Whitepaper

Service Oriented Architecture (SOA) The New Paradigm

Softweb Solutions
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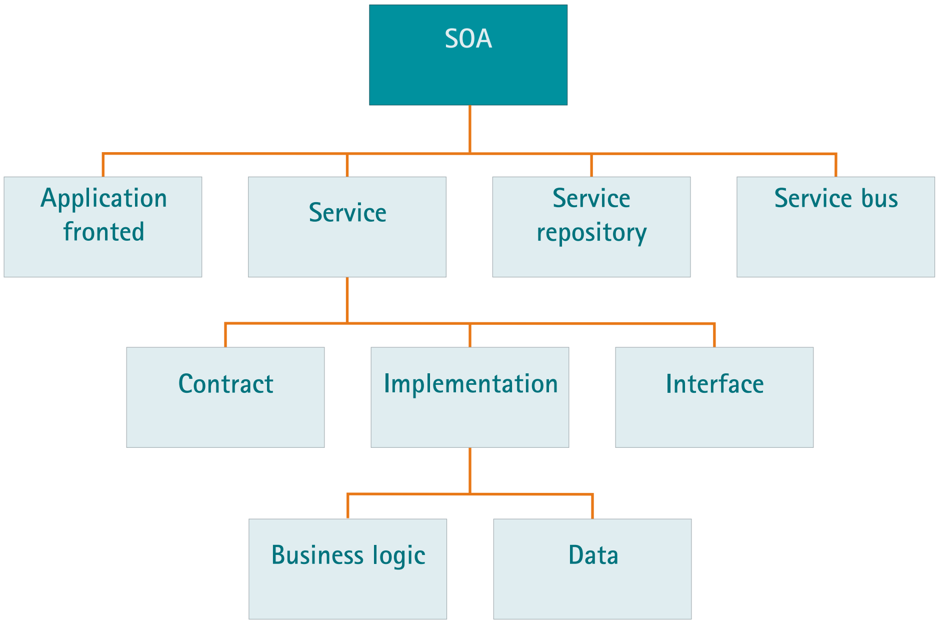
SOA Service Oriented Architecture The New Paradigm

SOA or Services-Oriented Architecture promises to deliver exceptional flexibility and cost savings to IT, by defining a methodology for the use and re-use of software components and business processes. SOA is focused on bridging the gap between business processes & IT through well defined, business-aligned services developed along established design principles, frameworks, patterns & methods.

However, SOA is still new, and organizations are still in the process of learning how to implement it so that it fulfils its potential for accomplishing desired business goals.



The new vision for the possibilities of application outsourcing is broader and more comprehensive.

SOA Defined:

SOA is a design for linking business and computational resources (principally organizations, applications and data) on demand to achieve the desired results for customers. OASIS (Organization for the Advancement of Structured Information Standards) defines SOA as:

"A paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains. It provides a uniform means to offer, discover, interact with and use capabilities to produce desired effects consistent with measurable preconditions and expectations".

Overall, SOA is an evolutionary concept, not some risky, new technology. SOA is simply a natural evolution of the way in which the enlightened have been delivering IT for many years. It is an architectural style whose goal is to achieve loose coupling amongst interacting software agents.

Why SOA?

Traditionally, IT works with business owners who are influenced by application vendors. This results in IT strategies that are application or integration-focused. This results in many "one-off" applications that may or may not be integrated into the existing architecture. Problems surface when mergers and acquisitions introduce new software platforms and methodology to an already fragmented architecture, but IT rarely has sufficient resources to complete business systems integration. As a result, IT often ends up deploying multiple systems that perform the same tasks within an enterprise or business unit.

Redundant infrastructure solutions as well as applications such as sales force automation (SFA), quoting, and order management compound the complexity and cost for IT. It becomes nearly impossible to modify this portfolio to reflect a change in a business process or accommodate an acquisition.

The main drivers for SOA adoption are that it links computational resources and promotes their reuse. Enterprise architects believe that

SOA can help businesses respond more quickly and cost-effectively to changing market conditions. This style of architecture promotes reuse at the macro(service) level rather than micro(objects) level. It can also simplify interconnection to - and usage of - existing IT assets.

In some respects, SOA can be considered an architectural evolution rather than a revolution and one that captures many of the best practices of previous software architectures. In communications systems, for example, there has been little development of solutions that use truly static bindings to talk to other equipment in the network. By formally embracing a SOA approach, such systems are better positioned to stress the importance of well-defined, highly inter-operable interfaces.

SOA promotes the goal of separating users (consumers) from the service implementations. Services can therefore be run on various distributed platforms and be accessed across networks. This can also maximize reuse of services.

The Approach:

Experienced SOA practitioners recommend the following approach for developing a roadmap to resolve the perceived conflict between the aims of the business and IT:

- Understand the business services: this is the critical first step towards successful adoption of SOA
- Develop an information strategy that identifies key performance metrics such as "reduce product defects by x percentage," or "respond to all mortgage requests within 24 hours"
- Develop an SOA blueprint that articulates the business benefits and includes business principles, reference architecture, roadmap, and governance and organization guidelines
- Identify "quick wins" to demonstrate that, with SOA, IT can improve on its current average of 15-18 months to deliver new capabilities.

Once these steps are taken, IT organizations need to identify the infrastructure services required to deliver business solutions. Designing and building infrastructure services to support coarse-grained, loosely coupled, and standards-based services enables IT to be transform itself, as the business requires. IT can then proactively or responsively deliver global solutions, with reduced application and infrastructure complexity, increased reuse of business services, and service orchestration capabilities.

SOA may be built on Web services standards (e.g., using SOAP) that have gained broad industry acceptance. These standards (also referred to as web service specifications) also provide greater interoperability and some protection from lock-in to proprietary vendor software. One can, however, implement SOA using any service-based technology, such as Jini.

Service-oriented architecture is often defined as services exposed using the Web Services Protocol Stack. The base level of web services standards relevant to SOA includes the following:

- XML - a markup language for describing data in message payloads in a document format
- HTTP (or HTTPS) - request/response protocol between clients and servers used to transfer or convey information
- SOAP - a protocol for exchanging XML-based messages over a computer network, normally using HTTP
- XACML - a markup language for expressing access control rules and policies.
- Web Services Description Language (WSDL) - XML-based service description that describes the public interface, protocol bindings and message formats required to interact with a web service
- Universal Description, Discovery, and Integration (UDDI) - An XML-based registry to publish service descriptions (WSDL) and allow their discovery.

SOA Principles:

The following guiding principles define the ground rules for development, maintenance, and usage of the SOA

- Reuse, granularity, modularity, composability, componentization, and interoperability
- Compliance to standards (both common and industry-specific)
- Services identification and categorization, provisioning and delivery, and monitoring and tracking

The following specific architectural principles for design and service definition focus on specific themes that influence the intrinsic behavior of a system and the style of its design:

- Service Encapsulation
- Service loose coupling - Services maintain a relationship that minimizes dependencies and only requires that they maintain an awareness of each other
- Service contract - Services adhere to a communications agreement, as defined collectively by one or more service description documents
- Service abstraction - Beyond what is described in the service contract, services hide logic from the outside world

- Service reusability - Logic is divided into services with the intention of promoting reuse

- Service composability - Collections of services can be coordinated and assembled to form composite services

- Service autonomy - Services have control over the logic they encapsulate

- Service optimization - All else equal, high-quality services are generally considered preferable to low-quality ones

- Service discoverability - Services are designed to be outwardly descriptive so that they can be found and assessed via available discovery mechanisms

SOA Advantages:

By adopting an SOA approach, companies can:

- Streamline Mergers & Acquisitions

- Enhance visibility & control of their business operations

- Reduce IT costs

Industries that are using & benefiting from SOA are the ones that are heavily dependent on IT to update their core business processes & refine their business models. These include:

- Internet firms such as eTrade, eBay, Amazon, Google, Yahoo etc.

- Financial services, telecommunications, transportation, media and other industries are finding that their business strategies are increasingly dependent on leveraging technological advances.

- Banks

Conclusion:

A Services-Oriented Architecture (SOA) delivers the data needed for business process activities as an integrated service. Users no longer have to log into multiple systems, search for relevant data, and integrate the results manually. The information appears as a single application, delivered on a single screen, all with a single login. As complexity grows, researchers find more innovative ways to answer the call. SOA, in combination with web services, is the latest answer. Application integration is one of the major issues companies face today; SOA can solve that. System availability, reliability, and scalability continue to bite companies today; SOA addresses these issues. Given today's requirements, SOA is the best scalable solution for application architecture.

Softweb SOA Solutions:

Softweb Solutions is a Chicago based software development services firm that helps customers harness the latest advances in IT & use them innovatively to remain at the forefront of their industries.

Softweb Solutions leverages software technology with a methodology to help organizations deal with the challenges of identifying, creating and reusing enterprise services that help organizations realize the benefits of SOA. Our drive to help clients unleash the power of service-oriented architecture (SOA) to achieve high performance is greatly strengthened by alliances with market-leading and emerging vendors in this field.

Softweb Solutions will work with your team to finalize your business requirements, understand your integration needs, architect a solution and implement the solution. We also offer support and maintenance for the solution.

Softweb Advantages:

- Unmatched experience in Business Process Outsourcing Services

- ISO 9001:2000 Certified

- Results-Driven Infrastructure, 100% customer satisfaction

- Onshore and Offshore Presence, Cost Optimization

- Technical excellence

- 6+ years of experience 300+ successful projects completed

- 24x7 Development Cycle

- 50+ Certified & Qualified Professionals

- XP Development Methodology

- World Class Technology Infrastructure

About Softweb Solutions

Softweb Solutions is a Chicago, Illinois based leading IT service provider of high-end software outsourcing development services for SMEs, specializing in custom application development, website development, system integration and software testing and quality assurance, with industry-specific software expertise in Technology, Financial, Healthcare media sectors.

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