

THE POSSIBILITIES ARE INFINITE



# **The Key to SOA**

## **Governance:**

Understanding the Essence  
of Business

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Technical White Paper (June 2008)

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## 1 Introduction

“Kaname” is a Japanese term meaning “essence.” In a Japanese fan, the bottom piece that keeps the fan together is the kaname. The kaname of a business is what keeps it all together, what defines it, its essence. The kaname of a business must be identified so that all activities influencing the kaname can be identified and improved. **This decomposition into individual activities, into “business services,” is the first step in realizing the benefits of a service-oriented architecture (SOA).**

The promise of an SOA is a modularized system that can flexibly address changes, enhance business performance and enable business agility in an increasingly competitive corporate climate. But determining which business services need to be created, how they should function, and how the hundreds or thousands of individual services should be managed can be a daunting task. Do all the services actually work together to support the essence of the business?

And once the business services are created, further complications arise. Which businesses are using what services, and which services are available to them? Are the right people accessing the right services? Are there rules to change, validate, and approve services? If a service is changed, who and which other services will be affected? How can things be fixed if something goes wrong? Are the service levels meeting the Quality of Service (QoS) requirements?

Answering these questions requires adequate governance. Governance is about visibility and accountability, and involves the processes and policies of both business and IT. In an SOA, governance becomes even more important as reusable, autonomous components are created to consume or be consumed by other reusable, autonomous components, potentially from other vendors. Issues such as security, reliability, and availability are also important as mission-critical applications and business processes are being developed using SOA.

Determining the kaname of a business and putting in place adequate SOA governance requires not only technology, but also a shift in the way business and IT work together. Organizations need to adopt clearly defined roles within an organization, allowing the stakeholders to understand each other’s goals and tasks. Only then can they understand the “essence” of the business and put the proper governance mechanisms in place for optimal performance of an SOA. Without the support and participation of IT architects, managers and development teams, an SOA initiative is likely to fail. By working together, however, this cross-functional group can develop a sound strategy, best practices, and a methodology that can help design a flexible SOA to address change and optimize reuse.

## 2 Determining Kaname

The first step to creating an SOA is to understand the essence of business so a clear vision of what the SOA will be and what value it will provide can be established. Too often, companies rush to implement an SOA without clearly identifying the business value or the ideal end-state. Once expectations are misaligned, the success of the overall SOA implementation is jeopardized.

To reach this clear vision and build the many services that support this vision, companies need to understand both the human aspects of an SOA transformation and the lifecycle management of the services. This can be done by establishing a roadmap for processes and policies and by clearly defining the stakeholders and required architectural standards. To do this, many organizations create a center of excellence or similar cross-functional group to provide resources and guidance, to serve as a repository for best-practice information, and to operate tools that support the SOA governance process. The main function of such a group is to share thoughts, experiences and knowledge. By improving the way they relate to each other and communicate, they are more likely to succeed in understanding the kaname, attaining the right vision for the SOA, and establishing adequate governance to ensure success.

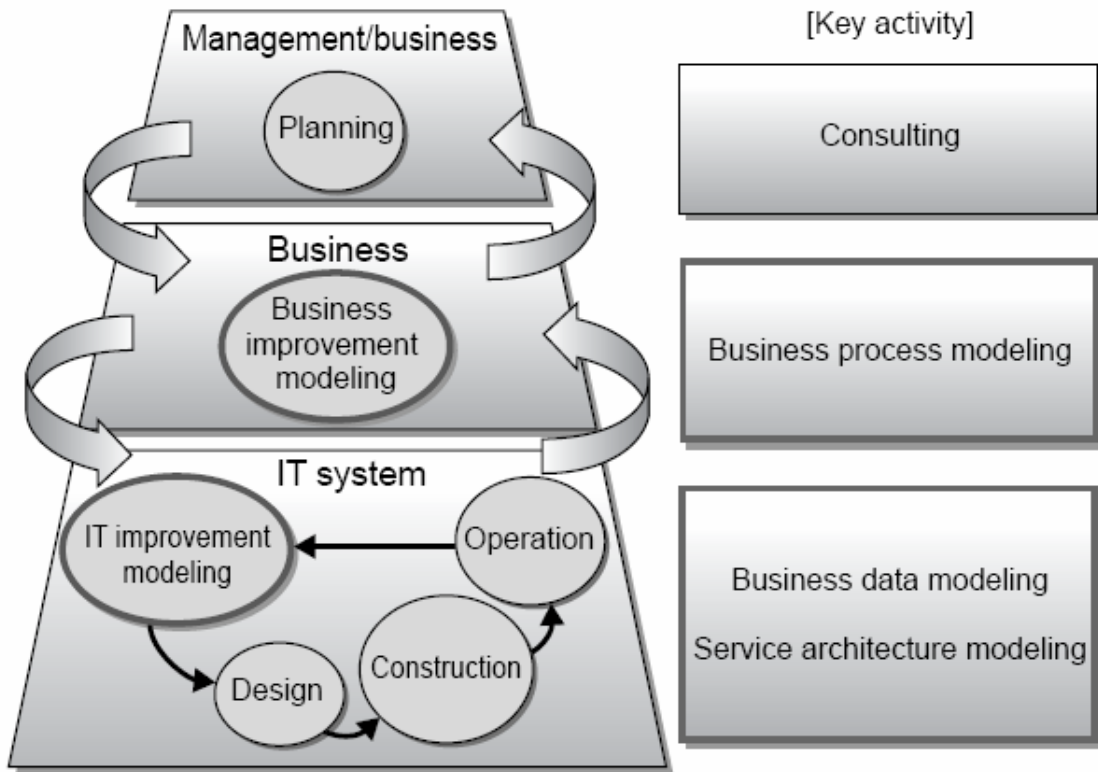
An article titled "New Foundation: SOA Implementation and Bank Transformation" and published in the March 30, 2007 issue of *Bank Systems & Technology* describes Bank of America's approach to governance and quotes Bill Conroy, enterprise architecture senior business executive for Bank of America:

Bank of America delegated governance for SOA to the four CIOs within the organization. An architecture council, which Conroy chairs, made up of the CIOs controls new technology and new products. "We're very controlled on the products we let in -- we let in on a very specific business case," he relates, adding that new technology has to pass a litmus test: It has to drive a significant amount of revenue, reduce a significant amount of risk or clean up the environment. No new technology can be purchased throughout the bank if the council has not approved it, Conroy stresses.

An architecture roadmap that includes SOA governance woven into the fabric of daily operations needs to be built using both a top-down business approach for understanding business goals and a bottom-up IT approach for building individual services. This requires new organizational models for bridging the gap between business and IT, and being able to visualize the fundamental structure and behavior of the business to understand what changes occur, quickly identify the changes, and just as quickly adapt the system to the changes.

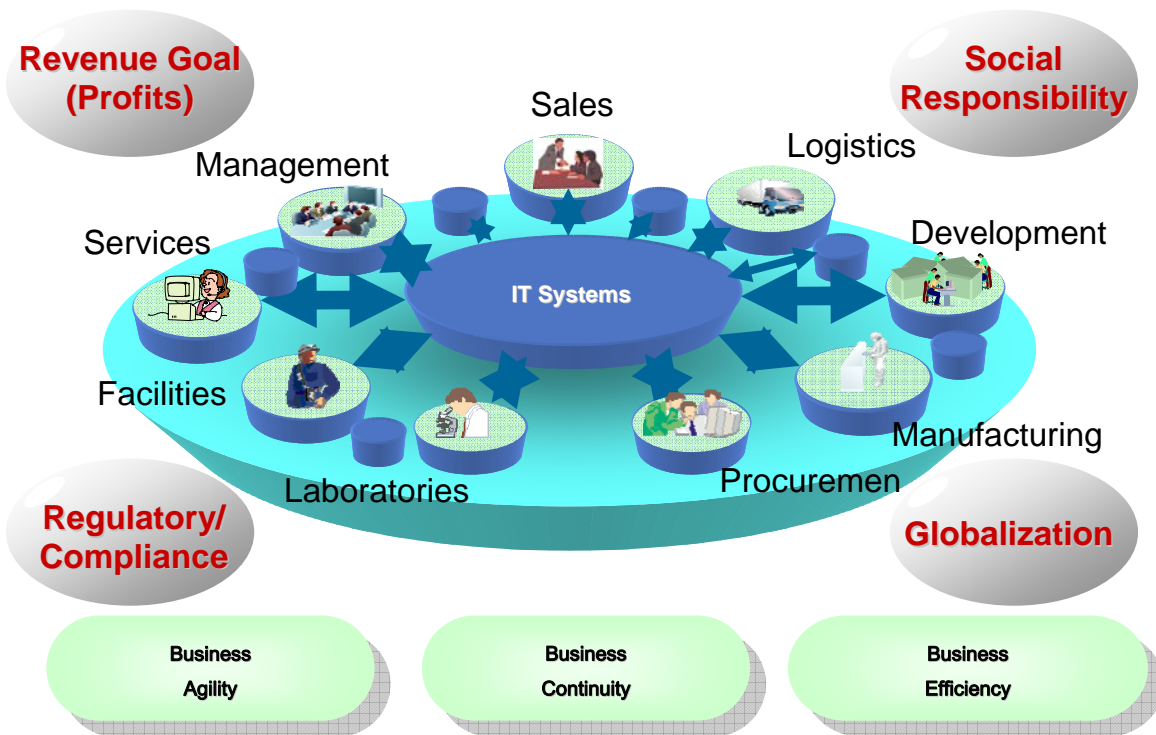
At this stage, management support is most crucial, since management drives IT strategy. Therefore, a clear business and financial case that accurately maps to the reality of the business is essential. To achieve this, the stakeholders must:

- Reach a consensus on the essence of the business
- Visualize and model the business using process simulation to estimate efficiencies
- Construct the system so it closely reflects the business model in an architecture that is responsive to changes



### 3 Visualizing the Essence

The essence of a business can be identified only through a common understanding of the business objectives (e.g. complying with regulations, globalization, corporate and social responsibility, etc.) and the related IT systems.



## 4 Building Upon the Vision

Once an architecture roadmap of the solution is agreed upon, processes and services that align to the business can be built out. This includes not only processes that govern how systems interact, but also processes that govern and reflect how people work – the human-centric business processes. A process-driven approach uses modeling tools targeted at the business analyst, tools such as Visio and IDS Scheer's Business Architect, or Business Process Modeling (BPM) vendor-specific design environments that not only include a BPM notation (BPMN)-based modeling tool, but also execution of the model, process performance monitoring and analysis of the actual running business process or a simulated business process, and optimization for interactive process improvements. These tools enable the business to define the human factors involved in a business process, and these activities can then be decomposed into reusable, autonomous services that can be orchestrated and delivered back to the modeling tool.

The actual integration hooks can be done using the Business Process Execution Language (BPEL) for service orchestration or an enterprise service bus (ESB) for mediation. For example, consider an online store that uses a credit card company, a shipping company and various suppliers of the goods sold. The basic business process of selling goods, getting paid and shipping them may be fairly straightforward. But the details – which companies to deal with, what data formats they use and the precise web address at which they can be reached – are very likely to change on short notice. An IT professional can augment the business process with execution details using an ESB so that these differences can be resolved as they become apparent without any Java programming, or even recompilation and library deployment.

The challenge is for business people to transform their vision into processes that can be easily deployed by IT while leveraging their existing systems and infrastructure without significant rework. A combination of BPM and an ESB does just that. BPM promotes a model that ensures business analysts can define processes in business terms resulting in processes that non-technical users can own and manage throughout the process lifecycle. This saves time and minimizes rework.

## 5 SOA – Entering the Next Phase of Maturity: Primetime

An SOA supports reusable services that perform business functions and provide an excellent foundation for implementing process-driven integration scenarios that solve complex business process management and orchestration problems.

Just as business processes can leverage the services within the enterprise, these same business processes can also be exposed as services to be consumed within applications. The end result is that BPM becomes part of the SOA fabric, in which the business processes are viewed as nothing more than a new kind of service. These reusable services may reflect business tasks, like opening a checking account, or verifying a credit card transaction, or processing a purchase order.

Let's take a simple example. Say you are a provider of a leading business rules management system (BRMS) where complex rules provide risk assessment decisions. In order for an application or BPM product to use an existing complex rule, it needs to be published or cataloged so it can be discovered – elements such as rule name, description, availability, cost, etc. In the old days, this kind of functionality was buried in legacy code and required lengthy IT change cycles. The SOA development approach focuses on leveraging the investments that organizations have already made in technology by providing the tools required to expose both business logic and data in existing or new systems in a standardized way. A service, such as "risk rating," takes into consideration many complex business rules to generate someone's risk rating. For example, if someone has poor credit and a payment history (days outstanding) of greater than three months, and has defaulted on a number of loans, then the risk rating will be high. A loan approval business process would then make this service request on demand when someone applies for a loan.

Most important, if this complex rule needs to change, the BRMS can manage the business rule independent of the business process or application, allowing policy managers to make changes to the rules without heavy IT involvement. As for the business process, it doesn't need to know about the change if it doesn't affect the agreed upon service.

Leading BPM vendors have already recognized the need to expose their functionality as services for reuse. By structuring applications in this manner, IT assets become more agile and organizations are better able to align their investments in dynamic business environments. A business analyst, integration expert or developer can then use

the BPM tool to snap together these business processes exposed as services as building blocks to create new business processes, reusing existing investments to create new value across the enterprise.

## 6 The Need for Governance

As BPM and SOA provide a way to respond quickly to changing business requirements, businesses need to quickly discover, manage, monitor and analyze the use of SOA artifacts through a centralized SOA registry/repository, which provides a control point for governing service availability, versioning, and compliance with internal and external systems.

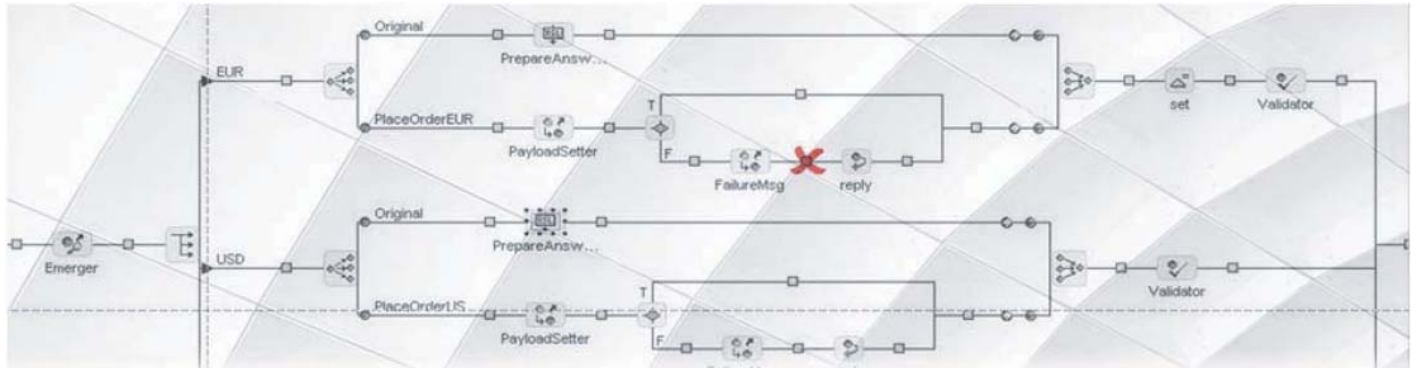
Take for example the business process described above in which an existing asset is consumed, but that existing asset happens to be a business rule from a different system that is exposed as a service. What if this service utilized another business process and so on and so on?

You would find the following relationships:



Now imagine you have hundreds of services calling other services that might be legacy code, business rules, ESB sequences, or others. How do you know what is actually happening at runtime, who is actually using the service, and what security enforcement, performance enforcement, and availability enforcement need to be in place?

You could easily end up with the following:



## Some questions in an active SOA:

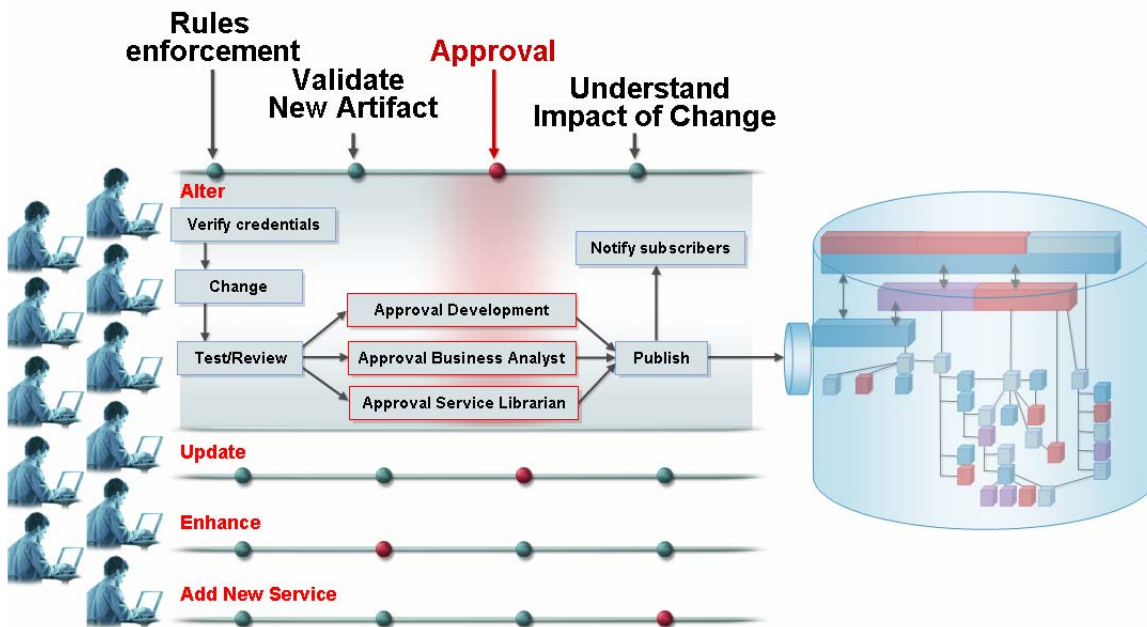
- Which services are available?
- Are all required services up and running?
- Are the right consumers accessing the right services?
- Are there rules to change/validate/approve services?
- If a service is changed, who and which other services will be affected?
- How can things be fixed when something goes wrong?
- Is the required quality of service (QoS) provided?

## Governance of SOA is key!

An SOA registry/repository provides a mechanism for keeping track of an organization’s SOA assets including all the dependencies and relationships. Services can be published into a registry/repository, listing them according to categories that make sense to the organization, and discovered via a search mechanism. Services are associated with other artifacts that are described through dependency relationships and grouped through an extensible taxonomy. Good governance reduces the risk of mismatched services and redundant development efforts.

As more and more demands begin to build, so will the importance of SOA management and governance, especially when multiple providers of services make changes. SOA registry/repositories should allow users to subscribe to any SOA artifact and be notified via call-outs or email of any changes to those artifacts.

An SOA registry/repository not only catalogs services to enable reuse, but also through corporate design standards encourages the use of common guidelines so service development remains consistent among different architecture groups within an organization. For example consistency can be maintained throughout a service lifecycle, from conception through production, by implementing appropriate approvals and attaching appropriate documentation, specs, and test plans at each phase. Businesses should be able to configure the lifecycle of not only services, but also business rules, business processes, and basically any SOA asset through a set of lifecycle stages and states. The authorization and approvals as a service moves through the different stages and states also need to include roles and privileges.



The SOA repository provides storage for metadata for services and any other artifacts related to an SOA asset, including WSDLs, XML schemas, XSLT stylesheets, policies, etc.

Once the services are invoked, organizations need to keep track of how they are being used. Real-time tracking of services includes monitoring of performance, availability, usage, and more, so that alerts and adjustments can be made. Governance becomes important to ensure that a service is functioning according to defined service levels. If not, a notification occurs to change the way the service runs. Services should include service-level agreements that include the ability to define measure and monitor specific performance characteristics of the services to guarantee service levels and spell out penalties for failures.

Services also require security levels to control who can use which service for what purpose. This involves defining and verifying users who are authorized to use certain services. For example, a company might define a class of users who can transfer more than \$1 million across various accounts. Also, the privacy of sensitive data must be protected to meet internal and external compliance regulations and standards that require a complete audit trail. For example HIPAA requires all transactions to be SSL-encrypted.

While establishing adequate governance is not trivial, the tools do exist to provide the operational-level visibility to make solid governance possible, and the SOA development team must ensure these tools are in place.

Operational-level visibility is also important to understanding how to manage the services at the business level. For example, should a gold-level customer have priority over other customers for certain transactions? Should there be two levels of service offered at basic and premium prices?

Because an SOA registry/repository maintains the dependency relationships of services and associates all services with their artifacts, such as policies, it provides a level of visibility that enables organizations to adapt quickly to change while minimizing risks, resulting in greater business agility and cost effectiveness.

## 7 It All Begins with “Kaname”

While SOA governance requires an investment in people and technology to establish the appropriate context for an SOA, the benefits of this investment are tremendous. The true benefits of an SOA are achieved when top-down business goals meet bottom-up IT development, with an SOA governance and management solution, such as an SOA registry/repository, that seamlessly joins the two. The goal of any SOA initiative is to improve communication, processes, and efficiency within an enterprise to deliver superior products and services at lower costs. But the start of any SOA initiative should be better collaboration and communication between business and IT on objectives, processes, implementation plans, and optimization. Only then can the kaname of a business be understood. And only when the kaname is understood can an organization develop a consistent vision and methodology throughout the process and ensure that the services comprising the SOA will optimally support the business.

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