



Reaping the rewards of your service-oriented architecture infrastructure

How real-life organizations are adding up the cost savings and benefits





Executive summary

Growing the business and reducing the budget might seem mutually exclusive objectives in a race to realize a greater return on investment. That's why today's executives are looking for ways to maximize IT resources. With the promise of shortened development cycles, increased flexibility and greater customer responsiveness, many organizations are migrating to service-oriented architecture (SOA) implementations.

This trend is being fueled by the maturity of industry-specific SOA-based middleware frameworks and the growing availability of associated pre-packaged, tested solutions. But viewing SOA value strictly from an application perspective is leading many organizations to overlook the significant, measurable benefits a reusable SOA infrastructure can contribute to the bottom line.

In this white paper, you will see how organizations in many different industries have invested in an SOA design approach, leveraged an SOA infrastructure—and uncovered unique business value.

The first set of benefits focuses on easing budget pressures, including:

- Reducing implementation costs with a more flexible infrastructure
- Reusing applications to reduce development costs
- Ensuring quality with improved monitoring of application development
- Simplifying data sharing and information access
- Streamlining and modernizing internal operations

A second set of results demonstrates a range of benefits, from support for business growth to improved services for end users and customers:

- Improving time-to-market
- Facilitating collaboration and teamwork
- Boosting production
- Satisfying regulatory requirements and adding new services



Figure 1. SOA implementation continuum

Findings from over 900 IT and business decision makers across North America, Europe, and Asia:

- Approximately 50 percent of companies implementing SOA declare their SOA investment has already paid for itself or more
- Of those seeking to generate revenue through SOA, 60 percent report they are meeting or exceeding their revenue goals
- For companies indicating that reducing cost is a major objective for SOA, over 60 percent report they are meeting or exceeding their cost reduction objectives

Organizations whose SOA implementations surpass expectations report one of the top success factors is the investment in a supporting SOA infrastructure.

Source: IBM SOA Infrastructure Adoption Study¹ - August 2008

Measurable results

To achieve an advanced implementation organizations ideally progress from a basic SOA implementation through a continuum of four stages (Figure1). The first is a foundational deployment, which may only pilot a few business processes. The next stage typically extends the SOA foundation capabilities for use across the enterprise. In the last two phases, organizations begin to truly leverage SOA to transform their business processes and eventually respond dynamically to market changes.

As you will see, regardless of the stage of their deployment on the continuum, the organizations highlighted in this paper are deriving real benefits from the increased flexibility of their SOA infrastructure.



Reduce implementation costs with a more flexible infrastructure

How long does it take your development team to implement—including planning, design, development, testing and deploying—applications or enhancements before you see a payback? As you move along the continuum of SOA implementation maturity, the component nature and flexibility of an SOA infrastructure can allow you to introduce new customer services, automated business processes and other initiatives much more quickly.



Cutting implementation time by three months and saving £12 million

A leading manufacturer cut file-support costs by 95 percent and secured an improved return on capital employed ratio when it created an SOA-enabled solution. To better manage its internal resources, the organization implemented a supply chain management solution that automated its delivery and replenishment processes. Unfortunately, a lack of integration between back-end systems limited the new solution's capabilities and efficiency. When the company needed to back up or share information between systems,

it had to transmit the data manually, marginalizing the advantage. But with a more comprehensive integration platform in place, the SOA integration framework now enables communication of data between numerous manufacturing systems, logistics software and other enterprise resource planning (ERP) applications. The organization has been able to streamline its supply chain processes, and leveraging specialized SOA adapters, IBM specialists cut the implementation timeframe by three months, saving roughly £12 million.



Stage: Extend end-to-end

IBM services:

- Global Technology Services: IT strategy and architecture services: SOA infrastructure consulting services
- Global Technology Services: Middleware services: SOA integration services

Reuse applications to reduce development costs

If you could reuse existing application components, how much would you save on development costs? How much sooner could you expect to see a return on your investment? Integrated infrastructures designed for connectivity and reuse offer major advantages. To facilitate your SOA design, start with an inventory of your existing IT processes, organization and technology. This will help you identify opportunities to reuse existing applications and share IT system resources.



Enabling customer services at lower costs through infrastructure integration and application reuse

A leading global insurance company extended its products and services directly to customers, turning an informational Web site into an e-commerce one through integration with the existing mainframe environment. To evaluate the existing infrastructure's ability to support an SOA implementation, IBM began by looking at IT processes, organization and technology for areas of improvement, then provided recommendations for upgrading and transforming the infrastructure. With the assessment completed, IBM helped the client develop and test the design.

On the front end, the solution—built on an SOA foundation—helps this company provide customers with a simple way to purchase and better manage insurance services. On the back end, it facilitates system security and governs deployment. By leveraging external Web services, the company reduced application integration costs and complies with insurance regulations. Brokers update the databases themselves, and the system is maintained in a central location.

With full reuse of legacy applications, a security-rich e-business infrastructure and close IT alignment with the company's business strategy, the company is able to respond quickly to market changes and launch new products and services more easily.



Stage: Transform

IBM services:

- Global Technology Services: IT strategy and architecture services; SOA infrastructure consulting services
- Global Technology Services: Middleware services; Infrastructure optimization services



Ensure quality with improved monitoring of application development

Is your quality suffering because you don't have a handle on software development initiatives across your enterprise? If so, how is this impacting users and customers when applications are deployed? How much time does staff spend researching and resolving problems? Are you paying excessive software licensing fees? An integrated SOA infrastructure that enables reuse of application components creates an environment for reduced duplication and lower software license costs. When you monitor your software development environment, you can more easily avoid potential disruptions associated with an unplanned deployment.



Driving enterprise-wide development efficiencies

A national bank created a backbone SOA infrastructure to support 300 branch locations in its home country, plus several overseas offices. Faced with an increase in monthly licensing charges due to a mainframe upgrade, the organization needed a way to assess the existing enterprise application infrastructure (EAI) and software development needs.

To meet the challenge, the organization deployed IBM Rational® development software and Tivoli® monitoring capabilities on all open servers so it can precisely manage its software development cycle to ensure quality.

As a result, the bank was also able to deliver a new branch office solution with centralized teller machines. IBM helped the organization efficiently and affordably create the SOA infrastructure, supported by WebSphere® and DB2® solutions, driving efficiencies in development processes and better connecting its EAI and Internet banking systems.



Stage: Extend end-to-end

IBM services:

- Global Technology Services: Middleware services: IT lifecycle management and governance services
- Global Technology Services: Middleware services: SOA integration services

Simplify data sharing and information access

Reducing the need for duplicate information across your enterprise can lead to significant savings. How much time does staff spend reentering information you already have in another database? How much data storage is being wasted? Making information more accessible can provide you with better oversight, increase your internal business productivity and allow you to offer new and enhanced customer services.



Integrating more than 27 applications and 50 databases

A district government, home to millions of citizens, simplified its data sharing and application integration with an SOA solution. The IT organization runs more than 27 application systems and over 50 databases to manage the businesses within the district. But the government organization could not easily obtain and evaluate data from across its siloed systems, driving the need for a framework that would:

- Manage and present business and economic indicators with greater efficiency and detail, particularly concerning geographic information
- Improve reporting capabilities
- Maintain processes with clearly defined regulations
- Include data exchange systems

IBM helped design and implement an SOA, architecting and deploying the framework. Through a loose-coupled standard, its 27 applications and 50 databases are now interconnected within the SOA infrastructure, simplifying data sharing and information integration. The organization estimates a 50 percent reduction in labor hours for new development efforts. The services directory, a key component of the SOA implementation, has greatly reduced the need for dedicated application interfaces, a savings in application development and ongoing maintenance costs. In addition, the servers housing these interfaces are no longer needed, providing additional savings. The overall result of the SOA implementation is improved government efficiency with the ability to deliver new data portals for all 26 agencies, coordinate and share data, and support new regulations.



Stage: Transform

IBM services:

- Global Technology Services: IT strategy and architecture services: SOA infrastructure consulting services
- Global Technology Services: Middleware services: SOA integration services



Streamline and modernize your internal operations

What if you could eliminate all paperwork—and the yearly cost for paper? How much time does your staff spend passing, handling and searching through paper throughout your enterprise? Imagine the savings—and improved data security—if your information were in one storage location accessible by numerous business processes.



Eliminating all paperwork and improving operations through integration

A national government agency, with more than 40 regionally located offices, streamlined and modernized its internal operations while improving public services through an SOA integrated workflow-based information system. Due to government reforms, the agency decided to create a standardized framework to integrate administrative activities, certify property, including data collection and management, and improve the quality of public services.

Once the system is fully implemented, all paperwork will become computerized. Additional benefits include:

- Process automation
- Increased reliability and security of data and information
- Improved quality of public services
- A Web-enabled interface for end users



Stage: Foundational

IBM services:

- Global Technology Services: Middleware services: SOA integration services
- Global Technology Services: Middleware services: Information on Demand infrastructure services
- Global Technology Services: End user services: Platform integration and deployment services
- Global Technology Services: Integrated communications services: Networking strategy and optimization services
- Global Technology Services: Integrated communications services: Network integration services

Improve time to market

Delivering new services to satisfy ever-changing customer expectations and keep up with competitors is becoming more and more challenging. You simply can't tolerate development cycles that take several months or years to deliver. What is the impact to your bottom line if your competition rolls out a new set of services that begin to erode your existing customer base? Could your inability to respond put you out of business?



Achieving speed to market and long-term cost reductions

A bank with an extensive nationwide network needed the flexibility to define and execute new and existing business processes, reusing their existing applications. Implementing an enterprise IT architecture based on SOA helped achieve this objective as well as improve both delivery and launch time of new banking products.

IBM developed the architecture conceptual design and proposed a division of functionality for the individual SOA-based service components. In the bank's SOA environment, the enterprise service bus (ESB) executes these services components to perform the functions

used in practically all of the business processes. The services catalog is key element of the solution, providing the interlock with front office components and back office services.

As part of the SOA solution, the bank also implemented an operational master database to store copies of data used in business processes and pulled from different systems and databases. The new, more effective architecture does not affect the main existing transactional systems. The bank can now define new business processes using previously incompatible components, replacing technical barriers with flexibility.



Stage: Transform

IBM services:

- Global Technology Services: IT strategy and architecture services: SOA infrastructure consulting services
- Global Technology Services: Middleware services: SOA integration services



Facilitate collaboration and teamwork

Innovation requires the ability to share ideas and information. Are you delivering an environment that stimulates research and creativity? Would a more collaborative environment distinguish your business or organization as a market leader?



Enhancing the learning experience and increasing administrative efficiency

A leading teaching and research university supporting 25,000 students in 28 academic schools and four graduate schools had disparate, incompatible IT systems across its infrastructure and needed to enhance the learning experience. The university could not securely or effectively make information and resources accessible to all users across the environment, limiting collaboration and administrative efficiency.

IBM helped plan, design and implement a service-oriented architecture and an IBM Virtual Infrastructure Access (VIA) security solution. The innovative VIA solution provides end users with secure, tailored, single sign-on access to the university's information and resources through virtual workplaces. The SOA implementation includes systems and performance

management, application integration, business process management and data management capabilities which allow the university to easily add, delete and modify its Web-based services without time-consuming application coding.

The integrated end-to-end solution facilitates collaboration among researchers, students, teaching staff and administrators, as well as with the university's information services team. Students now have quick and easy access to information about their studies and on-campus social activities. And university staff can now share information through the use of Web-based collaborative workspaces.



Stage: Extend end-to-end

IBM services:

- Global Technology Services: IT strategy and architecture services: SOA infrastructure consulting services
- Global Technology Services: Middleware services: SOA integration services
- Global Technology Services: End user services: Workplace optimization consulting services

Boost production

An SOA infrastructure enables you to link to information from many sources to maximize opportunities you might otherwise overlook. Could you enhance your business position if you improved your ability to mine and analyze data in your production environments?



Increasing output while lower costs

A major oil and gas producer expects to reduce costs and boost production with a service-oriented architecture for information sharing and collaboration. The goal: incorporate new technologies into production processes to transform, streamline and improve them. A new process framework links advanced real-time sensing capabilities in the field to powerful, collaborative and analytical resources accessible across the enterprise to provide:

- Expected 5 percent annual increase in oil and gas production through reductions in unplanned equipment downtime
- Expected 30 percent reduction in costs through the use of predictive maintenance
- Extension of oil field life and increased production yield through “smart” field management, enabled by real-time wireless sensing of subsurface oil field installations
- Lower costs and improved production efficiency through the consolidation of well monitoring and management into onshore facilities
- Increased interdisciplinary collaboration through improved information sharing

Creating a foundation for more informed decisions, optimized processes and—ultimately—higher production efficiency, the SOA environment enables the flow of information through the company’s IT systems, regardless of its format, providing access where it’s needed most. By leveraging process integration enabled by the SOA implementation, the company hopes to gain a whole new level of efficiency and flexibility.



Stage: Adapt dynamically

IBM services:

- Global Business Services: Application services: Custom application development and systems integration: Enterprise architecture and technology
- Global Business Services: Application services: Custom application development and systems integration: Enterprise integration
- Global Technology Services: Middleware services: SOA integration services
- Global Technology Services: Integrated communications services: Mobility and wireless services



Satisfy new regulatory requirements and add new services

When your business or organization is faced with new regulatory compliance requirements, a flexible SOA infrastructure may help you quickly respond. As your competition is scrambling to modify legacy applications, you can focus your resources on delivering new services to further differentiate your business and attract a greater market share. Do you anticipate that compliance with new or changing regulations could endanger your market position?



Beating the competition

When a national group of cooperative banks offers its customers quick, high-volume transaction processing through online access with an SOA solution, it doesn't have to worry about complying with the Single Euro Payments Area (SEPA) initiative. The regulation aims to make cross-border payments more efficient by turning the fragmented national markets for euro payments into a single domestic one, but also dramatically increases competition between affected financial institutions. To compete effectively, banks must offer high value-add, differentiated services supported by a flexible infrastructure that can adapt to ongoing changes in the regulatory environment.

The bank's payment systems were in silos, mapped to the lines of business. In just six months with a proof-of-concept engagement, IBM helped implement an SOA environment to enable straight-through processing of SEPA and domestic incoming payments. IBM demonstrated to the bank's business users how the new SEPA payment orders can be processed by the bank's information system without any specific modification of back office operations. The new payments solution can rapidly process high volumes of transactions and provide an accurate view of payments at any given time to help track down potential errors. Thanks to its new payment solution, the bank can offer its customers personalized services and have the flexibility to adapt to unpredictable and evolving SEPA regulatory requirements.



Stage: Transform

IBM services:

- Global Technology Services: IT strategy and architecture services: SOA infrastructure consulting services
- Global Technology Services: Middleware Services: SOA integration services
- Global Technology Services: Middleware Services: Infrastructure optimization services

IBM industry solutions:

Financial Services: Banking: Payments

Summary

IBM's experience shows that organizations are realizing many benefits from their investment in an SOA infrastructure, including:

- Immediate and long-term cost savings
- Improved business productivity and customer satisfaction
- Capacity to support new and expanded services for increased revenue
- Flexibility to respond to new and changing business demands
- Improved access to information

Regardless of where your organization is along the SOA implementation continuum, our consultants and architects can help ease your implementation with a broad range of solutions, including:

- A health check of your current IT capabilities to enable SOA
- Strategy and planning to help you identify initiatives as part of a prioritized roadmap
- Definition of an SOA infrastructure architecture that supports your business requirements
- Design and implementation of an enterprise service bus (ESB) to help you decouple your Web services, applications and infrastructure
- Expansion of your current service management solutions to support your SOA implementation

For more information

For more information about SOA infrastructure services from IBM, part of our IT strategy and architecture services and middleware services portfolios, visit:

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¹ IBM SOA Infrastructure Adoption Study - August 2008, IBM Market Intelligence