



**Rational** software

## **SOA governance—IBM's approach.**

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**Introduction**

SOA, or service-orientated architecture, has the potential to transform the way business and IT work together. It can bring enormous benefits to the business that implements it correctly. SOA can increase business agility, decrease the time it takes to get new products to market, reduce development and maintenance cost through the reuse of existing services, create new sources of revenue, and better align business and IT.

Implementing an SOA includes implementing a governance model that supports SOA. In fact, without a robust SOA governance model, an SOA implementation will not realize the benefits that the architecture has to offer. Without effective governance, an SOA project—no matter how big or small—will fail.

In this article, we will address issues related to SOA governance and outline IBM's approach to implementing a robust SOA governance model.

**What is SOA governance?**

To understand what SOA governance is, we must put it in the proper context. We begin by defining and gaining a base understanding of governance, IT governance and SOA governance.

#### Governance defined

Governance addresses the need for a mechanism to ensure that there is compliance with the laws, policies, standards and procedures under which an organization operates. Enterprises conducting business today are faced with a continuously changing business environment and a highly complex set of rules and regulations that require corporations to establish a governance model for their enterprise. Organizations must deal with a multitude of regulations, such as Sarbanes-Oxley and Patriot Act requirements, as well as the broad array of industry-specific regulations that make governance an essential element of any enterprise. To that end, we define governance as:

- *Establishing chains of responsibility, authority and communication to empower people (decision rights)*
- *Establishing measurement, policy and control mechanisms to enable people to carry out their roles and responsibilities*

Governance, then, is assigning the rights to make decisions and deciding what measures to use and what policies to follow to make those decisions. The decision rights are assigned to roles in the organizations, not to individuals; so, an aspect of governance is determining organizational roles.

Corporate governance, or enterprise governance, establishes the rules and the manner in which an enterprise conducts business, based upon its strategy, marketplace and principles of doing business. It defines for employees and for business associates the processes that are used to conduct operations and the manner in which people interact.

Beginning with the board of directors and cascading throughout the organization, there are many aspects and levels of corporate governance. All aspects of the business are touched in some manner, from the human resources department to purchasing and marketing. Compliance, a key aspect of governance, is achieved by higher degrees of communication, comprehension and buy-in of all the stakeholders.

#### IT governance defined

IT governance refers to the aspects of governance that pertain to an organization's information technology processes and the way those processes support the goals of the business.

IT governance represents a significant part of enterprise governance, and—given the horizontal nature of IT, where almost everyone in the enterprise uses IT assets to complete their responsibilities—it is also the most visible part of enterprise governance. Effective and ineffective IT governance can be assessed by employees rather easily.

IT governance defines a structure of relationships and processes to direct and control the enterprise. It helps to achieve the enterprise's goals by adding value while balancing risk and return regarding IT and IT processes. IT governance is a subset of enterprise governance; it deals with the management and control of IT assets, people, processes and infrastructures, as well as the manner in which the assets are managed and procured. IT governance also helps to define roles and responsibilities and to specify the decision rights and accountability framework that will help to encourage desirable behavior in IT departments and establish accountability for the use of IT assets. IT governance also helps to codify best practices and define monitoring practices.

SOA governance defined

SOA governance is an extension of IT governance specifically focused on the lifecycle of services, metadata and composite applications in an organization's service-oriented architecture.

SOA governance defines the changes to IT governance to ensure that the concepts and principles for service orientation and its distributed architecture are managed appropriately and are able to deliver on the stated business goals for services.

Since SOA is a distributed approach to architecture that crosses lines of business and IT, there is a greater need for effective SOA governance. In addition, SOA governance provides a framework for the reuse and sharing of services, a key value derived from leveraging SOA.

Because of its cross-functional aspects, SOA governance also provides a framework for examining several items that are necessary to manage services as another type of IT asset, such as:

- *Maturity of service orientation within the enterprise*
- *Infrastructure enhancements for managing the usage of services in areas of security, monitoring, performance, versioning and shared usage*
- *Enhancements to IT processes to address funding, sharing and incentives for sharing, and reuse of services, as well as for the identification, design and specification of services*
- *Education and training*
- *Roles and responsibilities*
- *Organizational changes*

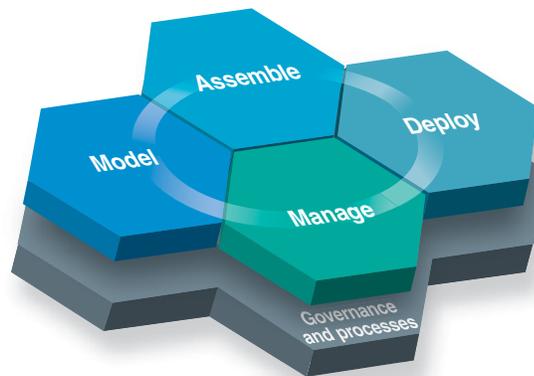
SOA governance extends IT governance by assigning decision rights, policies and measures around the services, processes and lifecycle of SOA to address such concerns as:

- *Service registration*
- *Service versioning*
- *Service ownership*
- *Service funding*
- *Service monitoring*
- *Service auditing*
- *Service diagnostics*
- *Service identification*
- *Service modeling*
- *Service publishing*
- *Service discovery*
- *Service development*
- *Service consumption*
- *Service provisioning*
- *Access to services*
- *Deployment of services and composite applications*
- *Security for services*

As a specialization of IT governance, SOA governance addresses how an organization's IT governance decision rights, policies and measures need to be modified and augmented for a successful adoption of SOA.

**The impact of SOA governance on the SOA lifecycle**

The SOA foundation defines a four-stage service lifecycle: Model, Assemble, Deploy and Manage. Customers have told us that they find the most success when taking a lifecycle approach to SOA.



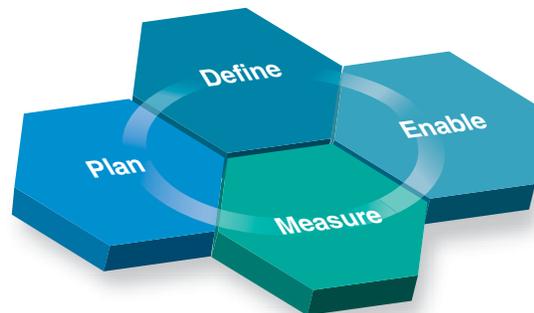
- Gather requirements
- Model and simulate
- Design
- Discover
- Construct and test
- Compose
- Integrate people
- Integrate processes
- Manage and integrate information
- Manage applications and services
- Manage identity and compliance
- Monitor business metrics
- Financial transparency
- Business/IT alignment
- Process control

Figure 1: SOA lifecycle

Underlying the service lifecycle and applied throughout the four lifecycle stages is the governance process that provides the structure, decision rights, principles, polices and measurements necessary to achieve the business value of SOA.

SOA governance itself has a lifecycle that is distinct from the services that are being governed. The SOA governance lifecycle also can be characterized as a four-stage process:

- *Plan phase, during which the need for governance is established and the existing mechanisms are assessed*
- *Define phase, during which the desired governance framework, including new and modified principles, processes, organizational structures and roles are established*
- *Enable phase, where the new governance framework is introduced into the enterprise*
- *Measure phase, during which the metrics are gathered and analyzed to refine the governance process*



- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li> <p><b>Plan the governance requirements</b></p> <ul style="list-style-type: none"> <li>• Document and validate business strategy for SOA capabilities</li> <li>• Assess current IT and SOA capabilities</li> <li>• Define or refine vision and strategy</li> <li>• Review current governance capabilities and arrangements</li> <li>• Lay out governance plan</li> </ul> </li> </ul>                     | <ul style="list-style-type: none"> <li> <p><b>Enable the governance model incrementally</b></p> <ul style="list-style-type: none"> <li>• Deploy governance mechanisms</li> <li>• Deploy governance infrastructure</li> <li>• Educate and deploy on expected behaviors and practices</li> <li>• Deploy policies</li> </ul> </li> </ul> |
| <ul style="list-style-type: none"> <li> <p><b>Define the governance approach</b></p> <ul style="list-style-type: none"> <li>• Define or modify governance processes</li> <li>• Design policies and enforcement mechanisms</li> <li>• Identify success factors and metrics</li> <li>• Identify owners and funding model</li> <li>• Charter or refine SOA Center of Excellence</li> <li>• Design governance infrastructure</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li> <p><b>Measure, monitor and manage the governance processes</b></p> <ul style="list-style-type: none"> <li>• Monitor compliance with policies</li> <li>• Monitor compliance with governance arrangements</li> <li>• Monitor effectiveness metrics</li> </ul> </li> </ul>                       |

Figure 2: SOA governance lifecycle

**How we engage with customers**

The IBM SOA Governance and Management Method approach is the engagement model used with SOA customers. It is built upon the SOA governance lifecycle and supports the SOA lifecycle of Model, Assemble, Deploy and Manage.

The SOA Governance and Management Method approach is an iterative process to implementing effective governance to support service orientation. The method begins with a detailed look at the customer's existing environment, decision-making process and organizational structure. This set of activities seeks to identify reusable IT governance elements to build the new model. Once assembled, the model is implemented. This implementation may include an SOA governance Center of Excellence as the implementation arm of the governance model, or it may entail an increase to the responsibility of the existing governance mechanisms, like an architectural review board. Measurement of the model implemented, the services deployed and the effectiveness of the established processes is essential to understanding whether services, processes and the governance model are meeting their stated objectives. This, then, constitutes the iterative governance method that will be continued by the customer once the IBM practitioners complete their engagement. Like the SOA governance lifecycle, the SOA Governance and Management Method approach has four phases. The phases provide a structured approach to the development of an SOA governance and management model for a client.

The Plan phase is used to:

- *Understand the current governance structures and environment*
- *Create an IT governance baseline*
- *Define the scope of the governance model*
- *Conduct change-readiness surveys*

In the Define phase, we:

- *Define and refine the governance processes, quality gates and decision-making matrix*
- *Define organizational change*
- *Define IT changes in SOA development processes*

In the Enable phase, we:

- *Implement the transition plan defined in the previous phase that outlines the actions needed to effect SOA governance*
- *Initiate SOA organizational change*
- *Launch the SOA governance Center of Excellence (optional)*
- *Implement the infrastructure for SOA*

Finally, in the Measure phase, we:

- *Measure the effectiveness of governance processes*
- *Measure the effectiveness of organizational change*
- *Review and refine development and operational environments*

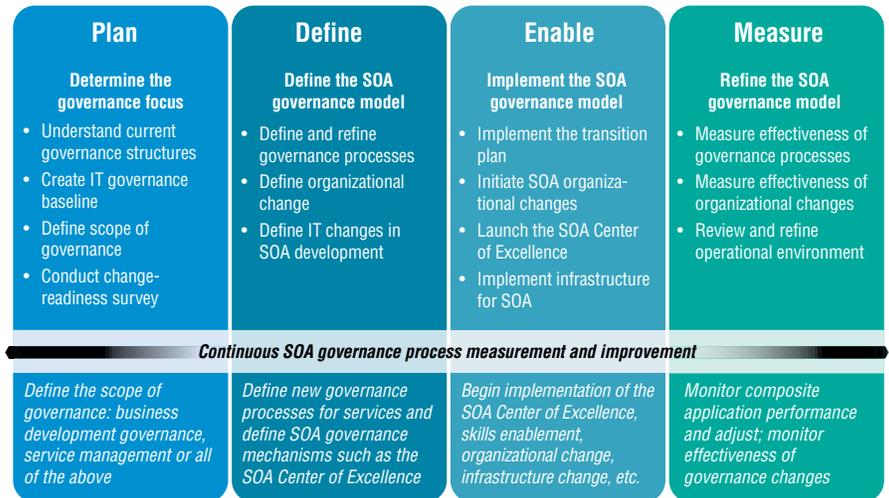


Figure 3: The IBM SOA Governance and Management Method offering

**The IBM SOA Governance and Management Method offering**

The SOA Governance and Management Method approach evolved from a customer engagement that involved practitioners from IBM Software Group (Enterprise Integration Services) and IBM Global Business Services (Strategy and Change Practice and the SOA Center of Excellence). A service offering was developed that can be customized to meet the specific needs of the client. The base methodology can be used to enhance existing IT governance frameworks to ensure that they meet the needs injected with the adoption of SOA. It can be used to create an SOA governance Center of Excellence within the client organization, and it can be extended to be used in engagements involving business transformation and organizational change.

On March 22, 2006, IBM announced that the methodology would be released to the public in a plug-in based on the IBM Rational® Method Composer solution. With this plug-in, organizations now have the ability to adopt IBM's methodology to create a unique governance framework themselves, or engage skilled IBM service practitioners for support or full engagement execution. And because the plug-in delivers the same base methodology, it can be extended by the client or by IBM to form part of a larger project or engagement.

The implementation of the SOA Governance and Management Method offering is not dependent on any tool. However, it is supported by a host of IBM tools, and it can be implemented with other tools on the market today.

Here is a list of IBM services and tools that can be used with the SOA Governance and Management Method offering:

- *IBM Global Business Services: SOA Governance and Management Method offering*
  - *Services to help customers map their requirements, policies, procedures and regulations to execute new business plans based on SOA, and help with the necessary cultural changes*
- *IBM Rational software: SOA governance plug-in for IBM Rational Method Composer software*
  - *Select governance best practices from IBM Global Business Services packaged as a reusable asset and delivered as part of the Rational Method Composer solution*

- *IBM WebSphere® software: IBM WebSphere Service Registry and Repository offering*
  - *A solution to help customers discover, access and manage service meta-data used in the selection, invocation, management, reuse and governance of services in an SOA*
- *IBM Information Management software: IBM Rational Data Architect software*
  - *Helps customers adopt and enforce corporate and industry standards on their data models, and helps customers design, discover and govern SOA-compliant information architectures*
- *IBM Tivoli® software: IBM Tivoli change and configuration management database*
  - *Automatically discovers and manages information about a client's IT environment, including IT resources, configuration items, user identities and the interrelationships among these entities*

**What are some of the best practices around SOA governance?**

SOA governance, like SOA itself, is in the beginning stages of maturity. IBM and the industry as a whole are still maturing this architectural style and the means to govern and manage it. It is too early in the evolution of SOA governance to identify best practices. However, through our internal experience and the knowledge gained through multiple client engagements, we have identified leading practices.

Leading practices

1. *Develop and implement a Center of Excellence. While a Center of Excellence is optional, it is clear that without a supportive organizational structure, a service-oriented architecture is more likely to fail.*
2. *Executive-level support for SOA is a must. Without support from the C-level executives, a service-oriented architecture is unlikely to be successful. Gain support by making sure that the value of SOA is seen and realized.*
3. *Ensure the buy-in or concurrence of the business. Make sure employees see value and that value can be demonstrated. Find a good candidate project and owner on the business side and make him or her look like a star.*
4. *Implement in an iterative fashion. Don't attempt a big-bang approach. If the initial implementation of SOA and associated governance is too large, the implementation will be difficult to manage and value will not be realized until much later. By that point, the implementation will have been shut down. By starting with small, manageable initiatives that are appropriate to the IT environment, return on investment will be seen in an acceptable timeframe.*

5. *Make sure to communicate what is to be done, and set expectations for all the stakeholders.*
6. *Tightly couple business and IT representatives in the decision-making processes, and keep them involved in each aspect of model planning and execution.*
7. *Governance is key to an effective SOA. Without an effective and enforceable governance model, a service-orientation initiative will fail to meet its objectives.*
8. *Measurement also is key to effective governance. If you do not measure the effectiveness of your processes and services, they will quickly become outdated and unable to meet the objectives of the business.*
9. *Define a vision and mission statement for SOA governance. Define principles, policies and standards that support the vision and mission.*
10. *Use tools to assist in governing the service-oriented architecture. Tools are not completely necessary, but they make effective governance a reality. Remember, however, that governance tools are not in themselves governance. Effective processes, procedures, policies and organization make governance.*
11. *Deploy an infrastructure that helps people adhere to the defined policies.*
12. *Institute processes that verify adherence to policies.*



**For more information**

Articles and perspectives on SOA governance from IBM:

[ibm.com/soa/gov](http://ibm.com/soa/gov)

IBM's white paper on SOA governance:

[https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?lang=en\\_US&source=esoagov](https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?lang=en_US&source=esoagov)

IBM developerWorks® article on IT architect perspective on governance:

<http://www-128.ibm.com/developerworks/ibm/library/ar-itio5/>

Implementing the method for SOA governance:

[http://www-128.ibm.com/developerworks/offers/techbriefings/details/governance.html?S\\_TACT=106AH50W&S\\_CMP=LPTCHBRF](http://www-128.ibm.com/developerworks/offers/techbriefings/details/governance.html?S_TACT=106AH50W&S_CMP=LPTCHBRF)

Trial copy of Rational Method Composer solution:

[http://www-128.ibm.com/developerworks/downloads/r/rup/?S\\_TACT=105AGX63&S\\_CMP=DLBDD&S\\_CMP=02005000005339](http://www-128.ibm.com/developerworks/downloads/r/rup/?S_TACT=105AGX63&S_CMP=DLBDD&S_CMP=02005000005339)

SOA governance plug-in for Rational Method Composer software:

[http://www-128.ibm.com/developerworks/rational/downloads/06/plugins/rmc\\_soa\\_gov/overview.html](http://www-128.ibm.com/developerworks/rational/downloads/06/plugins/rmc_soa_gov/overview.html)

Peter Weill and Jeanne Ross' book on IT governance:

<http://mitsloan.mit.edu/cisr/r-itgovernance.php>

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