



The Mainstream

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Anatomy Lesson: Building an on demand business layer by layer

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Remember those biology class anatomy books with the clear overlays? One page had the skeletal system. Another had the circulatory system. A third had the nervous system. Eventually everything was covered with a layer of skin, and voila! A human being!

Well, the IT equivalent of assembling an organism layer by layer can be found in the way organizations are now creating an on demand business. (On demand business is, of course, the end-to-end integration of one's IT resources with those of customers, partners and suppliers.)

The construction of a successful on demand business can be thought of in much the same way as a multi-layered anatomy diagram. No single component completes the picture. But when you lay one element over the other, you get a business that can respond rapidly to customer demands, market opportunities and external threats.

This kind of progressive approach is an excellent choice. But it doesn't necessarily address one of the primary roadblocks to building an on demand business: cost. Whether implemented all at once or in stages, a complete overhaul of one's IT infrastructure can turn into a major capital expenditure. So, how can you break into on demand business without breaking the bank?

According to a new study from Bain & Co., while 70% of senior executives at large corporations agree that information technology is relevant to growth, 60% say IT is actually inhibiting their growth efforts. According to Forbes, the study found that companies spend 7.4% of revenue on IT when executives view IT as an enabler to growth, but companies spend only 4.7% of revenue on technology when it is perceived as an inhibitor. When companies believe in technology as an enabler, they spend 42% of budgets on new systems, but that figure drops to 30% when companies don't believe in IT as a growth engine.



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There are billions of lines of code embedded in the heart of your organization's mission-critical applications and systems. The processes associated with them are viewed as prime-targets for integration. But, you're scared to death to open up those applications, and to change their associated source code—if something changes, it could have a huge impact on the business. Meanwhile, your business executives' needs are stacking up at your doorstep.

Modernizing legacy systems for on demand business

Today, many IT connections that enable applications inside and outside an enterprise to communicate with each other are of the old, hardwired variety. This legacy infrastructure makes it difficult, time-intensive and costly for companies to adapt their business processes for on demand business. In fact, according to data from Forrester's Business Technographics®, over 70% of IT budgets are spent on overcoming the limitations of existing systems—leaving less than 30% to be spent on acquiring new capabilities such as on demand business functionality.

With that kind of expense ratio, it's no wonder that IT decision-makers are seeking a more cost-effective method of upgrading their technology infrastructures.

They're finding it, in a concept called service oriented architecture (SOA). Essentially, SOA is a collection of business processes that uses existing, standard interfaces to integrate applications inside and outside an organization. SOA enables technology to align with business strategies more tightly, more cost-effectively, and in a secure and managed integration environment.

By enhancing current IT systems rather than replacing them, SOA can help an organization:

- *Reduce development and deployment cycle times via pre-built, reusable service "building blocks"*
- *Reduce complexity and maintenance costs with common services*
- *Increase the speed of business changes*
- *Improve business efficiency and performance*
- *Protect the privacy and security of critical information assets*



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Changing the game

The fundamental “building blocks” concept of service oriented architecture is not new. But the advent of Web services has changed the SOA game. In the past, technology resources had to be linked together with customized or hardwired connections. Today, however, Web services enable these resources to be standardized and loosely coupled.

The result of this standardization of service components? More cost-effective integration. You can do the work once and use IT assets to drive better cost-efficiency from your IT investments. In addition, the loose coupling enables your infrastructure to change more dynamically, yielding a more responsive enterprise.

These benefits could not have come at a more opportune time. According to a recent survey of top Global 400 companies, CEOs recognize that in order to respond quickly to increased globalization and economic volatility, they need to drive growth via a more responsive IT organization, one that can quickly adapt to changing business priorities.

Enter service oriented architecture, which provides businesses with the technology to enable on demand business. SOA can be adopted at many different levels, including:

- *Individual web services that create services from tasks contained in new or existing applications*
- *Integration of business functions through services across multiple applications inside and outside the enterprise for a business objective*
- *Enterprise-wide IT transformation through an architected implementation enabling integration across business functions*
- *On demand business transformation of existing business models or the deployment of new ones.*

Service oriented architecture provides businesses with the technology to enable on demand business.

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The advent of standards-based Web services has elevated SOA to a new level. Today, enterprises can leverage their IT investments through reuse and more seamless integration of applications and data, both inside and outside the organization.

Example: A major bank is using SOA to simplify the exchange and integration of disparate data and systems acquired through its mergers and acquisitions. As a result, employees can now pull up a single view of each customer relationship across multiple product lines—including traditional banking services for individuals, corporations and other institutions, life insurance and pension products, asset management, mortgage finance, brokerage, real estate and leasing services.

SOA and IBM: An end-to-end solution

How many IT providers can deliver all the necessary components of a Web services-based SOA solution? You can count them on one finger. Only IBM can, because only IBM supports an end-to-end SOA solution with a battery of resources that includes:

- *More than 35,000 industry-focused consultants with experience in Web services*
- *Over 40,000 developers actively working on Web services applications through IBM's SpeedStart for Developers program*
- *More than 15,000 architects, developers and designers (including our 1,000-person IBM WebSphere® practice) with skills in Web services and SOA implementations*

A striking case in point can be found at Avis Rental Cars, which must deliver ever higher levels of service to keep its customers coming back. "What differentiates us from our competitors is our service," says David Harris, CIO for Avis Futures. "We must make it easy for customers to do business with us and respond quickly to market demands."

To accomplish this, his team is creating an infrastructure service to make it easy for business units to share data between new Web-based applications and the existing reservation, rental and information management system. Working with IBM Global Services, Avis Futures is implementing IBM WebSphere Business Integration and IBM Tivoli identity management solutions



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to drive the company's new infrastructure service. Based on an SOA, the infrastructure will enable Avis business units to deliver new services using any device type—from handhelds to cellular phones to laptops.

"IBM solutions provided the scalability, flexibility and openness to support whatever our business units needed to do," says Joseph Pittari, the project's chief technology officer. "We felt the integrated approach would help us effectively keep pace with evolving Web services standards and enable us to reap the benefits that come with working with one vendor instead of three or four." ¹

IBM has the industry viewpoints, process maps and Web services/SOA skills to help businesses develop SOA solutions. And we're currently building industry-specific SOA and Web Services solutions to further enhance our offering.

In addition, IBM maintains three Global Web Services Centers of Excellence, dedicated to leading implementations of Web services and SOA with businesses. Plus, IBM has the world's largest hosting infrastructure, creating a "services ecosystem." We also provide the industry's most complete, end-to-end integration, with products and services that can integrate with J2EE™ and .Net.

SOA and OIL: A typical scenario

It stands to reason that the industry's most effective method of progressively implementing on demand business—SOA—would be progressive in nature itself. There are four major phases to developing an on demand business using a service oriented architecture from IBM: Vision, Connections, Enablers and Differentiators. Using a large oil company as an example, here's a look at a typical scenario of how these four phases can occur:



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1. The Vision

Let's say the CEO of the oil company wants his business to be flexible, efficient and responsive to market opportunities and clients' needs. The IBM Business Consulting Services teams can help identify broad business goals, such as:

- *Reducing seismic imaging time*
- *Simplifying purchasing processes with suppliers and customers*
- *Saving money on IT staffing by better managing corporate IDs and passwords*

2. The Connections

The company may need an architecture that supports both inter-departmental and inter-business transactions. Computers need to share data, applications and functions, even when they aren't using the same operating system or middleware.

Take authentication, for instance. Using SOA, the company can keep employee IDs and passwords on different authentication servers around the company, while making them look like they're all housed in the same place. (IBM Tivoli® Access Manager can provide single sign-on for all Web-based applications, so users don't have to key in their IDs and passwords multiple times.) The company saves money as it reduces server capacity, and it manages more effectively server access for new employees, ex-employees or people changing jobs within the company.

At one time, using legacy architecture models built to accommodate mainframe and hosted environments, or employing infrastructures with distributed applications and data, the company could gain the benefits of sharing processes only through expensive, custom-coded software projects. Today, however, the CEO's business goals can be achieved faster and cheaper with an SOA architecture supporting Web services.



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3. The Enablers

Simply put, architecture matters. Agreed-upon technology standards, such as those offered by Web services, enable distant and diverse computers and software to work together cohesively. Specifically, these standards describe the format of the information used in business transactions and services, such as:

- *A purchase order or a bank transfer request*
- *Security information like encrypted and digitally signed employee records*
- *Workflow that describes the order in which computing is done*

For the oil company, the establishment of standards like these provides a larger business benefit: determining the size and location of oil and gas pools more quickly and efficiently than by traditional methods. The company can thus dramatically reduce its processing time for standard calculations, while improving the quality of its seismic data.

4. The Differentiators

Partner applications, middleware and Web services applications combine to form unique layers in the anatomy of an on demand business, enabling the organization to develop a solution based on its specific needs.

In the petroleum industry, Explorer is a partner application for producing maps showing pool depth, geological features and seismic data; Probe is a set of software tools that can help predict the presence of hydrocarbons. IBM middleware handles tasks such as business intelligence, content management and/or application development. And IBM Web services applications handle tasks such as processing purchase orders for new pipes and pumps used in an oil field.

IBM's software and service offerings

IBM is a leader in building on demand businesses using Web services-based service oriented architectures. We begin with a product called WebSphere Business Integration Server Foundation, which leverages an SOA to build modular applications that are designed to adapt quickly to change.

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WebSphere Business Integration Server Foundation enables businesses to create reusable services out of their existing Web services and packaged applications, as well as combine services to link business process with software applications. It's the first product from a major vendor to offer native support the Business Process Execution Language.

But IBM's leadership in SOA-driven on demand business extends beyond software. With deep experience and unmatched expertise in this arena, we offer a number of valuable consulting services to organizations looking to enhance their legacy IT architectures for on demand business. Among our service offerings are:

- *IBM Component Business Modeling Services. A 6- to 12-week engagement to provide an initial view of an enterprise's business process components.*
- *IBM Application Portfolio Rationalization. A 10- to 12-week engagement to align a business's application portfolio to business goals and objectives.*
- *IBM Strategy and Planning Services for Service Oriented Architecture. A 2- to 3-month engagement to help organizations identify the business and IT capabilities required to take advantage of service oriented computing.*
- *IBM Assessments for Service Oriented Architecture. A 1- to 3-month engagement to assess a business' current and planned SOAs, with a focus on performance, scalability and availability.*
- *IBM Architecture and Planning Services for Web Services. A 6- to 12-week engagement to help businesses with architectural guidance, implementation guidelines and best practices.*
- *IBM Assessments for Web Services. A 3-day to 1-month engagement to assess the ability of current Web services plans or architectures to address business needs.*
- *IBM Application Renovation. A 9- to 12-month engagement to help organizations take business rules from legacy applications and turn them into reusable processes.*
- *IBM Application Integration. A 3- to 9-month engagement to help companies solve specific application and business problems, with a view towards service orientation.*



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- *IBM Infrastructure Readiness Assessment. A 6- to 10-week engagement to help businesses assess the opportunities, gaps and investments required to enable an on demand infrastructure.*
- *IBM Infrastructure Strategy. An 8- to 12-week engagement to help businesses assess their IT infrastructure and establish a plan to enable the on demand enterprise.*

From yesterday's business to today's

By taking the reusable "building blocks" approach of service oriented architecture, then adding the cost-efficiencies derived from the latest Web services, today's businesses are finding a rapid and affordable way to retool their legacy systems for on demand business.

That's leading to a dramatic reduction in complexity and maintenance costs...an equally dramatic increase in business efficiency, performance and speed of change. With SOA, the collection of business processes that uses existing, standard interfaces to integrate applications, technology can be aligned with business strategies more tightly, more cost-effectively, and in a secure and managed integration environment.

¹ "Executives' Views on IT Hurts Spending," Forbes.com, Aug. 24, 2004

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