IBM Service-Oriented Modeling and Architecture

Highlights

■ *Aligns business and IT goals through service modeling that is designed to connect an enterprise's business model with its technology model*

■ *Helps ensure that business knowledge in legacy applications can be accessed in a new, integrated, service-oriented architecture*

■ *Helps increase business flexibility and reduce risks by validating several aspects of SOA design, from business goals to service realization*

Service-oriented architecture — the basis for business agility

The concept of On Demand Business fuses business and information technology (IT) to create new opportunities for enterprises to become faster, more responsive and more profitable. The most valuable thing you can buy yourself as an organization these days is flexibility — flexibility to meet new market demands and seize opportunities before they're lost.

To increase flexibility, businesses are looking at themselves as a collection of interconnected functions — discrete processes and services, such as sell covered option, check customer credit or authenticate user — and then deciding which of those functions are core or differentiating, and which can be commoditized or even outsourced. If you can mix and match these functions at will, you'll have a tremendous competitive advantage in the marketplace. It's a powerful idea. But to achieve this degree of flexibility in your

business operations, you need an equally flexible IT environment. You need an environment that can take full advantage of both your legacy systems and the latest technologies. You need what's called a service-oriented architecture, or SOA.

An SOA is an application framework that makes it easy to reuse and combine the discrete business processes and services that make up your business. It's a blueprint or a map of how services function. When an SOA is built on open standards, such as Web services, you can connect business service components — processes and applications — more quickly and easily than ever before, regardless of platform or programming language. Web services are a suite of industry-standards-based technologies that plug and play with your infrastructure, fostering business agility in the face of changing marketplace conditions.

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However, shifting your legacy applications to an SOA can be a complicated and risky process — it's not enough to have the right architecture. It also has to work right. And modeling is a critical tool for getting a service-oriented architecture right. Early infrastructure modeling separated software codes into functions that allowed software to be grouped into smaller and better-organized pieces. These approaches then evolved into object and component models. But these customary modeling techniques are not designed to meet the specific requirements of an SOA. SOAs contain the familiar components, but they also add new elements meant to foster flexibility and resilience, such as service process choreography. And these elements require new design techniques. IBM Service-Oriented Modeling and Architecture was created to leverage the full spectrum of application development methods — including legacy, object-oriented and component modeling, and services — in the new SOA. IBM's techniques help ensure that the requirements of an SOA are fully addressed from the beginning, allowing full realization of the benefits of a flexible IT infrastructure.

Aligning business and IT goals

Service-oriented architecture is characterized by a close relationship between software engineering, enterprise-scale IT architecture and business architecture. The idea is to optimize your IT infrastructure to serve the needs of your business. Built ideally on open standards, SOAs are technology agnostic. Services, rather than applications and platforms, become the IT building blocks that enable business flexibility. Service-Oriented Modeling and Architecture separates the business logic of a process from its technology platform, taking inputs from the IBM Component Business Model™ method or from other business analysis and modeling approaches. These models map a business's goals to its essential processes, providing an understanding of componentized business activities, the events that trigger them and the roles that perform them, as well as inputs, control points and outputs.

Business process modeling, while as critical for IT as for business, does not typically reach into the IT architecture and implementation domains. Service-Oriented Modeling and Architecture was created to help bridge this gap. Referencing the business analysis, the modeling approach provides a set of

techniques to help ensure that the necessary services are provided and used. This link between your business and technology models helps verify that each element of your IT infrastructure is designed to further and support your business goals, extending your strategy into the day-to-day operations of the enterprise. This is the core of business flexibility and responsiveness.

Integrating legacy applications and technologies

Changing to a service-oriented architecture wouldn't be practical if there were no way to access and use your legacy applications and technologies. An SOA's capacity to integrate existing systems and provide access to legacy data is one of its primary appeals. Many large enterprises are characterized by disparate and siloed systems and applications — horizontal integration has become the goal of businesses seeking greater agility in the global marketplace. An SOA using open standards such as Web services can be an ideal way to link existing systems with one another and with new technologies. Using industry standards allows you to reuse existing software components. This means that integration is faster and

easier. Open standards also allow you to quickly and efficiently leverage innovation developed in one part of your organization and disseminate it across the enterprise. This helps prevent unnecessary duplication of effort, increase the business value of innovation and create an incentive for innovation itself.
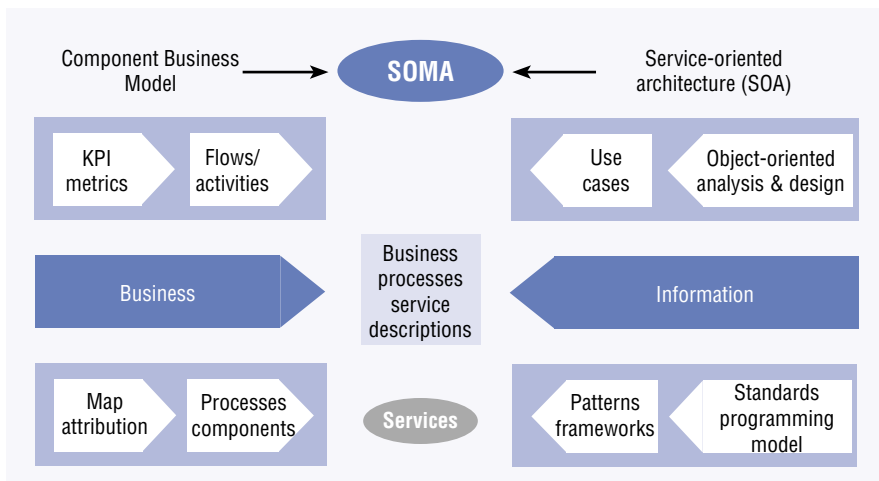
Service-Oriented Modeling and Architecture facilitates integration with techniques for analyzing legacy applications, custom and packaged, to identify, specify and realize services for use in a service-oriented architecture. It breaks out the business functions of each existing application, identifying candidate services that can be used to realize business goals under the new architecture. It also identifies potentially problematic areas and highlights areas where new services need to be developed or sourced from an external provider.

Gaining flexibility while reducing risks

It's one thing to develop a service-oriented architecture. It's another to feel confident that it will work the way you want it to. After all, this new architecture will be the foundation of your business and the basis for your competitive position in an on demand world. Greater business flexibility can be the result of a thorough analysis of your business goals and the careful construction of a solution designed for responsiveness. With an SOA built on open standards, you can reuse already-tested software components, reducing the risks associated with implementing new applications and services. Service-Oriented Modeling and Architecture provides a detailed analysis and design method for the identification, specification and realization of services needed in an SOA, validating every step of the design phase so you are more likely to end up with a fully integrated, flexible and responsive infrastructure for your business.

At the identification level, Service-Oriented Modeling and Architecture techniques map out the needed services, determining which already exist and which need to be added. Then, the IBM approach specifies the services by defining their multiple aspects, or service model, including dependencies, composition and messages. At this stage, the model provides a framework for exposure decisions — based on your business goals and on which services you want to expose to external partners and customers. Service-Oriented Modeling and Architecture also helps identify the containers for realizing services. When services and their components have been fully specified, the framework takes you through the final step: making service realization decisions. These architectural decisions specify how it is anticipated that the service or component will play its role in the new infrastructure, so you can have confidence in how your SOA will operate in the real business world.

Having a comprehensive blueprint for your design process can save you from having to make costly corrections and additions later. IBM's position as one of the world's largest technology and business consulting companies makes it uniquely suited to deliver a comprehensive model based on proven practices. Capitalizing on our expertise can reduce your own risks and increase your confidence in your resulting on demand environment.

Component Business Model → SOMA ← Service-oriented architecture (SOA)

KPI metrics | Flows/ activities

Business

Business processes service descriptions

Use cases | Object-oriented analysis & design

Information

Map attribution | Processes components

Services

Patterns frameworks | Standards programming model

For more information

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