportive of the organization's business goals and vision. It mitigates conflict by clearly defining responsibilities and assignments of authority, and further reduces ambiguity by articulating constraints and parameters in practical forms (such as rules and decision guidelines). It also helps balance tactical and strategic goals by expressing the intents and purposes of its rules.

The Scope of Governance

Within IT, a governance system is responsible for providing organization, direction, and guidance for the creation and evolution of IT assets and resources. To fully understand the scope of a governance system within a given IT department, we need to determine how a governance system relates to and is distinguished from methodology and management (Figure 6.1).

Figure 6.1
Governance, management, and methodology are distinct areas within an IT department that also share distinct relationships.



Governance and Methodology

Methodology represents a system of methods. Within IT, the form of methodology we are generally concerned with is that used to create software programs and business automation solutions. In this context, the methodology determines a system of methods used to conceptualize, design, program, test, and deploy a software program. These methods are generally formalized as a series of step-by-step processes that correspond to project delivery lifecycle stages.

NOTE

The Mainstream SOA Methodology (MSOAM) has established itself as a common, generic methodology for SOA project delivery. This methodology is explained in parts throughout the *Prentice Hall Service-Oriented Computing Series from Thomas Erl*, and is further summarized at www.soamethodology.com. Appendix G provides a supplementary paper that maps MSOAM to the Rational Unified Process (RUP).

Different software delivery methodologies exist. What commonly distinguishes one from the other is how they prioritize tactical and strategic requirements in relation to overarching business goals. These priorities will usually result in different processes (project lifecycle stages) being combined or organized in different ways. In some cases, one methodology may introduce a new process that does not exist in other methodologies—or it may exclude a process that commonly exists in other methodologies. Frequently, however, it comes down to how much time and effort a given process or project lifecycle stage receives, as determined by the tactical and strategic priorities of the methodology.

How a methodology is defined and carried out is heavily influenced by the governance system. Essentially, the methodology must be determined so that it follows the constraints established by the governance system and the corresponding methods (processes) must be carried out in compliance with these constraints, as well as any additional constraints that may be further introduced by the methodology itself.

Governance and Management

Whereas a governance system establishes rules and constraints, it is not responsible for enforcing them or overseeing related activities to ensure compliance. Management refers to the system and resources responsible for day-to-day operations.

Within an IT environment, this basically pertains to the execution of activities. In relation to governance, a management system provides the hands-on means by which the

constraints and goals of the governance system are realized in the real world. Therefore, the management of a governance system represents a subset of the overall management responsibilities.

Management systems are assigned to and carried out by those with authority.

Methodology and Management

Management relates to methodology the same way it relates to governance. When building software programs according to a pre-defined methodology, a management system is used to ensure the proper execution of processes and project delivery lifecycle stages in compliance with the constraints of the methodology—and the constraints of the governance system.

Comparisons

The following list contains a series of sample distinctions to further help provide a clear separation between governance, methodology, and management:

- Governance establishes rules that control decision-making.
- Methodology establishes processes that comply to governance rules and may introduce additional rules.
- Management makes decisions according to governance rules.
- Governance does not dictate when or how to make a decision. It determines who should make the decision and establishes limits for that person or group.
- Methodology establishes processes that carry out specific types of decision logic that adhere to governance rules.
- Management is responsible for day-to-day operations and for ensuring that decisions made adhere to governance and methodology rules.
- Governance cannot replace management or methodology, nor can it compensate for poor management or poor (or inappropriate) methodology.
- Poorly defined and executed methodology can jeopardize the business goals associated with governance.
- Poor management can undermine a governance system and a methodology and will jeopardize associated business goals.
- Neither management nor methodology can replace governance, nor compensate for poor governance.

- A poor governance system inevitably inhibits the ability of a methodology to fulfill business automation requirement potential.
- A poor governance system inevitably inhibits the ability of management to make correct decisions.

As previously stated, while this book will make many references to management and methodology, it is primarily focused on governance.

STYLES OF GOVERNANCE

Governance must reflect and complement an organization's culture and structure. For example, when establishing suitable governance rules, considerations such as the following need to be raised:

- How much autonomy should each division, business unit, or department have?
- How much freedom should decision-makers have to delegate responsibilities to others?
- How much freedom should decision-makers have to use their own judgment when making decisions (as opposed to making decisions fully or partially based on pre-determined criteria)?

To determine what style of governance may be the best fit for a given organization, it can be helpful to refer to established forms of governance used historically in society. Figure 6.2 illustrates two dimensions that relate common governance styles.

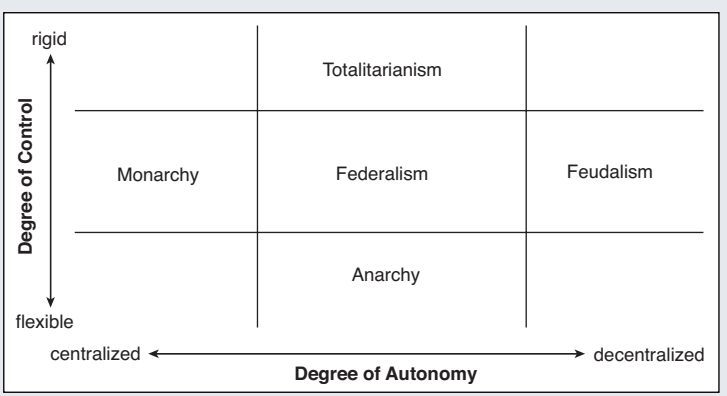


Figure 6.2
The horizontal axis represents the degree of autonomy given to separate people or groups. The vertical axis represents the degree of control imposed on decision-makers.

Looking at one end of the horizontal spectrum, all decision-making is centralized, which is comparable to a monarchy. At the other end, each group establishes its own policies and procedures, similar to a feudal society. Many IT departments opt for a federated model, which permits the separation of the department into individual business units or cost centers, each of which is given a degree of independence while still maintaining a level of consistency. This helps reduce contention between fiefdoms.

When we study the vertical spectrum, we have a totalitarian type of regime whereby rigid policies dictate required actions, and decision-makers have little freedom to apply their own judgment. Too much rigidity can generate resentment and inhibit creativity in an organization. On the other hand, allowing flexible policies that provide only suggestive guidance leaves decision-makers with so much freedom that there is little chance of achieving meaningful consistency.

Good governance empowers people to do what's right for the business. Poor governance unnecessarily constrains or inhibits decisions, or fails to provide enough decision-making guidance. All governance—whether good or bad—places limits on the decisions and behaviors of the people being governed. It also prescribes consequences for those choosing not to abide. There is no single governance style that is correct for all organizations. Each must strive to find a balance between centralization and decentralization, between rigidity and flexibility, and between its existing culture and its ability to adapt to new approaches.

The Building Blocks of a Governance System

So far we've established that governance provides a systematic way for organizations to make decisions. Let's take a closer look at the primary building blocks that comprise a governance system:

- *precepts* define the rules that govern decision-making
- *people* assume roles and make decisions based on precepts
- *processes* coordinate people and precept-related decision-making activities
- *metrics* measure compliance to precepts

Note that these building blocks can be collectively or individually referred to as *governance controls*.

Precepts

A *precept* is an authoritative rule of action. Precepts are the essence of governance because they determine who has authority to make decisions, they establish constraints for those decisions, and they prescribe consequences for non-compliance.

Precepts codify decision-making rules using:

- *objectives* – broadly define a precept and establish its overarching responsibility, authority, and goals
- *policies* – define specific aspects of a precept and establish decision-making constraints and consequences
- *standards* – specify the mandatory formats, technologies, processes, actions, and metrics that people are required to use and carry out in order to implement one or more policies
- *guidelines* – are non-mandatory recommendations and best practices

NOTE

Within some IT communities, the term "policy" is commonly used instead of "precept" in relation to governance systems. However, as just explained, a policy can be just one aspect of a precept.

Also, even though a precept can contain standards, certain precepts themselves are considered standards. Therefore, it is important to not be confused when the precept name includes the word "standard" (such as Service Design Standard precept), and the precept itself further contains one or more standards that support corresponding precept policies.

People (Roles)

People (and groups of people) make decisions in accordance to and within the constraints stipulated by governance precepts. For a governance system to be successful, people must understand the intents and purposes of the precepts and they must understand and accept the responsibilities and authorities established by the precepts. Governance systems are therefore often closely associated with an organization's incentive system. This allows the organization to foster a culture that supports and rewards good behavior, while also deterring and punishing poor behavior.

When exploring the involvement of people in relation to governance systems, it is further necessary to identify the role or roles they assume. Organizational roles position people (and groups) in relation to governance models and further affect the relevance of precept compliance and enforcement.

There are two ways that people can relate to precepts and processes: they can help author the precepts and processes and they can be dictated by their application. In this book, we explore both types of relationships.

Processes

A process is an organized representation of a series of activities. It is important to make a distinction between governance processes and other types of processes related to IT. Governance processes provide a means by which to control decisions, enforce policies, and take corrective action in support of the governance system. Other processes, such as those employed to carry out project delivery stages, can be heavily influenced by governance precepts, but are not specifically processes that are directly related to carrying out the governance system. Technically, any process is considered a management activity, but a governance system is dependent on governance processes to ensure compliance with its precepts.

An organization is likely to use a variety of processes to support its precepts. Some may be automated, while others require human effort. Automated processes can help coordinate tasks (such as steps required to collect data for approvals), but can still rely on people to make important decisions (such as making the actual approvals based on the presented data).

Metrics

Metrics provide information that can be used to measure and verify compliance with precepts. The use of metrics increases visibility into the progress and effectiveness of the governance system. By analyzing metrics, we gain insight into the efficacy of governance rules and we can further discover whether particular precepts or processes are too onerous or unreasonable. Metrics also measure trends, such as the number of violations and requests for waivers. A large number of waiver requests may indicate that a given precept might not be appropriate or effective.

Governance and SOA

An organization establishes governance to mitigate risk and to help advance its strategy, goals, and priorities. When the organization invests in an SOA initiative, it expects to gain benefits worth more than the cost of the investment. This return on investment is measured in terms of business outcomes, and, presumably, those outcomes reflect the organization's strategy, goals, and priorities. Therefore, the primary business goal for SOA governance is to ensure that an SOA initiative achieves its targeted business outcome.

An SOA governance system is the meta-decision system that an organization puts in place to control and constrain decision-making responsibilities related to the adoption and application of service-orientation. There are many practices, considerations, models, and frameworks that can comprise a meta-decision system suitable for SOA governance, all of which are explored throughout this book. The foundation of an SOA governance system resides within an SOA Governance Program Office responsible for creating and administering an SOA governance program that encompasses and defines necessary SOA governance models and the tasks required to realize and sustain these models.

NOTE

The term "SOA Governance Program Office" is intentionally capitalized as it represents the official name of an IT department. The term "SOA governance program" is not capitalized, as it refers to a type of program that is commonly assigned its own unique name.

SUMMARY OF KEY POINTS

- There are clear distinctions between governance, methodology, and management.
- The building blocks of a governance system are precepts, people, processes, and metrics.
- The fundamental steps to laying the foundation for an SOA governance system are to create an SOA Governance Program Office that creates and administers an SOA governance program.

6.2 The SOA Governance Program Office (SGPO)

NOTE

For simplicity's sake this chapter frequently uses the acronym "SGPO" for the "SOA Governance Program Office." This is not an industry-standard acronym, nor is the book proposing it as such. It is an acronym used solely to simplify content by avoiding repeatedly spelling out this term.

The first step in any SOA governance effort is to establish a group (or department) that assumes the responsibility of defining and administering the various parts of an SOA governance system. This group forms the SOA Governance Program Office (SGPO), an organizational entity that is commonly comprised of trained SOA Governance Specialists, Enterprise Architects, and other types of IT decision-makers. The SGPO is given the authority to define and enforce the on-going activities and rules associated with SOA governance.

A primary responsibility of the SGPO is to author a series of formal precepts. In some cases, the SGPO may need to request amendments to existing IT governance precepts to accommodate the distinct needs of SOA projects, as the SGPO needs to avoid inadvertently defining conflicting precepts.

In general, SOA governance precepts are more balanced and more easily accepted when those who are governed have a voice. The SGPO may therefore need to solicit input from major stakeholders, including IT and business managers, senior IT staff, and even the legal department. Those contributing should have an opportunity to comment on pending precepts, propose amendments, and recommend new precepts. However, just because the SGPO solicits input does not imply that it is relinquishing its authority to establish the necessary SOA governance precepts.

Following are some basic guidelines for incorporating the SGPO into an IT environment:

- The SGPO must have the responsibility and authority to develop and manage the SOA governance system, and other teams must accept the SGPO's authority.
- The SGPO must ensure that the SOA governance system aligns with the organization's incentive and disciplinary systems.
- The SGPO must develop collaborative working relationships with other governance teams whose responsibilities intersect with those of the SGPO.

- The SGPO must ensure that its precepts align with other governance systems (Figure 6.3) within the company, or they must work with the other governance program offices to amend the conflicting precepts.
- The SGPO must have access to communication channels to disseminate information about the governance precepts and to provide training to people affected by them.

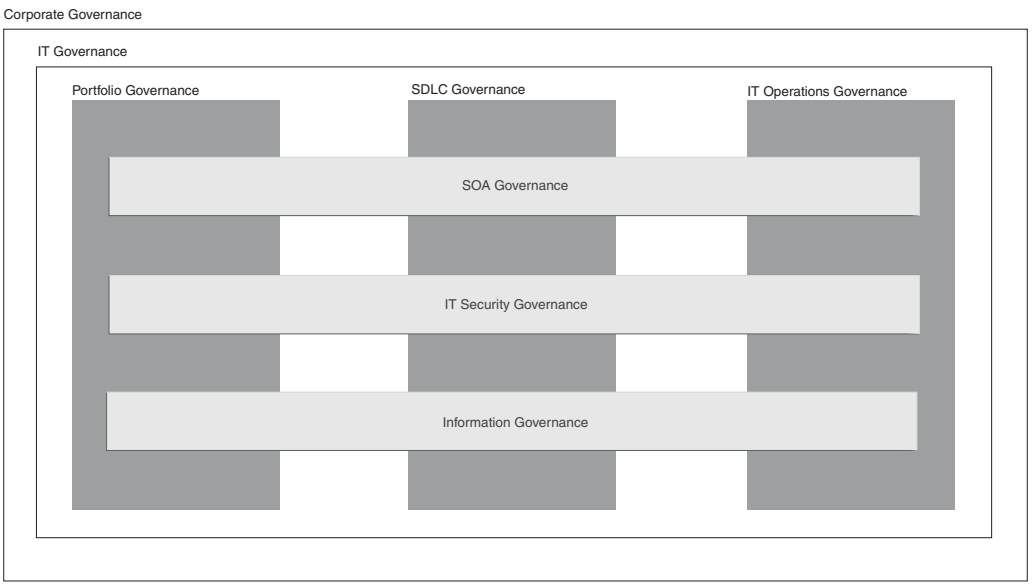


Figure 6.3
SOA governance must be defined through a program that can harmoniously co-exist alongside other IT governance programs.

What's of critical importance is that an appropriate scope be established for the SGPO. There are two primary factors that determine this scope: the reach of the SGPO within the overall IT enterprise and the areas of responsibility assumed by the SGPO within whatever domain it operates.

6.3 SGPO Jurisdiction Models

As explained in Chapter 3, a given IT enterprise can have one or more service inventories. Each service inventory represents a collection of independently standardized and governed services. When an IT enterprise has multiple service inventories, each is (ideally) associated with a well-defined domain, such as a line of business. In this case, service inventories are further qualified with the word "domain."

Depending on whether domain service inventories are being used and depending on how cooperative relations are between different service inventory owners, there may or may not be the opportunity to have one SGPO assume responsibility for multiple domain service inventories. As a result, different jurisdiction models exist, as follows:

Centralized Enterprise SGPO

If a single enterprise service inventory has been established, then it is generally expected that SOA governance responsibilities will be assigned to a single SGPO that oversees SOA governance on behalf of the entire IT enterprise.

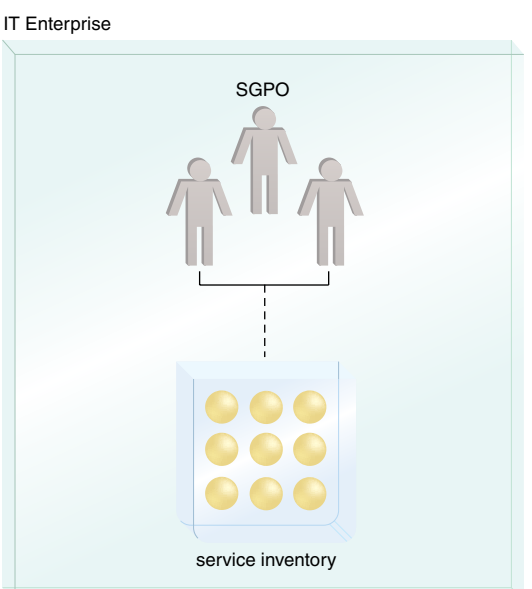


Figure 6.4
A single SGPO responsible for the enterprise service inventory.

Centralized Domain SGPO

Even though individual domain service inventories can be independently standardized, managed, and owned, with enough cooperation between the owners, the IT department may be able to establish a single, enterprise-wide SGPO that subjects all service inventories to a common SOA governance system.

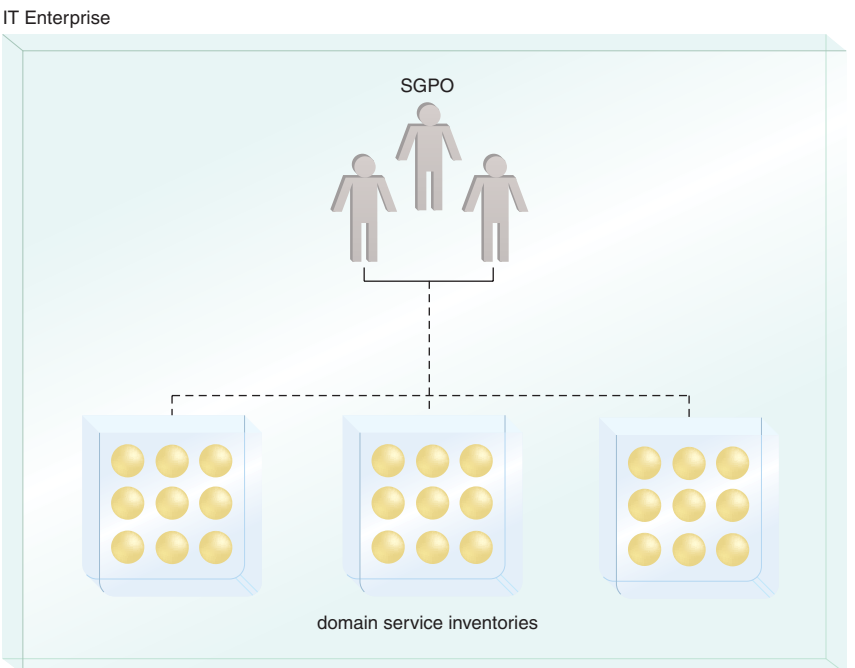


Figure 6.5
A single SGPO responsible for multiple domain service inventories.

Alternatively, different SOA governance programs can be created for each or select domain service inventories. With this model, separate programs can still be defined and maintained by the same central SGPO. The primary benefit of doing so is to maintain consistency and enterprise-wide alignment of how SOA governance programs are created and carried out, despite the fact that the respective SOA governance systems vary.

Federated Domain SGPOs

In this model, a central overarching SGPO exists in addition to individual SGPOs, each responsible for a separate domain service inventory. The domain SGPOs carry out individual SOA governance programs; however, these programs are required to comply to a set of conventions and standards defined by a single parent SGPO. The intent of this model is to strike a balance between domain-level independence and enterprise-wide consistency.

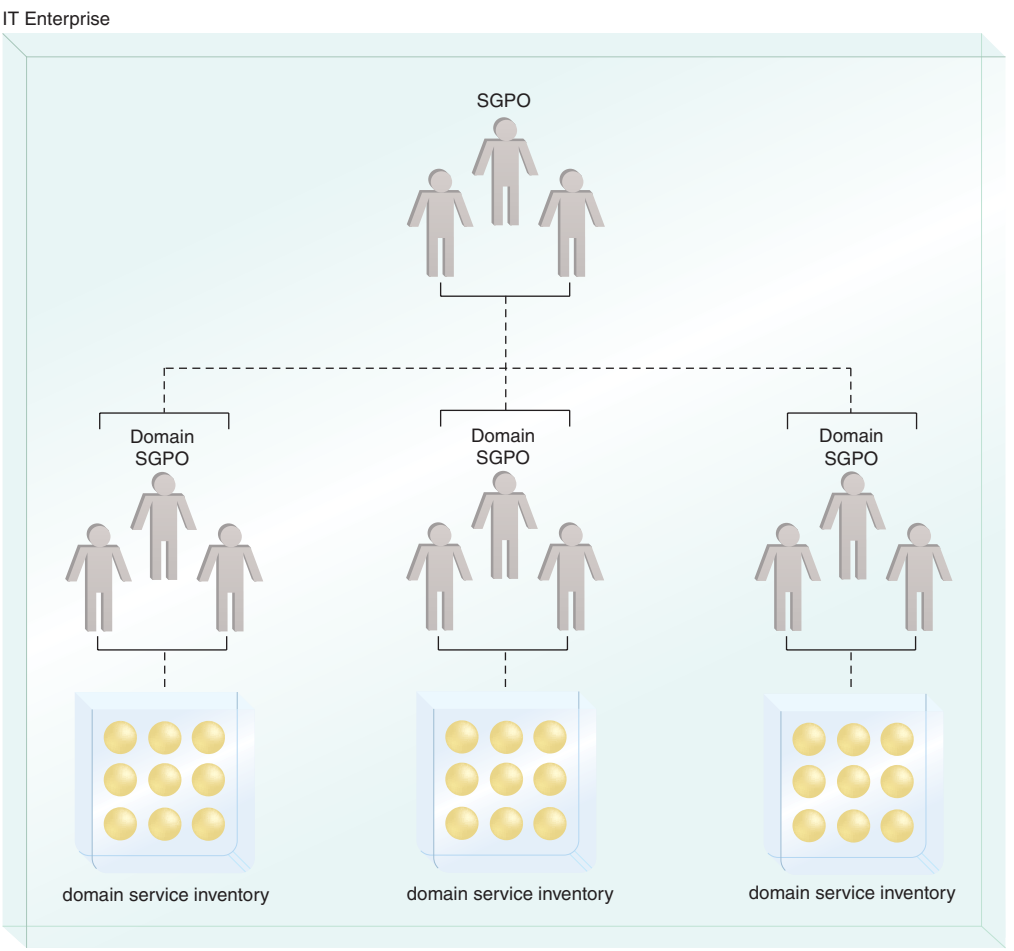


Figure 6.6
Multiple domain SGPOs are further "governed" by a central overarching SGPO.

Independent Domain SGPOs

Each domain service inventory has its own SGPO, which has full governance authority and jurisdiction over that domain. With the absence of a centralized SGPO presence, independent domain-level SGPOs have complete freedom to define and execute respective SOA governance programs.

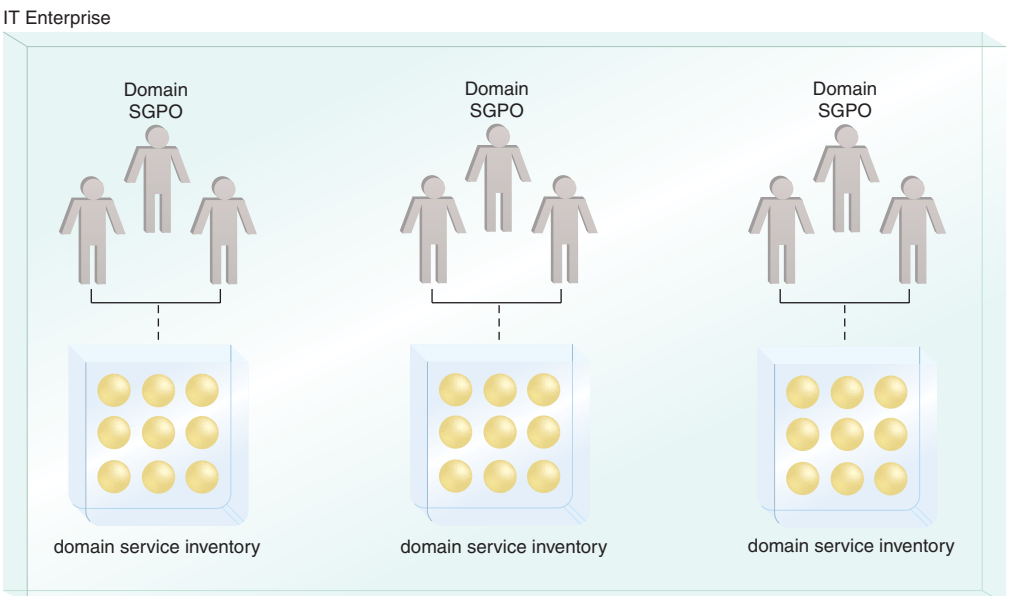


Figure 6.7
Multiple domain SGPOs independently govern multiple domain service inventories.

SUMMARY OF KEY POINTS

- The SGPO is an organizational entity responsible for defining and administering the SOA governance program.
- The SGPO needs to be carefully positioned within the overall IT department to ensure alignment with existing governance groups and programs.
- Different SGPO jurisdiction models can be considered, depending on the SOA adoption approach taken by an organization.

6.4 The SOA Governance Program

The SGPO exists to create and maintain an *SOA governance program*. This program encompasses the SOA governance system and all associated responsibilities for planning, implementing, and evolving this system. The best way to distinguish the program from the system is to view the SOA governance system as a set of formal precepts, roles, processes, metrics, and any associated models. The SOA governance program is dedicated to establishing and evolving the SOA governance system and therefore further provides real-world planning and implementation considerations, such as project plans, budgets, schedules, milestones, and further deliverables that map the SOA governance system to other parts of the existing IT enterprise (including already established IT governance systems).

The task of realizing an SOA governance program can be divided into three basic steps:

1. Assessing the Enterprise (or Domain)
2. Planning and Building the SOA Governance Program
3. Running the SOA Governance Program

Step 1: Assessing the Enterprise (or Domain)

Before creating appropriate precepts and formalizing the overall SOA governance system, the SGPO must first evaluate specific aspects of the current organizational state of the IT enterprise or whatever domain thereof for which that SOA adoption is being planned. This assessment may be limited to the domain in which the SGPO operates, but often also encompasses broader, organization-wide considerations that apply to most or all domains.

The assessment generally focuses on several specific areas:

- Current Governance Practices and Management Styles
- SOA Initiative Maturity
- Current Organizational Model
- Current and Planned Balance of On-Premise and Cloud-based IT Resources

Current Governance Practices and Management Styles

The organization's existing governance practices and management styles need to be studied to determine how best to introduce SOA governance-related processes and precepts. As previously described, no one governance model is suitable for every organization. A successful SOA governance program must take into account the organization's culture and management preferences.

Common issues that need to be addressed include:

- Are decisions tightly controlled by a central authority or widely delegated?
- Do the various groups within the organization collaborate or do they typically work autonomously?
- How do other governance program offices in the company work?
- How well does the organization articulate and disseminate governance precepts?
- How rigorously do people within the organization adhere to standard practices and processes?
- How much flexibility do managers and project leaders have in adapting to processes to meet the needs of a specific project?
- How much flexibility does management have to establish or modify incentive systems?

Concrete, well-researched answers to these questions can significantly influence an SOA governance program in that they can identify both strengths and weaknesses in relation to the types of governance and management practices required to see through a successful SOA initiative. This, in turn, helps determine the nature of precepts required and to what extent the existing IT culture will be impacted by the SOA governance system.

SOA Initiative Maturity

Ideally, an SOA governance program is established prior to the launch of an SOA initiative. However, in situations where existing SOA projects or activities are already underway, a further analysis of their progress and maturity is required to ensure that the introduction of the SOA governance program ends up supporting and aligning these efforts with overarching strategic goals. The SGPO may also need to spend time assessing existing SOA initiatives in relation to an IT department's readiness for SOA governance.

NOTE

Visit www.soaspecs.com for a list of industry maturity models relevant to the adoption of service-orientation and SOA.

Current Organizational Model

An organizational model defines roles and responsibilities within an organization. A given IT department will have a distinct organizational model that usually establishes a hierarchy with levels of authority. The SGPO must assess existing roles and responsibilities in order to identify how new roles and responsibilities specific to SOA governance will affect the organizational model.

Current and Planned Balance of On-Premise and Cloud-based IT Resources

In order to take an appropriate range of considerations into account when authoring SOA governance precepts and supporting processes, the SGPO needs to have a clear understanding of what cloud-based IT resources relevant to the SOA project currently exist, and to what extent the organization is planning to explore or proceed with cloud-based deployment of services and/or related IT resources. These considerations usually lead to additional standards, additional factors that apply to review processes, and additional organizational roles and skill-sets required for the definition of precepts and processes.

Step 2: Planning and Building the SOA Governance Program

After assessing the organization, the SGPO can get to work on actually planning and creating a concrete program for SOA governance. As previously established, the SOA governance program encompasses the SOA governance system and further provides supporting components to help establish and maintain this system.

To identify the primary components of an SOA governance program, we therefore begin by revisiting the precepts, people, and processes that are part of a governance system.

SOA Governance Precepts

The assessment completed in the previous stage is intended primarily to identify the aspects of a current or planned SOA initiative that pose the most risk and have the most urgent need for structured governance.

The following precepts are described individually in Chapters 7 to 12, where they are further associated with project lifecycle stages, processes, and organizational roles:

- Service Profile Standards (Chapter 7)
- SOA Governance Technology Standards (Chapter 7)
- Preferred Adoption Scope Definition (Chapter 7)
- Organizational Maturity Criteria Definition (Chapter 7)
- Standardized Funding Model (Chapter 7)
- Service Inventory Scope Definition (Chapter 8)
- Service and Capability Candidate Naming Standards (Chapter 8)
- Service Normalization (Chapter 8)
- Service Candidate Versioning Standards (Chapter 8)
- Schema Design Standards (Chapter 9)
- Service Contract Design Standards (Chapter 9)
- Service-Orientation Contract Design Standards (Chapter 9)
- SLA Template (Chapter 9)
- Service Logic Design Standards (Chapter 9)
- Service-Orientation Architecture Design Standards (Chapter 9)
- Service Logic Programming Standards (Chapter 9)
- Custom Development Technology Standards (Chapter 9)
- Testing Tool Standards (Chapter 10)
- Testing Parameter Standards (Chapter 10)
- Service Testing Standards (Chapter 10)
- Cloud Integration Testing Standards (Chapter 10)
- Test Data Usage Guidelines (Chapter 10)
- Production Deployment and Maintenance Standards (Chapter 10)
- Runtime Service Usage Thresholds (Chapter 11)

- Service Vitality Triggers (Chapter 11)
- Centralized Service Registry (Chapter 11)
- Service Versioning Strategy (Chapter 11)
- SLA Versioning Rules (Chapter 11)
- Service Retirement Notification (Chapter 11)
- Enterprise Business Dictionary/Domain Business Dictionary (Chapter 12)
- Service Metadata Standards (Chapter 12)
- Enterprise Ontology/Domain Ontology (Chapter 12)
- Business Policy Standards (Chapter 12)
- Operational Policy Standards (Chapter 12)
- Policy Centralization (Chapter 12)

It is important to document the reasoning behind each precept and define the circumstances in which it does or does not apply. Precepts need to be codified with clarifying policies and standards and consequences for non-compliance need to be further established. Also, supporting guidelines and compliance metrics are required. Where appropriate, conditions that might warrant a waiver need to be identified and a separate precept for allowing or denying waivers may further be required.

SOA Governance Processes

Depending on the size of the SGPO, internal processes may be required to coordinate activities within the group running the office. Governance process definition is another area of focus for the SOA governance program.

The following processes are covered in Chapters 7 to 12, where they are mapped to project lifecycle stages, precepts, and organizational roles:

- Organizational Governance Maturity Assessment (Chapter 7)
- Adoption Impact Analysis (Chapter 7)
- Adoption Risk Assessment (Chapter 7)
- Business Requirements Prioritization (Chapter 8)
- Service Candidate Review (Chapter 8)

- Service Contract Design Review (Chapter 9)
- Service Contract Registration (Chapter 9)
- Service Access Control (Chapter 9)
- Service Logic Design Review (Chapter 9)
- Legal Data Audit (Chapter 9)
- Service Logic Code Review (Chapter 9)
- Service Test Results Review (Chapter 10)
- Service Certification Review (Chapter 10)
- Service Maintenance Review (Chapter 10)
- Service Vitality Review (Chapter 11)
- Service Registry Access Control (Chapter 11)
- Service Registry Record Review (Chapter 11)
- Service Discovery (Chapter 11)
- Shared Service Usage Request (Chapter 11)
- Shared Service Modification Request (Chapter 11)
- Service Versioning (Chapter 11)
- Service Retirement (Chapter 11)
- Data Quality Review (Chapter 12)
- Communications Quality Review (Chapter 12)
- Information Alignment Audit (Chapter 12)
- Policy Conflict Audit (Chapter 12)

You may have noticed how several of these processes end with "review." Many SOA governance processes are designed specifically to support and enforce compliance to precepts, and therefore are carried out subsequent to other project delivery tasks as a formal review.

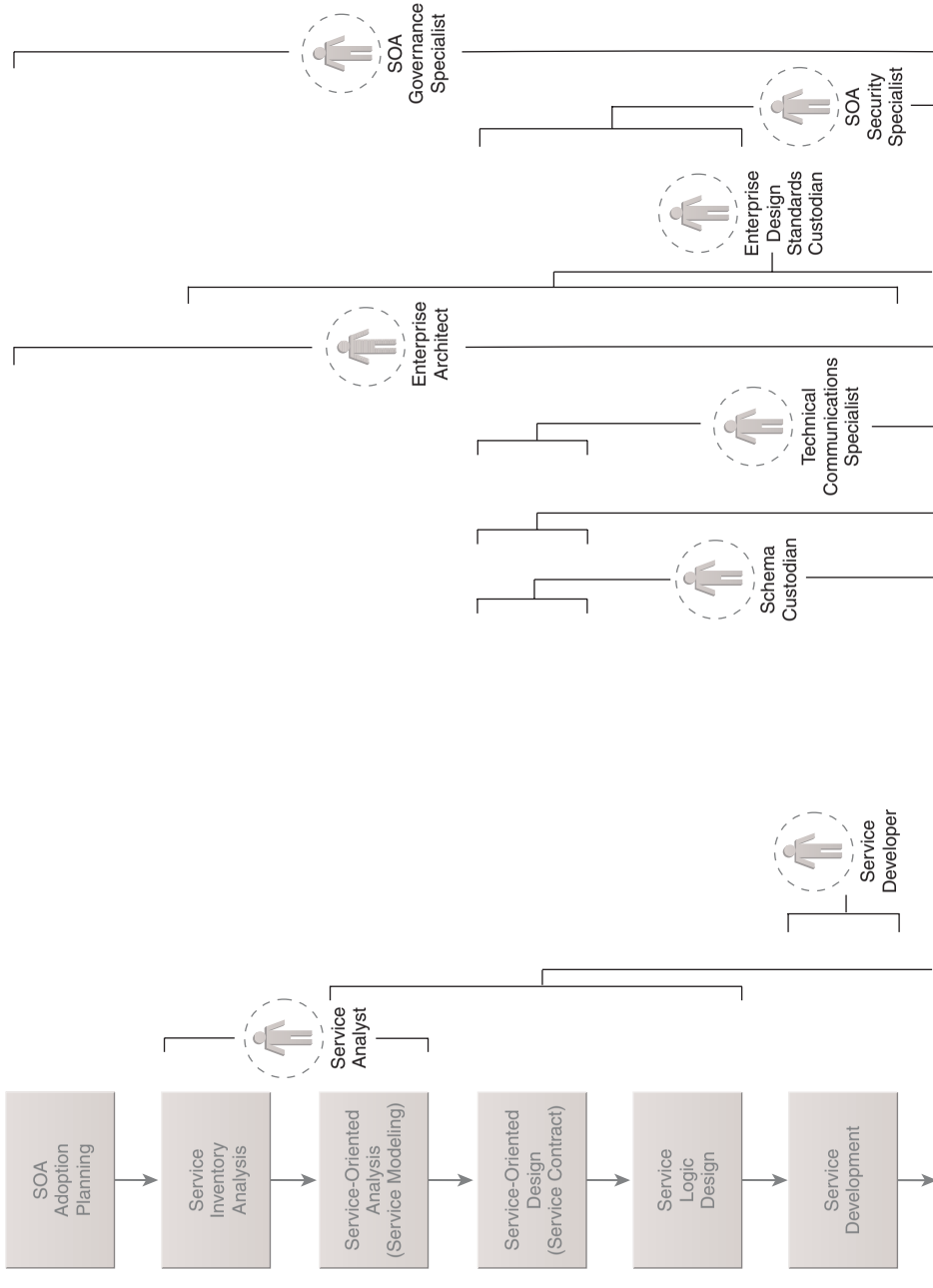
SOA Governance Roles

Organizational roles associated with SOA initiatives are of great interest to the SGPO because the various project stages for which governance precepts and processes can be defined will involve these roles in a governance capacity.

The following organizational roles were introduced in Chapter 5 and are further explored in Chapters 7 to 12, where they are associated with project lifecycle stages and SOA governance precepts and processes:

- Service Analyst
- Service Architect
- Service Developer
- Service Custodian
- Service Administrator
- Cloud Resource Administrator
- Schema Custodian
- Policy Custodian
- Service Registry Custodian
- Technical Communications Specialist
- Enterprise Architect
- Enterprise Design Standards Custodian (and Auditor)
- SOA Quality Assurance Specialist
- SOA Security Specialist
- SOA Governance Specialist

Figure 6.8 provides an overview of how these roles commonly map to SOA project lifecycle stages.


SOA Governance Specialist
SOA Security Specialist
Enterprise Design Standards Custodian
Enterprise Architect
Technical Communications Specialist
Schema Custodian
Service Developer
Service Analyst
SOA Adoption Planning
Service Inventory Analysis
Service-Oriented Analysis (Service Modeling)
Service-Oriented Design (Service Contract)
Service Logic Design
Service Development

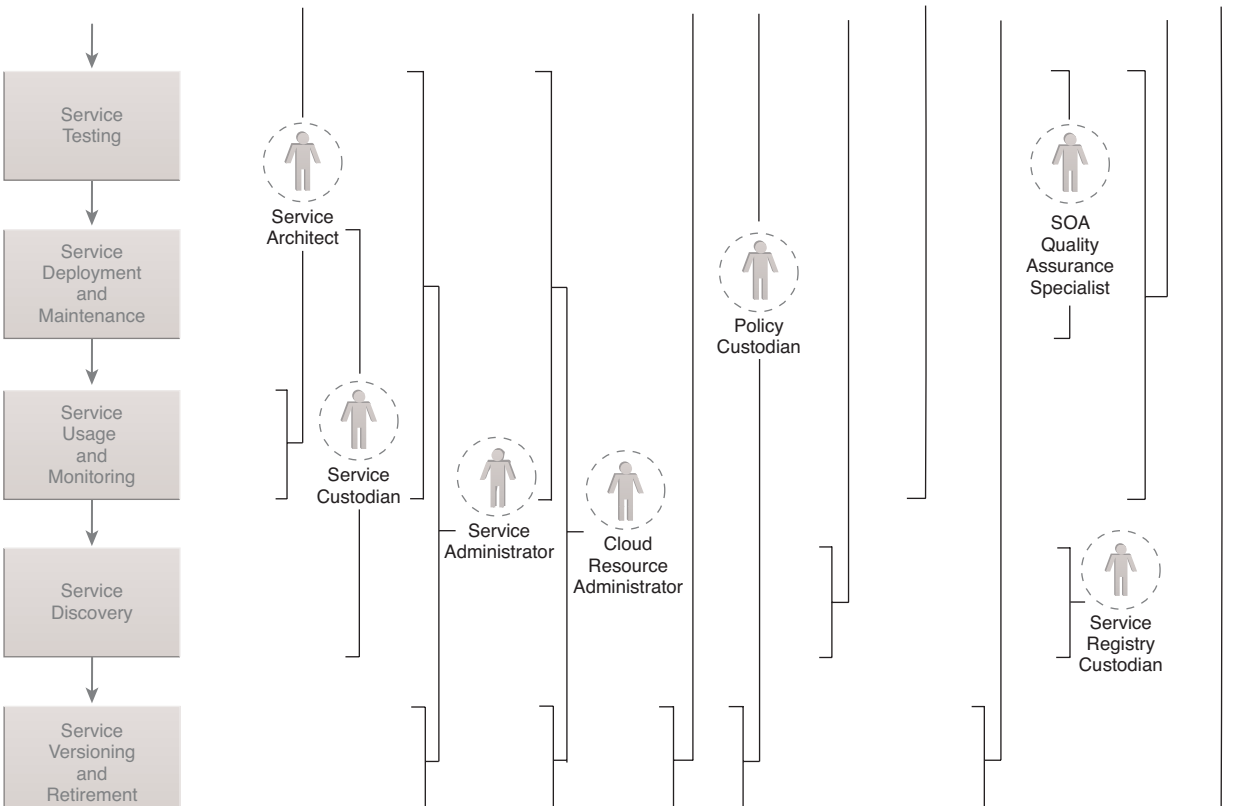


Figure 6.8

Each role can be involved in governance activities pertaining to multiple SOA project stages. Appendix B further provides master reference diagrams that illustrate the cross-project stage relationships of these roles with precepts and processes.

Additional Components

As previously stated, the scope of the SOA governance program goes beyond the definition of the SOA governance system. Some of the areas that the program will likely need to further address in support of pre-defined precepts and processes include:

- *SOA Governance Tools* – Products and technologies that enable the automation of SOA governance processes or that can monitor and collect relevant statistical data need to be identified and chosen in order to establish a suitable SOA governance infrastructure.
- *SOA Governance Roadmap* – Also referred to as the SOA Governance Program Project Plan, this document establishes the timeline, resources, budget, and other real-world considerations required to actually realize the goals of the SGPO and, more specifically, a specific SOA governance program.

There can be many more parts and extensions to an SOA governance program specific to the needs of a given IT department and its SOA project goals.

Step 3: Running the SOA Governance Program (Best Practices and Common Pitfalls)

The SOA governance program is a living entity that requires continuous maintenance. Over time, and in response to real-world issues and challenges, the SOA governance program will naturally evolve as precepts, roles, and processes are refined or added to the overall SOA governance system.

This section contains a series of best practices that provide guidance for successfully running an SOA governance program, as well as a set of common pitfalls that warn against factors and circumstances that can inhibit the adoption and evolution of the program.

Collect the Right Metrics and Have the Right People Use Them

Metrics, the fourth primary building block of a governance system, represent a vital element in the on-going operation of the SOA governance program. Having the tools and processes to consistently collect and disseminate key metrics is just as important as having the right individuals and groups assigned the responsibility to interpret and make decisions based on the reported metrics.

Provide Transparency and Foster Collaboration

Depending on its scope, an SOA governance program can affect a wide range of departments, groups, and individuals. Instead of creating the program in isolation, its development should be an open process, accessible for review and involvement to others within the IT department. Not only will this generate goodwill among those less enthusiastic about upcoming SOA adoption initiatives, but it will also allow people to voice concerns and provide suggestions. This type of feedback can help improve the SOA governance system, while also easing its eventual implementation.

Ensure Consistency and Reliability

SOA governance precepts need to be consistently enforced and SOA governance processes need to be consistently carried out. Providing a reliable means of managing and maintaining the SOA governance system is the foremost responsibility of the SGPO and depends heavily on the quality and detail with which the SOA governance program has been developed.

Besides human incompetence and poor SOA governance program definition, another reason this best practice may not be followed is an unexpected withdrawal of funding allocated to the SGPO. Should this occur, it is preferable to downsize the scope of the SOA governance program instead of trying to continue carrying out SOA governance activities without the necessary resources to ensure consistency and reliability.

Compliance and Incentives

An SOA governance system will introduce precepts that will sometimes restrict certain tasks that IT project team members have traditionally been free to complete by using their own judgment. At the same time, precepts also help make critical decisions for IT professionals that can ease their responsibilities while also guaranteeing consistency across services and service-oriented solutions. It is important that project teams embrace SOA governance precepts and processes and that they clearly understand how and why new types of compliance are required, while also fully acknowledging that their judgment and freedom in other areas are still required and relied upon.

Furthermore, offering formal incentives for regularly supporting precepts can go a long way to fostering consistent adherence. Because people will generally do that for which they are most rewarded, an absence of incentives can encourage them to violate or ignore SOA governance precepts. When this happens, something generally needs to change: the incentive, the precept, or the people.

Education and Communication

SOA governance systems can impose precepts more restrictive than traditional IT governance systems. Furthermore, some organizations can find it difficult to fully mandate the adoption of and compliance to SOA governance precepts. Even when compliance is required, in some IT cultures, groups or individuals can still choose to "rebel" by intentionally disregarding precepts because they are considered too burdensome.

Regardless of whether compliance to SOA governance precepts is voluntary or mandatory, it is critical that everyone affected fully understand why these precepts exist and how their compliance ultimately results in tangible benefits. Furthermore, it can be helpful to specifically address the common question: "What's in it for me?" Fostering a true understanding of how support for the SOA governance system can result in personal benefit will further help unify IT project teams and personnel.

For this purpose, the SGPO must put together an education and communications program. This program must begin by establishing SOA terminology, concepts, and practices using a common vocabulary that all project team members can understand. It must then introduce the SOA governance system and impress its virtues.

Common Pitfalls

From the many failed and successful SOA adoption initiatives has emerged a set of common pitfalls that pertain directly to establishing and running an SOA governance program:

- *Lack of Recognized Authority* – The SGPO must be endowed with the responsibility and authority to develop and execute the SOA governance program. For this to happen, other IT departments and project teams must accept that authority. When the SGPO's authority is ignored or not recognized, there needs to be recourse. If the lack of recognition persists, there need to be consequences for those who refuse to provide support.
- *Misalignment with IT Governance* – An SOA governance system must be consistent with and supportive of existing corporate and IT governance systems. If other IT governance precepts and processes are not taken into consideration, the SOA governance system can become inadvertently misaligned. This will result in conflicts and can further introduce risks to the IT department as a whole.
- *Overestimating or Underestimating Cloud Computing Factors* – There are various ways that cloud platforms and technologies can be made part of the planned SOA project. An organization may have or may plan to establish a private cloud comprised

of standardized IT resources that require distinct administration processes, or it may be moving IT resources to a public cloud that imposes non-compliant requirements that may require even more distinct administration approaches. Either way, it is important for the SGPO to be open and flexible regarding these possibilities and—if cloud deployment is a possibility—to fully understand the consequences of having some or all services or IT resources of a given project deployed in cloud environments.

- *Impractical or Overly Formal Processes* – SOA governance processes are intended to help enforce and organize the application of precepts. Sometimes it can be tempting to create highly structured and detailed processes that cover all possible bases. Although such processes may be thorough, they can be too burdensome, onerous, or time consuming to carry out consistently in the real world. When designing SOA governance processes, consider the impact of the process on the project lifecycle and timeline and investigate any opportunity to streamline and automate parts of the process. Tools that integrate the governance process directly with development or administration platforms may further be helpful in allowing developers and administrators to efficiently identify and fix compliance issues.
- *Poor Documentation* – SOA governance precepts should be well-documented and disseminated. Many precepts require human interpretation, which means that people in the trenches will need to clearly understand how and when to apply them. Sometimes members of the SGPO take the formality of an SOA governance system too seriously. As a result, precepts and processes can be documented using overly academic or technical language. This can make the documents difficult to fully understand and, at times, inaccessible to some project team members.
- *Overspending on SOA Governance Tools* – SOA vendors have developed highly sophisticated administration and management tools (commonly labeled as "governance" products) with various design and runtime features. While powerful, these tools sometimes provide functionality that is not needed or not suitable for an organization's specific governance requirements. Further, these tools can be very expensive, especially in larger IT enterprises. Therefore, it is often worth waiting to invest in a full-blown SOA governance infrastructure until an SOA governance program has matured to the extent that the actual design and runtime automation requirements can be identified and well defined. Otherwise, over-spending or mis-spending on governance tools and technology can put a significant dent in an SOA initiative's overall ROI and further limit funds that may have been better allocated to supporting the SGPO in other areas.

SUMMARY OF KEY POINTS

- An SOA governance program encompasses the models that comprise an SOA governance system and further provides actionable artifacts that determine how the system will be established and maintained.
- A basic framework for an SOA governance program consists of three primary parts that address the assessment of the current organizational state, the planning and building of the program, as well as its evolutionary operation.

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