IBM maximizes the value of service oriented architecture initiatives with effective SOA governance.

Overview

- ***The Challenge***
  After adopting Service Oriented Architecture (SOA) to enable better flexibility, increase reuse, and respond quickly to changing business needs. IBM needed effective policies, processes and tools to capitalize on the potential of SOA across the enterprise.

- ***The Solution***
  IBM adopted SOA governance as a framework for assigning decision rights, implementing measurements and control, and integrating the people, processes, information and assets central to SOA initiatives.

- ***The Benefit***
  With effective SOA governance, IBM is ensuring that it can align IT initiatives with business needs, enable business transformation, simplify end-to-end enterprise integration, and maximize the value of its investment in SOA.

The IBM Business Transformation and Chief Information Officer (BT/CIO) organization is responsible for managing the IBM worldwide IT infrastructure, defining the company's global IT strategy, and executing that strategy across the enterprise. The mission of BT/CIO is to implement, support and exploit technology to meet both internal IT requirements and external business objectives.

A primary goal of BT/CIO is to deploy the most effective, cost-efficient technologies within IBM, while validating the use of IBM products and strategic tools. As part of this effort, BT/CIO has embraced service oriented architecture (SOA) and SOA governance, by funding a SOA Acceleration enterprise initiative, which is owned by Howie Miller, BT/CIO vice president of Integration Architecture. "SOA has become very important to IBM, especially over the past couple of years. Our focus has expanded from Web services to the bigger picture of an SOA approach, to ensure that we can continue to increase our responsiveness and flexibility across the enterprise. Sometimes terms such as 'flexible' and 'responsive' are thrown around as buzzwords to describe the benefits of SOA. But in our case, we have really capitalized on SOA to drive towards the IBM goal of increased business flexibility," notes Lance Walker, senior technical staff member, SOA

acceleration, BT/CIO Integration Architecture. “Just as important, SOA governance is allowing us to maximize the ability of SOA to enable business transformation at IBM and coordinate the integration of SOA across the enterprise.”

The potential of SOA

As the leader of the IBM effort to become an early adopter of innovative information technologies, BT/CIO is using SOA to the address the challenges it faces. “Facing competition from other vendors who are also striving to assist their clients with SOA, IBM is focused on providing a complete set of SOA solutions that can meet a customer’s needs from an end-to-end perspective. A primary goal of BT/CIO is to enable the foundation that allows our externally-facing teams to meet this challenge,” says Walker.

Walker lists a number of advantages that SOA offers in helping BT/CIO achieve key objectives, “To meet market demands, we need to roll out business solutions faster. SOA enables us to deliver solutions to our customers at a faster pace while ensuring that business processes drive IT. In addition, end-to-end enterprise integration is a key objective for us; and SOA simplifies that effort by enabling us to quickly assemble new solutions and deploy updates. SOA also helps us leverage our many legacy applications, enabling us to extend the ROI of legacy systems and incrementally migrate to new systems. Using standards-based interfaces common to SOA, we can also efficiently integrate third-party products into the overall IT landscape. We can improve partner interoperability through SOA by conducting B2B transactions based on open standards. And because SOA emphasizes reuse, we can eliminate redundant development and support costs by using existing functions instead to rapidly build business solutions.”

In applying SOA, BT/CIO worked with IBM Global Account, a group that serves the internal IT infrastructure and services needs of IBM worldwide. “We have a partnership with the IBM Global Business Services team for the IBM Global Account to focus on the use of SOA to develop solutions. They have made a strong commitment to SOA by funding SOA training for practitioners, developing SOA use measurements for projects and initiatives, and providing reuse engineers,” says Walker.

The need for governance

BT/CIO recognized early on that the benefits made possible by SOA are not automatically achieved by every organization that sets out to implement an SOA. Effective SOA governance is needed to coordinate the integration of SOA across the enterprise and ensure an organization’s SOA reaches its full potential. By specifying policies for how shared services are funded, accessed, updated, and managed across all IBM business units, and incorporating this guidance into the IBM internal Enterprise Architecture Governance, the BT/CIO SOA governance framework clearly defines who is empowered to make decisions and how the business measures progress towards achieving its goals.

Catherine Winter, team leader for Enterprise Architecture Governance in BT/CIO, notes, “Governance—for SOA or for Enterprise Architecture—identifies the key elements of the architecture and the responsibilities behind the definition of those key elements. In SOA terms, when we have a strategic application that enables a business process, it has service components that are leveraged enterprise wide, across business units. Our SOA governance framework ensures that we know who owns a service, who can use it, when it will be available to them, and a broad range of other details. For example, in SOA governance, the management of funding is critically important. Because services span multiple business units, SOA investment is much more complicated than standard application development which is typically contained with a single unit.”

SOA governance is also vital to the BT/CIO effort to create a virtual IT environment of composite applications assembled from common services by enabling the organization to:

- Enhance the process to identify and fund new common SOA assets.
- Produce consistent and interoperable services that support business capability needs.
- Eliminate service redundancy.
- Promote services reuse.
- Integrate data from multiple sources using a common business data vocabulary.
- Ensure that common services assets are integrated into the Enterprise Architecture.
- Enforce the use of accepted enterprise and business unit service components.
- Gradually sunset costly legacy applications and incrementally migrate to a services base.

Many of these capabilities are vital to the SOA development process. Winters adds, "With SOA governance, we are focused on the effective development of components as well as their funding. Ensuring that we provide clear guidance and input to the development cycle, for example, how components are to be designed to ensure effective reuse and how assets should be reused, is an extremely important aspect of SOA governance."

SOA governance as an extension of IT governance

For BT/CIO, SOA governance is not a standalone concept. Rather, it is incorporated into the existing IBM Enterprise Architecture Governance strategies and mechanisms. "From our point of view, SOA governance is an integral and significant aspect of our overall IT governance, that includes managing process, applications, data and technology. SOA slices across all of those. SOA governance helps us define the related standards and design criteria, as well as the service components and how they are used," says Winters. "For companies that already have IT governance, SOA governance is a good way to further enhance it and accelerate effective SOA deployment. For those that don't have an IT governance strategy, SOA governance is an entry point, one that can help them to think about governance in a comprehensive way."

By integrating SOA governance into existing IT governance strategies, BT/CIO avoids burdening teams with unnecessary work. Walker explains, "When you have too much governance, it can really slow down your processes and your business by putting even more barriers in the way. We don't want to do that. Instead, we integrate SOA governance into Enterprise Architecture Governance, adding what is necessary for SOA govern-ance processes. In that way, SOA governance is not something completely unique and different, yet another governance process that our people have to go through; but it is instead integrated into what they already do."

Playing a central role in IT governance and SOA governance within IBM is the Enterprise Architecture Council (EAC), a decision-making body that drives cross-unit objectives, sets cross-unit priorities, and resolves cross-unit issues. "The Enterprise Architecture Council is a governing group that acts on behalf of the units to make sure that we have a focal point for critical decisions and for the implementation of those decisions. Within that, there are many dimensions and our teams come together to work out the specifics, but the EAC sponsors all of our governance work and the governance deliverables," Winters reports.

Mapping the SOA governance life cycle

Based on its experience working with many customers and early adopters of SOA, IBM has developed the IBM SOA governance life cycle, a strategy for developing, deploying, maintaining, and enhancing SOA governance. The IBM SOA governance life cycle consists of four phases, each with a distinct objective:

- *Plan:* establish the governance need.
- *Define:* design the governance approach.
- *Enable:* put the governance model into action.
- *Measure:* monitor and manage the governance processes.

BT/CIO uses the IBM SOA governance life cycle as a guide, and as a basis for measuring progress, by mapping each activity of every phase to existing, or planned, governance activities within IBM. "We found the IBM SOA governance life cycle to be an excellent framework by which we can measure ourselves and examine SOA governance within IBM," Walker says. "We listed the key elements of the life cycle, and for each item we determined if we were already addressing it, or would address it with plans underway—and we also identified potential gaps in our approach. Using this framework, we verified that we understood the key activities of SOA governance, ensured we were performing those activities, and illustrated how we were integrating them into our existing enterprise architecture practices."

Establishing a center of excellence

As one example of mapping existing activities to the IBM SOA governance life cycle, Walker cites a major element of the define phase—establishing or refining a SOA Center of Excellence (COE). "An important aspect of SOA governance is the Center of Excellence. We have several initiatives that provide COE functions, including an initiative already in place that sets SOA enterprise vision, strategy, plans and activities," Walker says.

This existing initiative covers a wide range of COE roles, such as defining high-value business services. It also provides architecture vitality, thought leadership, SOA measuring best practices, skills transfer, early proof of concepts, and architectural authority. In the plan phase of the SOA governance life cycle, the initiative plays a role in documenting and validating business strategy for SOA and IT.

Supporting the SOA governance life cycle

As BT/CIO progresses with its SOA governance initiatives, the group gradually adopts solutions from IBM Rational® to support the SOA governance life cycle. Jeff Berkowitz, a member of the BT/CIO Solution Deployment Council, notes that the process of introducing SOA governance solutions will not be completed overnight. "One of the things we have learned about the Rational product set is that it is very broad and very deep. We are not trying to use every thing, end-to-end, all at once. Instead, we find the areas that give us the greatest value and start there."

Walker adds, "Before any new technology goes enterprise wide, it starts out with pockets of usage. We had pockets of Web services first, before we started focusing on it at a corporate level. Effective solutions "bubble up," and we have pockets using Rational solutions on which we are now increasing our focus."

In the plan and define phases of the SOA governance life cycle, BT/CIO focuses on IBM Rational Method Composer as a flexible process platform for SOA governance, IBM Rational Portfolio Manager for project portfolio management, and IBM Rational RequisitePro® for defining and tracking requirements. The group is also evaluating IBM SOA Governance and Management Method, a Rational Method Composer plug-in based on IBM best practices for SOA governance. "For the plan and define phases, Rational Portfolio Manager is an effective way to manage the investments that we make including

personnel and dollars, to track progress in key areas, and to plan our projects," says Berkowitz. "We also have several projects underway that use Rational RequisitePro to define, document, and track requirements."

The governance model in action

In the enable phase of the SOA governance life cycle, solutions to address the BT/CIO SOA governance requirements are being put into action. The use of IBM Rational Method Composer extends beyond the plan and define phases to this phase, as well as an effective solution for documenting the governance framework. In addition, to help govern model standards and enable efficient service oriented development, BT/CIO will expand its use of IBM Rational Software Architect and IBM Rational Data Architect. Rational Software Architect is an integrated design and development environment for model-driven development, and IBM Rational Data Architect will provide BT/CIO with a comprehensive solution for enterprise data modeling and integration design.

"Rational Software Architect and Rational Data Architect will be increasingly important to us as we extend our list of standard artifacts and incorporate common, consistent ways to design and develop key elements of our SOA," Winters explains, "We will provide governance criteria to the developers using Rational Software Architect and Rational Data Architect, who will build on that criteria as they drill down into the definition and development of the architecture." Walker adds, "Rational Software Architect is used to develop artifacts and use case studies. Together with IBM WebSphere® Integration Developer for assembling composite applications, it enables key aspects of our SOA activities. As we go forward, we see how each tool in the Rational toolset can support our existing SOA governance framework."

To manage assets and the asset life cycle, BT/CIO will rely on IBM Rational ClearCase® for software configuration management and the IBM WebSphere Service Registry and Repository. "These solutions enable us to share and reuse content effectively. We define our enterprise and business unit components and share the characteristics and metadata associated with them in an SOA repository. Sharing that content—sending high-level governance information and pulling back the details on the enabled assets—becomes another dimension of our overall governance. Knowing what is planned and what is available are separate dimensions of governance, and you need both to manage your development efforts," says Winters.

Walker agrees that effective governance is essential for organizations seeking to reuse assets. "Governance has a very important impact on reuse, and a repository such as WebSphere Service Registry and Repository will be vital to our activities to support reuse in SOA, and reuse in general. When a team completes a project, they need to register it. When they develop new functionality, they need to understand what already exists, and the registry enables them to do that. By defining your governance flow, you can encourage reuse or even mandate it at times," he notes.

A framework for success

BT/CIO recognizes the value of SOA to the business, and is committed to effective SOA governance as a means for getting the most out its SOA initiatives. "IBM is moving to a more process-centered approach to the business, which aims for end-to-end usage of our applications and processes in supporting the business. We are moving from a towered view to a cross-unit view, and SOA governance and supporting tools fit very nicely and really add value in that effort," says Berkowitz.

"It is clear that IBM has a great deal invested in SOA, and we want to make sure that we can derive

maximum value from our SOA activities. We want to accelerate SOA and move it into the enterprise as deeply and as quickly as possible. SOA governance is ensuring that we can do that," adds Walker.

According to Winters, one of the key benefits of SOA governance is ensuring that IBM has the ability to respond swiftly to changes. "For large companies like IBM that have complex legacy environments, how do you simplify, so that you can respond quickly to change? It is a great challenge, and in years past, the complexity of our environment has inhibited us. We look to SOA to help simplify a complex integration environment, and through that, to simplify the overall implementation of our architecture. SOA governance helps us do that more efficiently and more effectively from a cross-unit perspective. SOA governance is another dimension for enabling BT/CIO to rapidly get from where we are as a business, to where we need to be."

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