

1. Service Oriented Architecture (SOA)

Companies of all sizes know that their IT systems are constantly under pressure to respond quickly to tactical change, while adopting new operating models for rapid strategic change. *Service-orientation* principles can offer companies mechanisms to effectively respond to fierce business demands, helping business and IT decisions to be better aligned. IT organizations that adopt service-orientation principles using Service Oriented Architectures (SOA) can reach the flexibility, reuse and adaptability that will make them better prepared to compete and win, while having the potential for lowering costs (from reuse), and increasing revenue (from adaptability and flexibility). Service Oriented Architectures (SOA) can help the business become more agile by aligning business needs with IT.

2. What is SOA?

SOA is an architectural approach that structures IT assets as a series of reusable services that perform business functions. These reusable services may reflect business tasks, like opening a check account, or verifying a credit card transaction, or processing a purchase order. By structuring applications in this manner, IT assets become more agile and organizations are better able to align their investments in dynamic business environments. Companies can snap together services as building blocks, creating new business processes. With SOA, companies can:

- Increase the flexibility of available software resources
- Promote loose coupling among software component
- Create composite applications
- Reuse of existing investments to create new value for use across the organization

SOA is becoming a standards-based approach to enterprise architecture, which uses IT systems to help:

- Enable business agility
- Promote innovation
- Optimize businesses
- Reuse core capabilities for the ability to create more business value

Follow this [link](#) for more on SOA information.

3. Why SOA?

- Software applications have grown in such a way that they can not be easily adapted to address existing and emerging constant business demands
- New business models driven by collaboration, partnerships, mergers and acquisitions, as well as

internal integration needs, force IT systems to work together

- Rip and replace the IT environment is not an option, as a good portion of the business logic and processing resources are already available – and these assets need to be reused
- Industry standards are stable and adopted across technology vendors

4. What SOA is NOT

- One isolated product – a *silver bullet*
- Only one software or hardware technology
- A panacea to solve IT issues

5. Recognizing a SOA project

Some keywords help identify the fit for service orientation: Business Process Management, multi-channel integration, improve customer service, automate processes across multiple companies and users, reuse business logic, expand businesses to partners, business integration, and application modernization. As SOA projects mature, they may share some of the following characteristics:

- Driven by business demands to make IT systems be more flexible – integrating people, processes and information
- Integrate applications across lines of businesses or domains of control
- Treat existing or new software assets as reusable *services*
- Foster the maximum possible reuse, including best practices creating consumable services
- Consider the cultural impacts related to reuse, collaboration and line of business buy-in
- Use Web services standards to clearly identify interfaces, communication and collaboration among services
- Use portal technologies to enable the assembly and orchestration of composite applications
- Recognize the impact of loosely coupled connections on computing and network resources
- Model the way business operates
- Include a service registry/repository
- Can manage business processes
- Exploit technology architectures to provide the foundational elements required to build robust SOA Ultimately – SOA projects can enable companies to compose business value from IT assets

6. Caution!

Some characteristics can impact results from SOA:

- Reuse without focus on creating *services*
- Impose rigid interaction between systems
- Define components but not necessarily *services*
- Mandate the use of specific products to be “SOA”
- Has little or no focus on extracting reusable best practices

7. When may a company be ready for SOA?

Companies face a variety of business issues – a subset of those is listed below. Follow the links to learn more about how SOA can help deliver real business results:

Business issues	SOA can help to
<ul style="list-style-type: none"> • Agents can't see policy coverage information remotely • Calls/faxes used to get information from other divisions • Clinical patient information stored on paper in clinic • Access to supplier design drawings is complex 	Integrate data to distribute to employees for improving access to information
<ul style="list-style-type: none"> • High cost of handling customer calls • Reconciliation of off-invoice deductions and rebates • Hours on hold to determine patient insurance eligibility • High turnover leads to excessive hiring and training costs 	Understand how business tasks interact for better managing administrative costs
<ul style="list-style-type: none"> • Decreasing customer loyalty due to incorrect invoices • Customers placed on hold to check order status • Inability to quickly update policy endorsements • Poor service levels 	Improve customer retention to deliver new products and services while reusing current IT investment
<ul style="list-style-type: none"> • Time wasted reconciling separate databases • Manual processes like handling trade allocations • Inability to detect quality flaws early in cycle • Percentage of scrap and rework too high 	Improve employee productivity with better business integration

More information at the [free SOA assessment](#) , the “[Five SOA projects that can pay for themselves in six months](#)” and [SOA case studies](#).

8. SOA – a technology perspective

SOA is both an evolution and a revolution: it unlocks the power in technology to build new, innovative business value while leveraging the experience and maturity of many technologies including:

- Web services
- transactional technologies
- information driven principles
- loose coupling
- components
- object-oriented design/development
- event delivery models
- EJB
- .NET

Many technologies can co-exist in a SOA project, connected through standards, well-defined interfaces and organizational commitments on “not reinventing the wheel” – but reuse services. None of these technologies themselves deliver SOA in isolation. Most of them collaborate in service component architectures.

9. A SOA checklist starter

Not everything in IT is SOA. The list below includes some of the elements that can be part of SOA projects but that alone would not deliver the full value of service orientation:

SOA	Not necessarily SOA
Uses portal technology to build composite applications	Generic usage of Portal to front end applications
Clearly defines interfaces between services – regardless of where services reside or how they are implemented	Isolated object-oriented code, components, portable Java code, pure use of standards with no definition of services, or no cooperation between services
Manages the relationship between the business logic components – ultimately managing the business <i>processes</i>	Management done at the infrastructure – network, computing resource levels, or even applications – without connection to the business
Focus on business driven development to create reusable assets	Services created “ad-hoc”, no upfront consideration is given to reuse
Provides information as a service	Data management features traditionally built on databases
Has a services registry/repository	Software components not available for wide reuse

10. Overcoming SOA objections

Consider how SOA can help environments where service orientation might not be immediately considered:

Before SOA	With SOA
Application systems are self-contained	Applications can be exposed and used by other internal parties
Business processes are mostly internal and tightly coupled	Business process can be reused across organizations – internal and external
Homogeneous IT environment	More choices for IT environment may lead to lower TCO
Required and desired real time performance	Appliances and optimized hardware can improve performance; technologies are advancing rapidly to meet real time constraints
No automation or integration of business processes and business interaction protocols	Processes formally specified can help companies to become more flexible in creating new business offerings
Peer relationship between IT and the business units are difficult to be forged	SOA is a team discussion which provides common ground for business and IT discussions

11. The bottom line on SOA ...

- SOA helps companies be more agile by enabling the alignment of business needs and IT capabilities
- Business drives requirements on IT; SOA allows the IT environment to effectively and efficiently respond to these requirements
- SOA is about helping companies apply reusability and flexibility that may turn into lower cost (of development, integration, maintenance) and can help companies to increase revenue
- SOA helps business obtain sustainable competitive advantage through technology
- Choose IBM for SOA for IBM’s understanding of service orientation and the industry

12. Some key definitions

Service – A repeatable business task represented by a software module deployed on network accessible platforms provided by the service provider. Its interface is described by a service description. It exists to be invoked by or to interact with a service requestor. It may also function as a requestor.

Service Orientation – An approach to integrate business tasks as loosely coupled, linked services

Service Oriented Architecture –An architectural approach that structures IT assets as a series of reusable services that perform business functions. By structuring applications in this manner, IT assets become more agile and organizations are better able to align their investments in dynamic business environments.

Composite application – A set of related and integrated services that support a business services built on an SOA

Component – A modular unit of functionality, accessed through one or more interfaces. A component may be composed of other components, but a component is not necessarily a service

Service Component Architecture (SCA) – A set of specifications which describe a model for building applications and systems using a Service-Oriented Architecture. SCA extends and complements prior approaches to implementing services, and SCA builds on open standards such as Web services.

Business Process Management (BPM) – A discipline that covers the full range of application-to-application, inter-application, workflow and person-to-person process management, including process design, automation, management, and continuous improvement.

Service Registry – A searchable registry of service descriptions where service providers may publish their service descriptions. Service requestors may find services and obtain binding information (in the service descriptions) for services during development for static binding or during execution for dynamic binding.

13. More Information

- **IBM SOA information:** www.ibm.com/soa
- **SOA and Web Services:** <http://www-306.ibm.com/software/solutions/webservices/>
- **WebSphere User Groups:** www.websphere.org
- **IBM SOA solutions:** <http://www-304.ibm.com/jct09002c/ivv/soa/index.html>
- **SOA and IBM business integration:** <http://www-306.ibm.com/software/info/openenvironment/soa/index.shtml>
- **SOA programming model:** <http://www-128.ibm.com/developerworks/webservices/library/ws-soa-progmodel/>
- **Service Component Architecture:** <http://www-128.ibm.com/developerworks/library/specification/ws-sca/>