

Goals and Challenges in SOA Governance

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Agenda

Service-Oriented Architecture

SOA Governance Challenges

Scenario-Based Technique for Establishing SOA Governance

Summary



Our View of SOA?



Service-oriented architecture is a way of designing, developing, deploying and managing systems, in which

- Services provide reusable business functionality via well-defined interfaces.
- Service consumers are built using functionality from available services.
- There is a clear separation between service interface and service implementation.
 - Service interface is just as important as service implementation.
- An SOA infrastructure enables discovery, composition, and invocation of services.
- Protocols are predominantly, but not exclusively, message-based document exchanges.



SOA Governance

IBM defines SOA governance as the *process of establishing the chain of responsibilities and communications, policies, measurements, and control mechanisms that allow people to carry out their responsibilities in SOA projects.*

B. Woolf, "Introduction to SOA Governance," June 13, 2006.

eBizQ states that *SOA governance provides organizations with the processes, policies, and solutions/technologies that can help to manage increasingly complex SOA deployments in an effective and efficient manner.*

"Increasing the Effectiveness and Efficiency of SOA Through Governance, 2008 SOA Governance Survey Report," Oracle, 2008.

In general:

SOA governance provides a set of policies, rules, and enforcement mechanisms for developing, using, and evolving service-oriented systems, and for analysis of the business value of those systems.



Types of SOA Governance

Design-time governance applies to early activities such as planning, architecture, design, and development

- includes elements such as rules for strategic identification, reuse, development, and deployment of services
- enforces consistency in use of standards, SOA infrastructure, reference architectures and processes

Runtime governance applies to deployment and management of service-oriented systems

- develops and enforces rules to ensure that services are executed according to policy and that important runtime data is logged

Change-time governance applies to maintenance and evolution of service-oriented systems

- develops and enforces rules for maintenance and evolution as well as communication of changes to stakeholders



Examples of Design-Time Governance Concerns

- Who has what responsibilities regarding services? Build? IV&V? Security? Operation?
- What services should be implemented?
- Does a proposed service represent a new, reusable capability?
- What are the rules regarding documentation?
- What are expectations for service verification and validation?
- What type of testing is required for a service? A composite service? A business process?
- What are the compliance steps required to verify architecture? Design? Implementation?
- What are the steps to get a service deployed on the infrastructure?
- Who pays for development of shared services?
- Who owns a service and the data it uses?



Examples of Runtime Governance Concerns

- Who is allowed to invoke a service?
- What are the steps for service consumers to become authorized users of a service?
- What service monitoring expectations are placed on the infrastructure?
- What execution logs are kept?
- What types of incidents/events require notification to authorities? Who are the authorities? are the notification processes in the case of security breaches or other events?
- What are the policies regarding problem reporting?
- What are the backup/restore policies?



Examples of Change-Time Governance Concerns

- How are service changes and upgrades decided and communicated?
- Who pays for maintenance and development of shared services?
- How do governance processes support rapid re-verification of functional capability and system qualities in the event of a new version?
- What happens when a service changes?
- What types of changes lead to complete revalidation?
- What changes do not?



Benefits of SOA Governance



Greater alignment with business goals

Greater control over creation, deployment, and use of services

Centralized place for policies and regulations

Can embed compliance with government and industry regulations

- Sarbanes-Oxley, HIPAA, GLBA



Challenges of Implementing SOA Governance



Seems counterintuitive

- If SOA is all about loose coupling and flexibility, why all this central control?
- Goal should be to automate governance as much as possible!

Multiple organizations

- How to create governance for service providers, infrastructure providers, and service consumers?
- What if policies conflict?

Dealing with exceptions

- How to record and maintain sometimes necessary exceptions to the rules?

Enforcing compliance

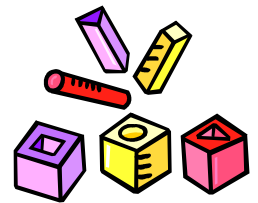
- How to make sure that policies and procedures are being followed at design time and runtime?
- What are the incentives for compliance?



SOA Governance Elements

Existing SOA governance models are diverse, employ unique vocabularies, and possess different strengths and limitations.

However, there are many common elements across these models that are often obscured by their unique vocabularies and marketing jargon.



Rationale

SOA governance needs of organizations vary across a wide spectrum.

- On one end are organizations where extreme agility in producing new applications and services is key.
- On the other end are SOA implementations such as the U.S. Department of Defense (DoD) that involve military command and control and real-time surveillance where there is a high need for control.

Organizations need to understand their SOA governance needs and the context in which they need to implement SOA governance.

- Many existing commercial SOA governance models are overwhelming in early stages of SOA adoption.

Many organizations play multiple roles or address multiple perspectives in their SOA implementations: service provider, service consumer, and infrastructure provider.



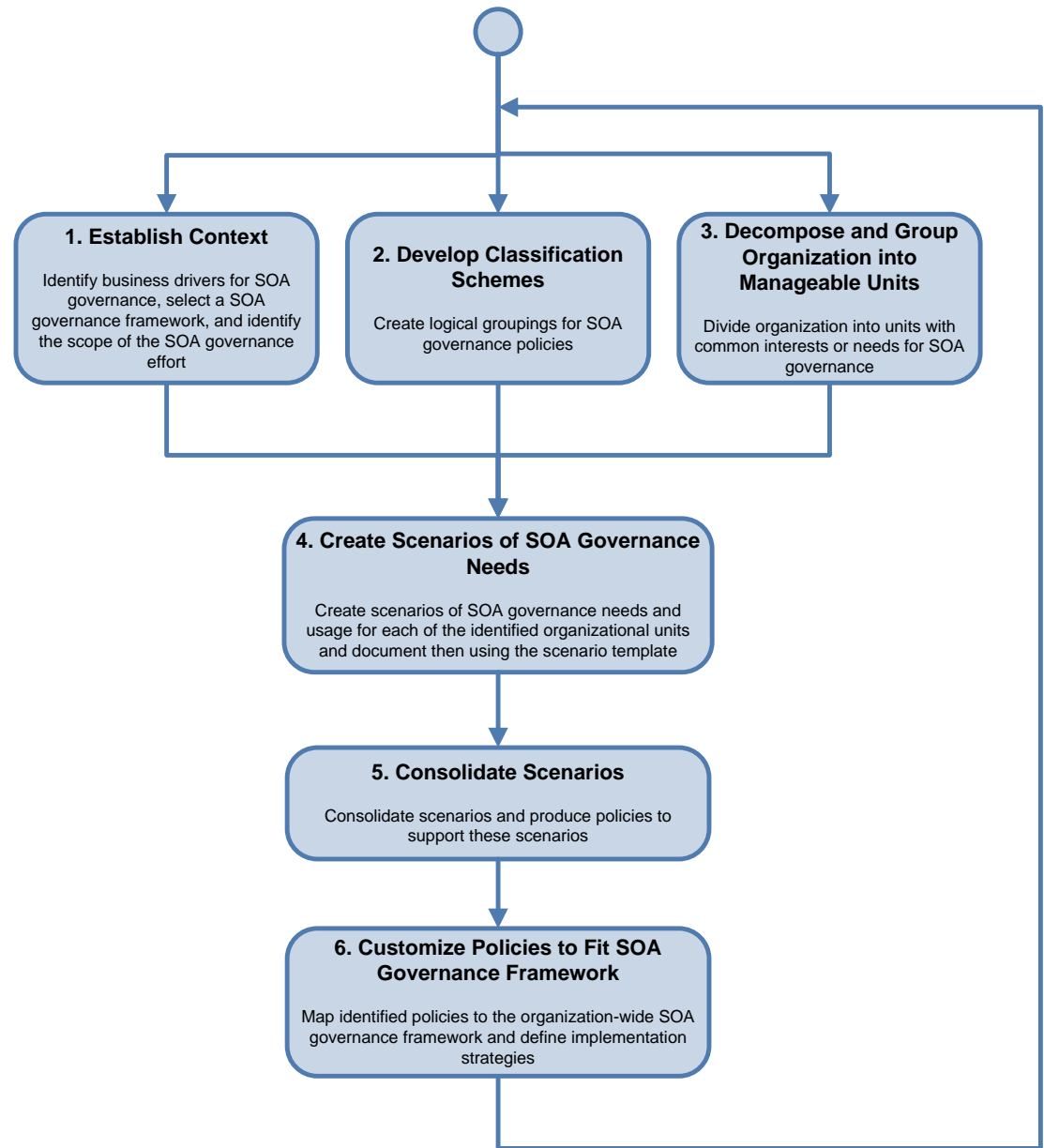
A Scenario Based Approach for Selecting an Appropriate SOA Governance Model

- Vendor-neutral and applicable regardless of which vendor-provided or custom SOA governance framework is adopted
- Scenario-based to capture organization-specific governance concerns
- Risk-aware to support organizations in the analysis and remediation of potential problems in governance

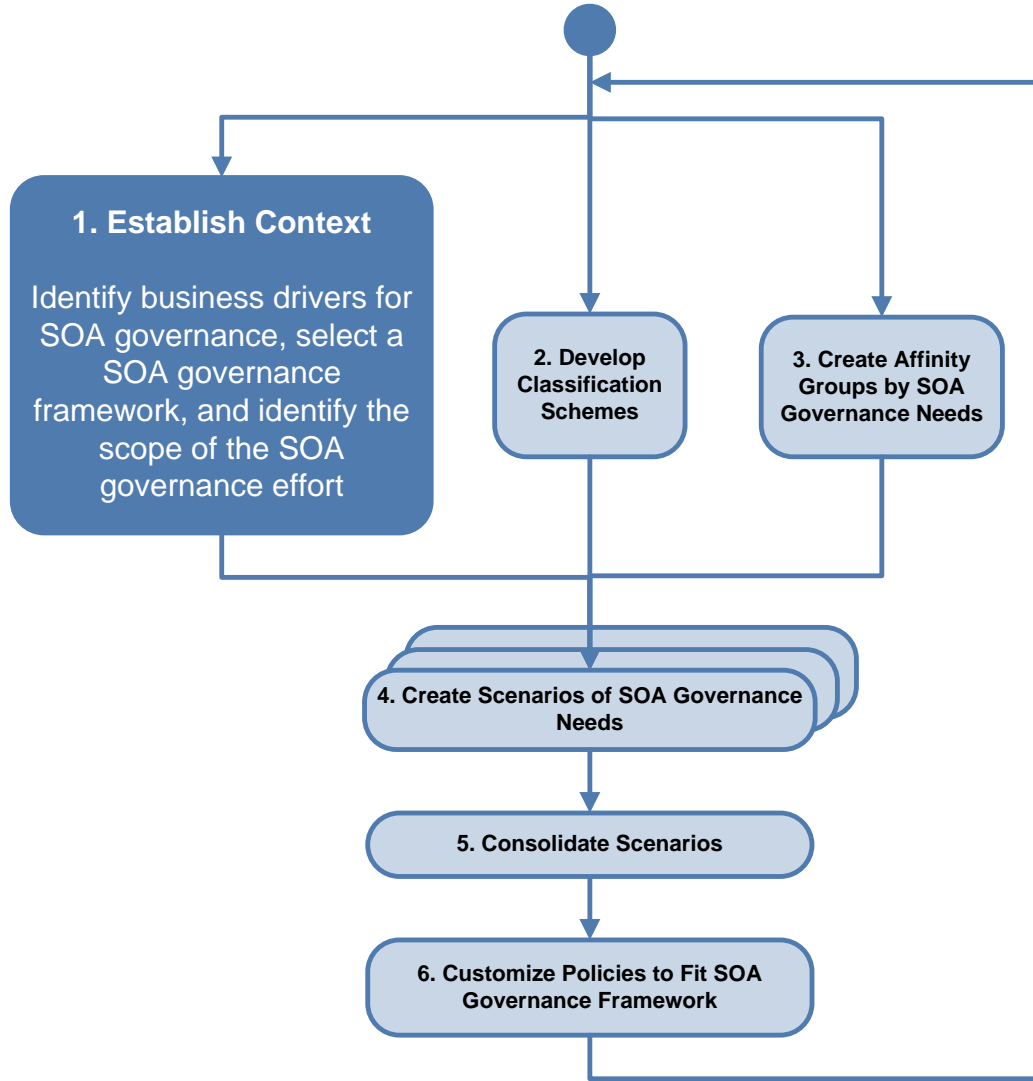
The technique is not intended to replace existing commercial offerings, but to provide a starting point to help organizations understand their specific SOA governance needs and navigate the available offerings.



Overview of the Technique



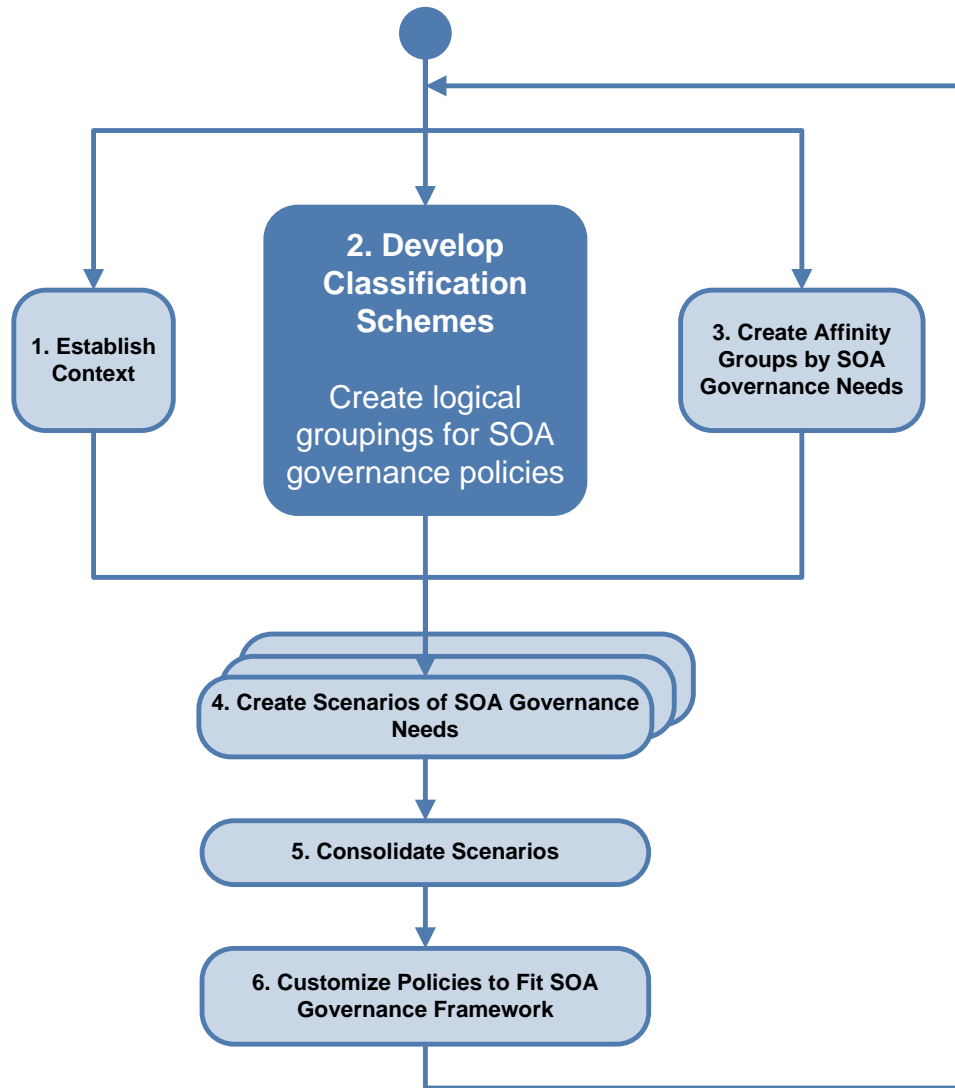
Activity 1: Establish Context ₁



The goal of establishing context is to collect and record information that will guide the scenario and policy generation activities.



Activity 2: Develop Classification Schemes



Classification schemes are used to categorize scenarios and the policies designed to address problems they raise.

They provide a shorthand for discussing groups of governance scenarios and policies and support efficient communication among participants.

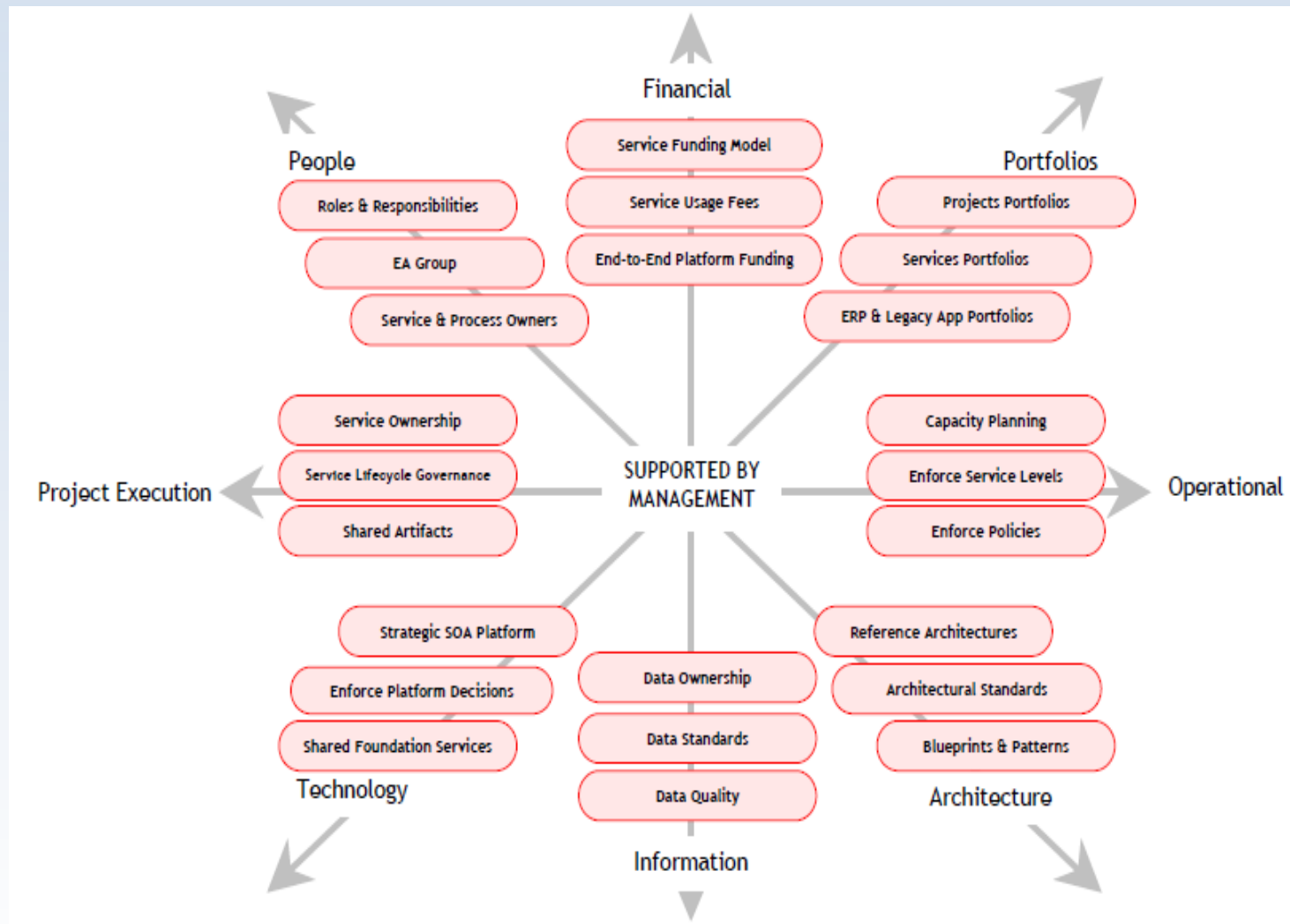


Activity 2: Develop Classification Schemes — Common Classification Schemes

Classification Scheme	Example
Goal	Service Certification, Enterprise-Wide Registry, Governance Life-Cycle Automation, ...
Service Life Cycle	Identification, Design, Deployment, Launch, Management, Maintenance, ...
Activity	Funding, Development, Technology Refresh, Infrastructure, etc.
Service Usage	Internally-Visible Service, Externally-Visible Services, ...
Mixed	Life Cycle and then Service Usage



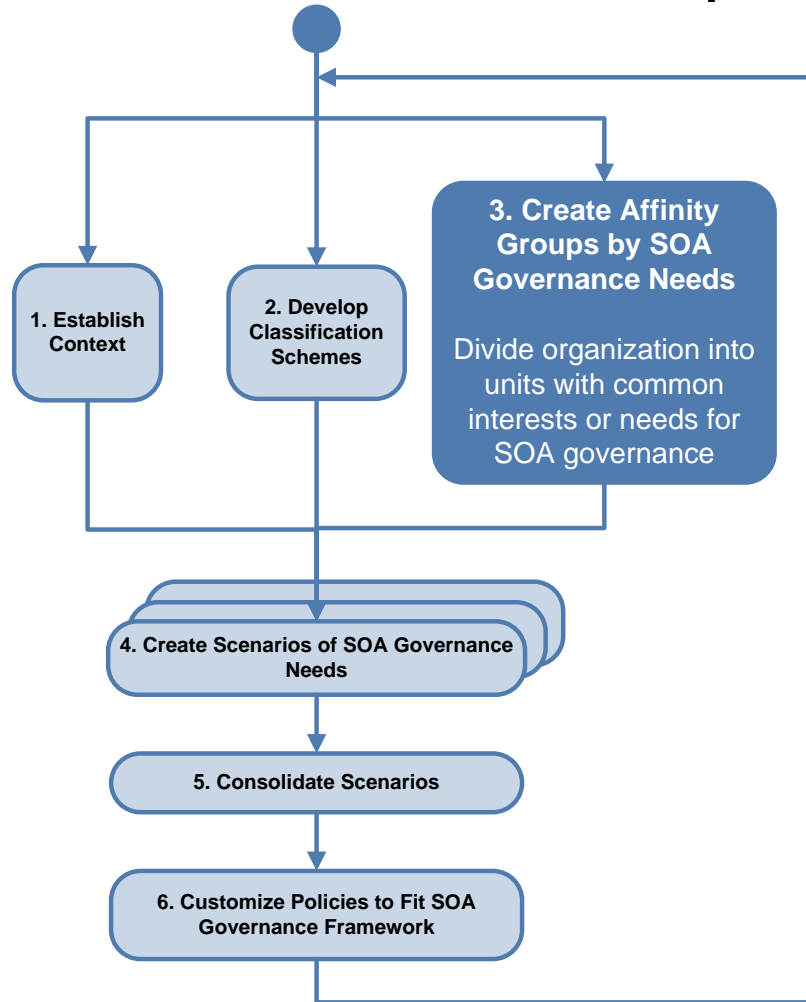
Example: Oracle's SOA Governance Aspects



Source: <http://www.oracle.com/technologies/soa/docs/oracle-soa-governance-best-practices.pdf>



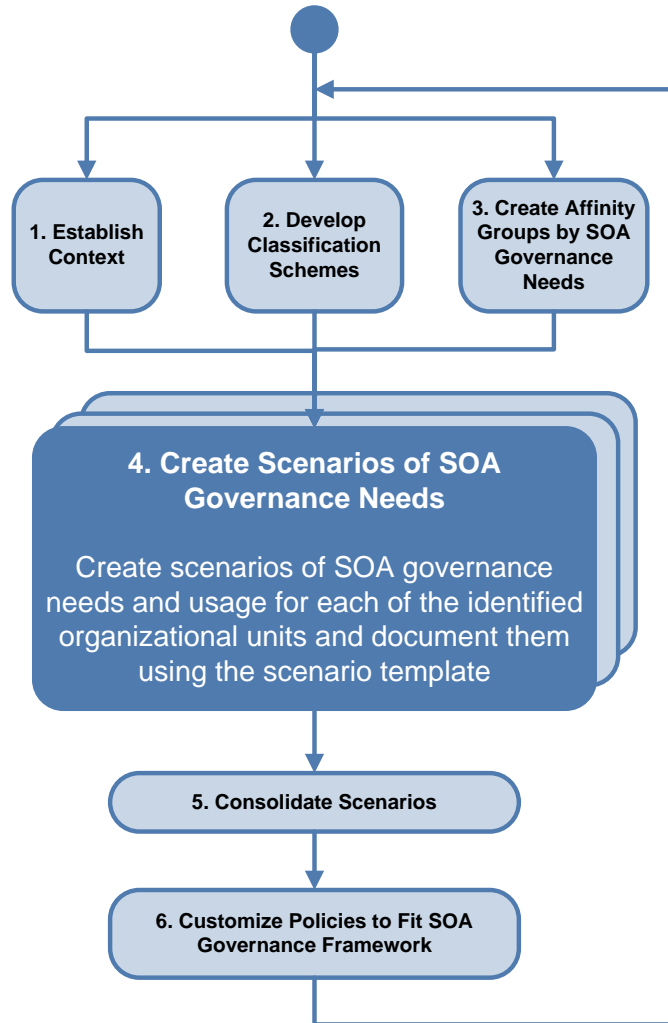
Activity 3: Create Affinity Groups by SOA Governance Needs ₁



Groups with similar needs (affinity groups) are created and tasked with creating scenarios to capture different governance viewpoints.



Activity 4: Create Scenarios of SOA Governance Needs



Scenarios are generated independently by each of the affinity groups established in Activity 3.

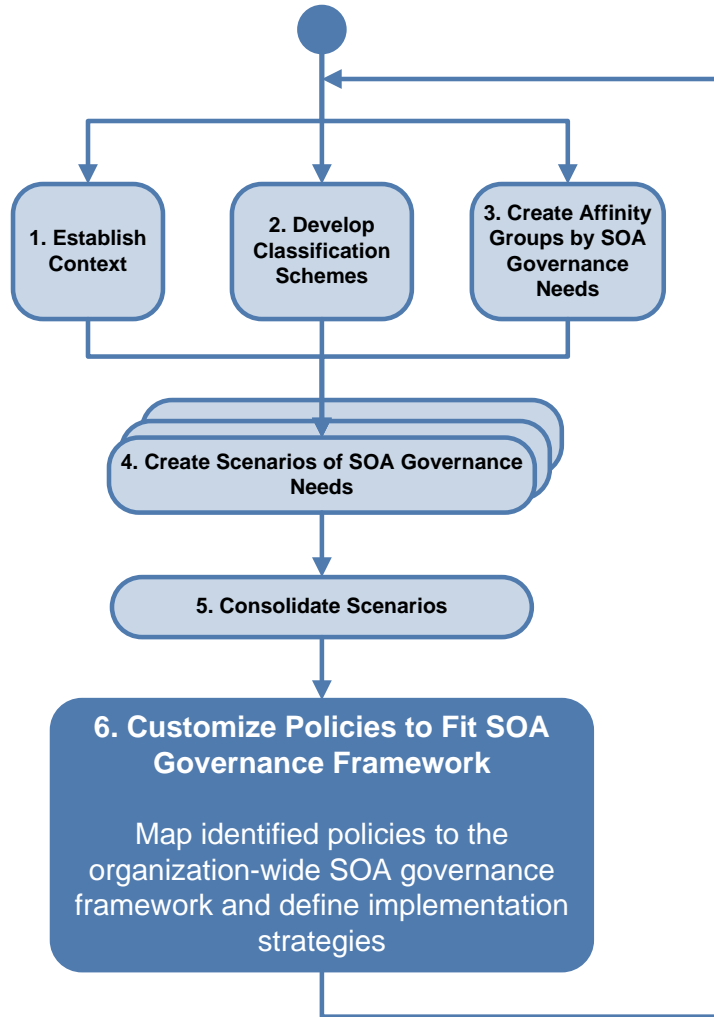


Scenario: Data Quality

Concern	Obsolete/inaccurate data (wrong address, wrong medication, ...)
Scenario Description	Quality assurance processes provide reasonable assurance that data is accurate and timely.
Governance Drivers	Patient safety, compliance with regulations, reduced risk, ownership and responsibility for services, incentivize adoption
Scenario Categories	Data Quality
Perspectives	Service consumer, service provider
Policies	<ol style="list-style-type: none"> 1. Data is compliant with business rules that apply to it. 2. Data is compliant with accepted data schemas and data dictionary. 3. Continuous data validation efforts. 4. Mechanisms are in place for service consumers to report data inaccuracy.
Implementation Mechanisms	<ol style="list-style-type: none"> 1. Process for business rule validation. 2. Process for service consumers to validate entered data. 3. Process to certify data against data schemas. 4. Process and mechanism for service consumers to report data inaccuracies. 5. Process for data validation on the service side.
Risks and Mitigations	<ol style="list-style-type: none"> 1. Incomplete and invalidated business rules. MS: Consumers validate business rules. 2. Business rules change and are not updated in the system. MS: Periodic validation of business rules in the system.
Implications	<ol style="list-style-type: none"> 1. Business rule engine—may need redundancy. 2. Costly and resource-intensive processes to implement. 3. Some processes may require re-training.
Exceptions	No required for test platform. Any exceptions have to be approved by upper management. Certain data elements may not require strict validation.



Activity 6: Customize Policies to Fit SOA Governance Framework



A goal of the customization activity is to fold the findings of the various teams, now reflected in a single set of implementable policies and other elements, back into the organization-wide SOA governance approach.

Another goal is to identify how the policies can be implemented and supported across the organization.



Summary ₁

SOA governance provides a set of policies, rules, and enforcement mechanisms for developing, using, and evolving service-oriented systems, and for analysis of the business value of those systems.

Commercial and other existing SOA governance frameworks are a useful starting point for an organization adopting SOA.

However, mandating an existing framework without considering the unique needs of the organization may result in inefficiencies, overkill, or, even worse, complete failure.

Rather than by fiat, adoption of an SOA governance framework should start with an analysis of organizational needs for SOA governance.



Summary ₂

The scenario-based technique

- Provides a mechanism that is vendor neutral, compatible with existing SOA governance frameworks, simple, and easily scalable
- Can be used in the early phases of SOA adoption to lay the foundation for organization-specific SOA governance and can also provide insight into a sequencing of policies based on actual needs
- Can also be used to capture the inevitably changing needs for governance as SOA is deployed.

