

Understanding the Business Benefits of an Open Source SOA Platform





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Introduction

In a highly competitive business environment, the ability to adapt the information technology infrastructure quickly is imperative. Many businesses are turning to a Service Oriented Architecture (SOA) to create a flexible infrastructure. SOA enables organizations to build and deploy IT systems that directly serve the goals of the business faster and more easily than traditional approaches. A business services approach helps businesses and IT to establish a common language of communication, align IT with business needs, and facilitate change. SOA, in short, allows businesses to adapt their IT to meet frequently changing business challenges.

SOA is an approach to building IT systems that allows businesses to leverage existing assets—in the form of reusable services—to support business change. SOA simplifies and speeds the automation of business processes by delivering the desired functionality as services. Because services request the required functionality through a standards-based interface, the need to change backend systems is eliminated. In the process, services can be combined and recombined in various ways to automate a given process. The major components typically included in a service oriented architecture are illustrated in Figure 1 below. The Enterprise Service Bus (ESB) shown in the center of the diagram is responsible for passing secure and reliable messages between the different components of the SOA. All of the component parts are designed to work together in a standardized and repeatable way leading to a consistent quality of service.

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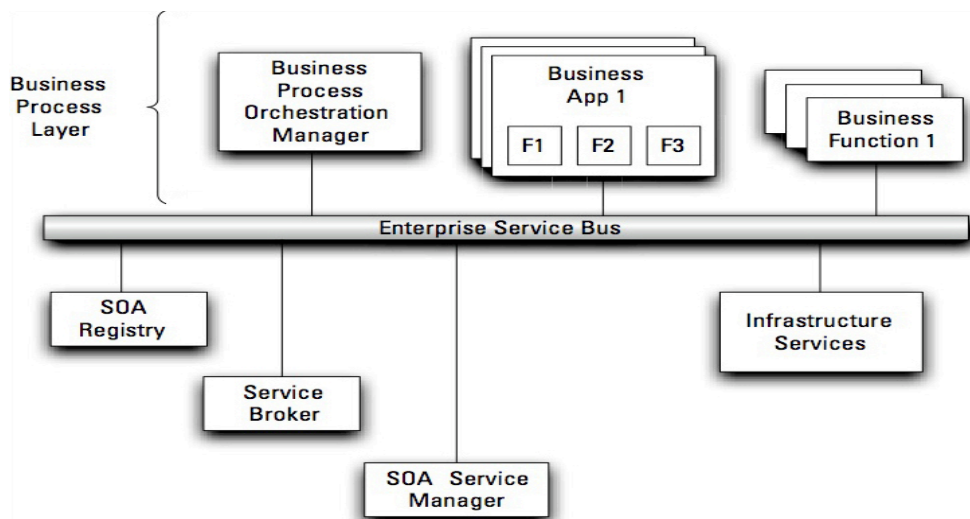


Figure 1. Fundamental SOA Components
SOA For Dummies, 2nd Edition, Wiley 2008

Open source has been proven particularly effective when implementing SOA. Using open source reduces the cost of tools while providing a range of options from different providers. Having access to the source code also eliminates concerns about vendor lock-in. Finally, open source offers a broad and supportive community and ecosystem to support the SOA initiative. At the same time, commercial open source SOA tools carry with them the full support of a well-established vendor.

This paper is divided into two sections. The first half of the paper describes the business challenges of three JBoss Enterprise Middleware customers and how they gained business benefit from the use of JBoss Enterprise products and services. The second half of the paper provides insight into the JBoss Enterprise SOA platform.

The Business Need for SOA

Hurwitz & Associates has interviewed hundreds of companies that are moving to SOA. While each company is different, many share common business goals, such as lowering IT costs or enabling rapid change. The following companies each faced serious business challenges that SOA helped them overcome:

Information distributor. A global information distributor found itself struggling to aggregate and integrate information from multiple proprietary legacy systems and rein in rapidly escalating IT costs. The various independent data stores, with data from over 200 different sources, required significant manual intervention to ensure the delivery of accurate information to its customers: re-formatting and accuracy checking involved numerous manual steps. The process was labor-intensive, costly, and very slow, thereby frustrating the company's customers who demanded more rapid access to the information than could be provided.

The company recognized that it needed to move to SOA in order to reach its goal of increasing both the speed of delivery and the quality of information it provided to customers. The services approach required streamlining application and data integration through the use of standards-based services and interfaces that left the backend systems untouched.

Railway. Similarly, a national European railway, which carries over 100,000 passengers per day, realized it needed to integrate a diverse set of IT systems. Specifically, it wanted to create a common IT platform to support a wide range of applications—from HR to sales to operations—and access these applications through a variety of platforms including servers, PCs and handheld devices. The railway had previously been coding point-to-point integration, which was slow, error prone, and costly to maintain. The railway's management turned to SOA in the hope that it would now only enable the railway to reduce IT integration cost by providing

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a common standards-based IT platform, but would also speed development of new applications and capabilities.

Government agency. A third organization, a large government agency, turned to SOA to solve its document management problem. The agency receives a large number of documents daily and needs to make them available to its users to perform the work of the agency. However, the agency was under tight budget constraints. Working with its consulting firm, the agency started by building J2EE services that connected through the JBoss ESB. Faced with a situation in which there was no predictable document flow, the agency built a business-driven system based on services that would extract document meta data, categorize and index specific text, prepare documents for user search and retrieval, and even do translation. Figure 2 illustrates the agency's approach.

... a large government agency turned to SOA to solve its document management problem.

Large Agency - SOA-based Document Management Process Flow

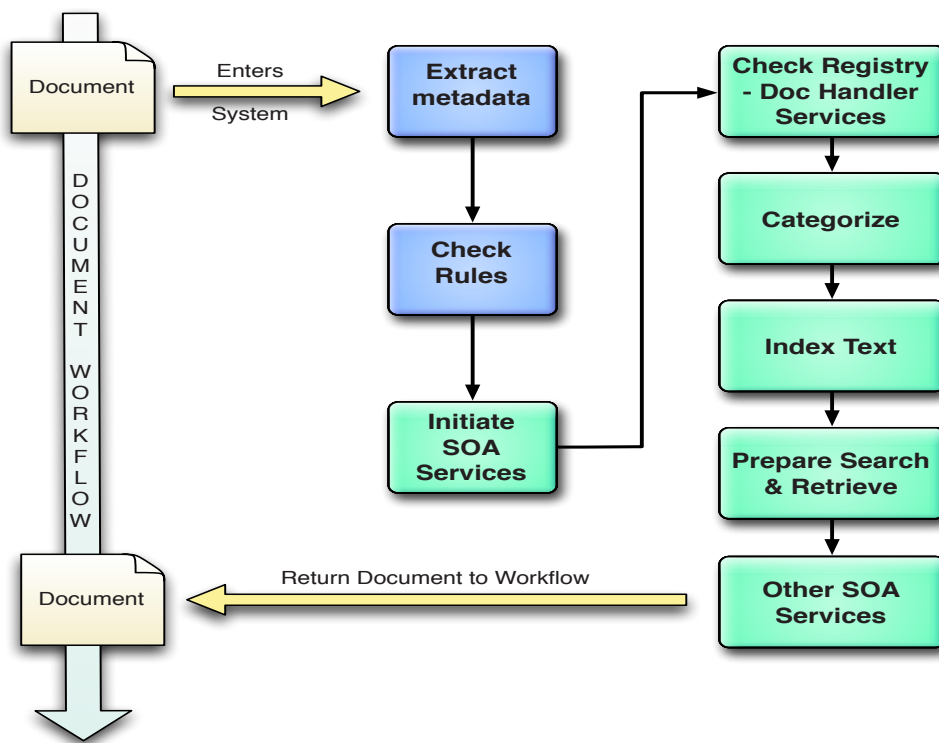


Figure 2. Flow Chart of Government Agency Document Management SOA Solution

All three of these organizations succeeded in their SOA initiatives. The business results they achieved are summarized in the following sections.

Understanding the Benefits of SOA

Companies implement a services approach when they build IT systems in order to leverage existing assets and make rapid, efficient, and cost-effective changes to its IT systems when required. Technically, SOA provides the architecture for building business applications as a set of loosely coupled black-box components that are orchestrated to deliver a well-defined level of service by linking together business processes. In so doing SOA helps the business to keep its focus on business while allowing IT to evolve and keep pace with a dynamically changing world.

Furthermore, through the use of services—recognizable codified tasks combined with appropriate rules and policies—SOA separates IT functionality from the underlying systems, whatever they may be. In this way SOA frees the business from technology constraints that previously hindered business flexibility and responsiveness to change. It helps the business leverage existing assets and create new assets in the form of reusable services. Through SOA, organizations can create, combine, and recombine these services as needed to support the task at hand—whatever that task may be.

SOA makes building and deploying IT systems that directly serve the goals of a business easier and faster. SOA integrates business requirements with an IT framework that simultaneously leverages existing systems and enables business change, thus leading the business to improve the quality of its systems and data through better business and IT governance and through reuse of proven rules, policies, and software assets. In the process SOA adds predictability and consistency through business rules, policy, and reusable software services.

Freed from the underlying technology constraints and able to integrate systems faster, more easily, and at much lower cost, the business stands to lower its IT total cost of owner and boost the return on its IT investment. SOA, in effect, allows the business to enhance overall business performance and profitability. The three companies described above all determined that SOA provided these types of impressive benefits.

Tangible SOA Business Payback

By selecting a subscription to the JBoss Enterprise SOA Platform and taking advantage of professional services provided by Red Hat, the global information distributor was able to make very significant changes to its technical infrastructure and still keep costs under control. Other business benefits included data quality improvements that allowed its business analysts to spend more time focusing on data analysis. The SOA initiative increased the overall flexibility and efficiency of the information company's business processes, enabling it to increase the timeliness, accuracy, and quality of the information delivered to its customers.

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To get these results the company leveraged the savings from choosing JBoss Enterprise SOA Platform over a more expensive proprietary option to invest in new IT hardware and hire people with SOA technical skills, created a master dictionary to organize and define incoming data, and developed a master tag library to streamline integration. Using JBoss, the company developed an orchestration engine that could adapt to changing business conditions by handling changes in data feeds on the fly through SOA rules-based services. It created other services to normalize and enhance the data. For example, it was able to replace eight different data decoders with a single SOA-based service.

Through the use of such services, SOA made it possible for the company to shift personnel from data operations to product strategy and other areas of higher value to the business. The company also was able to leverage its fast and efficient SOA operations to add valuable new business services.

The European railway, using Red Hat and JBoss technology, built a SOA integration platform that delivered increased ROI for the railway. A ticket-auction application built around a set of interoperating services, for instance, took just four months to complete and led to the sale of an extra 1,500 tickets per week—tickets that previously went unsold. With SOA, the railway now measures its IT ROI in weeks rather than months.

Assisted initially by Red Hat with professional integration and training services, the railway established a SOA integration center of excellence that can rapidly deliver cost-effective, integrated SOA projects across the entire business. It intends to continue to regularly roll out SOA initiatives similar to the ticket auction.

The information distribution company opted for a subscription to the JBoss Enterprise SOA Platform because it delivered comprehensive SOA functionality at an affordable price. The European railway selected JBoss because in pilots it demonstrated the ability to deliver dramatic application performance improvements over competing products. In addition, both companies wanted to take advantage of the Red Hat/JBoss professional SOA support and services.

The government agency opted for JBoss Enterprise SOA Platform because it could start small yet scale very large. It began by implementing the ESB portion of the JBoss Enterprise SOA Platform for automated transport, message routing, and protocol translation. A central registry contained a variety of document handlers while the agency resolved issues arising from multiple data sources with the JBoss Enterprise Data Services Platform (MetaMatrix) to ensure a unified view. All the various components easily integrated within the JBoss Enterprise Application Platform.

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Within three years, the SOA-based document automation system had become so popular it was handling in excess of 100,000 documents a day and supporting a 600% increase in users with no problem.

Introducing JBoss Enterprise Middleware

JBoss, owned by open source solutions provider Red Hat, is a provider of open source middleware software. The JBoss.org Community is a thriving and innovative open source community. Projects developed through the Community are hardened by JBoss and then integrated into a comprehensive portfolio of stable, supported, enterprise-class solutions that support the entire application lifecycle. The JBoss Enterprise Middleware portfolio includes application, portal, data integration, and ESB-based SOA platforms, as well as development and management tools. JBoss Enterprise Middleware is available via subscription that include patches, updates, support, multi-year maintenance policies, and software assurance.

The JBoss Enterprise SOA Platform and other middleware products in the portfolio enable the integration and orchestration of application components and services. (See Figure 3.) Packaged as a modular distribution, the JBoss Enterprise SOA Platform integrates multiple components, including messaging, service orchestration and workflow, and policy and governance along with SOA design, development, and management.

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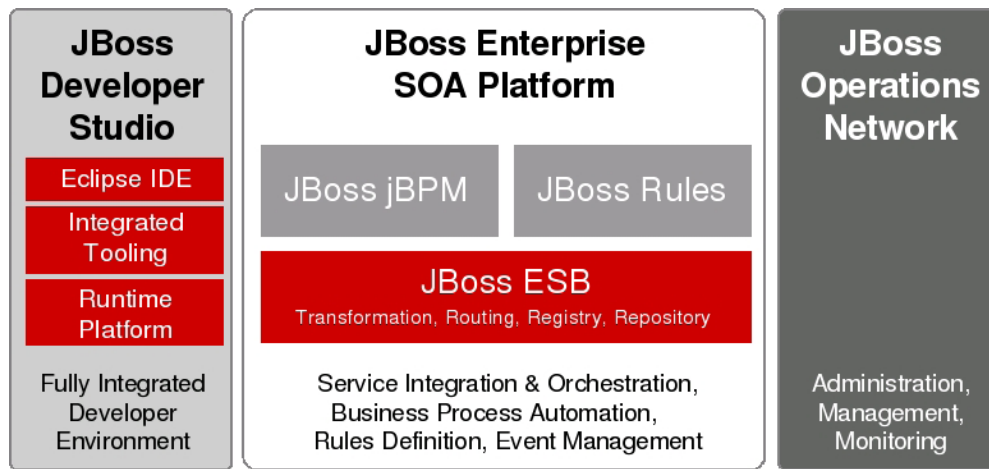


Figure 3. JBoss Enterprise SOA Platform Components

Key JBoss Enterprise SOA Platform components include:

- JBoss Enterprise Service Bus (ESB)—enables any-to-any message delivery while performing the necessary message transformation and routing to ensure

messages between SOA services are received and understood. JBoss ESB is a next generation ESB that enables EAI, SOA and EDA styles of integration in a single platform. The ESB is central to eliminating the need for point-to-point connectors.

- JBossRules—provides a business rules engine that enables greater business agility responding to a changing regulatory and competitive environment. Rules are particularly important in ensuring compliance and mitigating risk.
- JBossjBPM—provides enterprise business process integration, orchestration, and automation. Orchestration, specially, enables control of the information flow and service interactions among dozens, even hundreds of interoperating services and systems and binds them together to deliver business value.

There are other key offerings from the JBoss Enterprise Middleware portfolio that can be used with the JBoss Enterprise SOA Platform as part of a comprehensive SOA development, deployment and management solution. They are:

- JBoss Operations Network—comes with the JBoss Enterprise SOA Platform subscription and delivers basic JBoss SOA administration capabilities including patch management, install/deploy, and provisioning. An optional monitoring upgrade adds SOA service monitoring features.
- JBoss Developer Studio—integrated open source development environment used to create and deploy reusable services, including business rules authoring and to combine services into SOA business applications. JBoss Developer Studio includes the JBoss Enterprise SOA Platform for development purposes. In addition to JBoss Developer Studio, which delivers just the software with no support, Red hat also offers Red Hat Developer subscriptions that provide developer support for all JBoss Enterprise Middleware and Red Hat Enterprise Linux.

In addition to the JBoss Enterprise SOA Platform, the company offers the JBoss Enterprise Data Services Platform (MetaMatrix). It provides a set of data management capabilities including data integration, data services federation, and data abstraction so that the SOA environment can properly handle diverse data consistently.

Other JBoss Enterprise Middleware products that support SOA Deployment include:

- JBoss Enterprise Application Platform—provides a SOA service hosting environment.
- JBoss Enterprise Portal Platform—provides a personalized experience interacting with SOA-enabled business processes and applications.

Within three years the resulting system allowed the agency to consolidate 55 underutilized servers into just eight servers and still have capacity available for more growth in the future.

Conclusion: Open Source SOA Works

The business problems that organizations face today continue to be difficult and are only compounded by the current economic turmoil. Systems remain hard to integrate, and changing applications remains a slow and costly endeavor. Budgets are tight, even at big government agencies. SOA, however, provides an effective and efficient answer to these difficult challenges as it delivers significant business value.

As noted above the government agency turned to SOA services to implement a business process-driven messaging infrastructure based on commercial open source technology. Within three years the resulting system allowed the agency to consolidate 55 underutilized servers into just eight servers and still have capacity available for more growth in the future. SOA also gave the agency flexibility and scalability, allowing it to quickly scale processing from 18,000 documents to more than 100,000 documents per day. The system absorbed a 600% increase in users without missing a beat.

The lesson in all three cases—the information distributor, the European railway, and the government agency—is clear: the combination of SOA and enterprise-class commercial open source technology help an organization solve difficult business problems by expediting IT integration, eliminating IT and business pain points, reducing errors, and enabling flexibility and scalability. These SOA initiatives helped the organizations lower costs, speed the deployment of new capabilities, boost business performance, and better align IT and the business for the purpose of increasing business value and improving the customer's experience. And it did so at a cost each could afford. That is the power of commercial open source SOA.

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