



# Successful Integration with Service-Oriented Architecture (SOA)

## Reader ROI

- A phased approach to SOA adoption promises the greatest success to organizations seeking greater efficiency and agility.
- An agile SOA infrastructure includes an Enterprise Service Bus, Services Registry, and a secure communication framework that permits clients to invoke application services.
- BPM, Rules Engine and Policy Manager may be used in addition to the SOA infrastructure to build advanced services.

## Overview

Enterprise architects in IT organizations have long understood that integrating stand-alone, packaged applications (COTS) improves operational efficiency and business agility. A decade ago, organizations began the integration process by using message-oriented middleware (MOM) technology to enable the flow of data across multiple COTS packages. More recently, service-oriented architecture (SOA) has gained prominence as the technology of choice for interconnecting applications.

SOA provides a method of unlocking the functionality within an application and making it available more broadly through well-defined, industry-standard interfaces. This method promises a number of benefits to the organization:

- By making application services accessible to more users, SOA increases application use and, therefore, ROI.
- Because it enables IT to reassemble services more rapidly than it can customize traditional applications, SOA improves ability to respond to changing business conditions.
- SOA allows business processes to be externalized from COTS and managed across multiple applications.
- Because open interface standards minimize tight coupling between applications, changes to one application do not waterfall through all others.

## Adopting SOA

With Web Services standards, SOAP, and XML having paved the way, SOA has been gaining credence as an approach which adds business value. Many organizations have begun SOA adoption with point-to-point integration. Moving forward to gain greater business value requires a three-phased approach.

### Phase 1: Enabling service interface definition, publication, and invocation

The first step in migrating to SOA is to put in place a basic Web Services infrastructure that allows client applications to invoke services from service providing applications.

Building a wrapper around the application enables the service-providing application to connect to the infrastructure. The wrapper implements the communication protocol and makes the service-providing application accessible to the client. The communications protocol is not limited to SOAP over HTTP as is often thought. It may be message-oriented middleware such as JMS, MQ, or RMI over IIOP.

Once the service is defined (using in an industry-standard definition language such as WS) and entered into a registry, clients can invoke available services.

Phase 1 gets the Web Services off the ground with point-to-point communications, but does not include support for point-to-multipoint communications (e.g., asynchronous request/response, publish-subscribe, multicast and broadcast). Also, phase 1 does not provide facilities for semantic bridging of incoming service requests and support for quality of service (QoS).

## Phase 2: Enhanced integration services

Phase 2 introduces the enterprise services bus (ESB) to address these limitations. An ESB provides rich support for inter-application communication and more. The ESB supports:

- publish-subscribe communication
- security (including client authentication and detection of loss of data integrity)
- data transformation and mapping capability
- business process management
- service versioning
- failover management
- load balancing

One of the biggest benefits of using the ESB is that its extensible, pluggable architecture allows modifications to existing services in order to respond to frequent changes to business requirements, introduction of new services, and new service providers.

The ESB provides a rich and robust structure that allows integration of a large number of client applications and server applications, thus integrating multiple domains within an enterprise.

## Phase 3: Enabling composite applications and external partner integration

The thrust of phase 3 is using business process management to create composite applications which invoke services from underlying service-providing applications. Additionally, phase 3 allows external partners to access the services through industry-standard data exchange protocols (i.e., RosettaNet, ebXML, etc.). Support for policy management and a rules engine may be added. Thus, phase 3 extends the foundation established in phase 2 to create a more far-reaching SOA infrastructure. Figure 1 shows the overall architectural blueprint for phase 3.

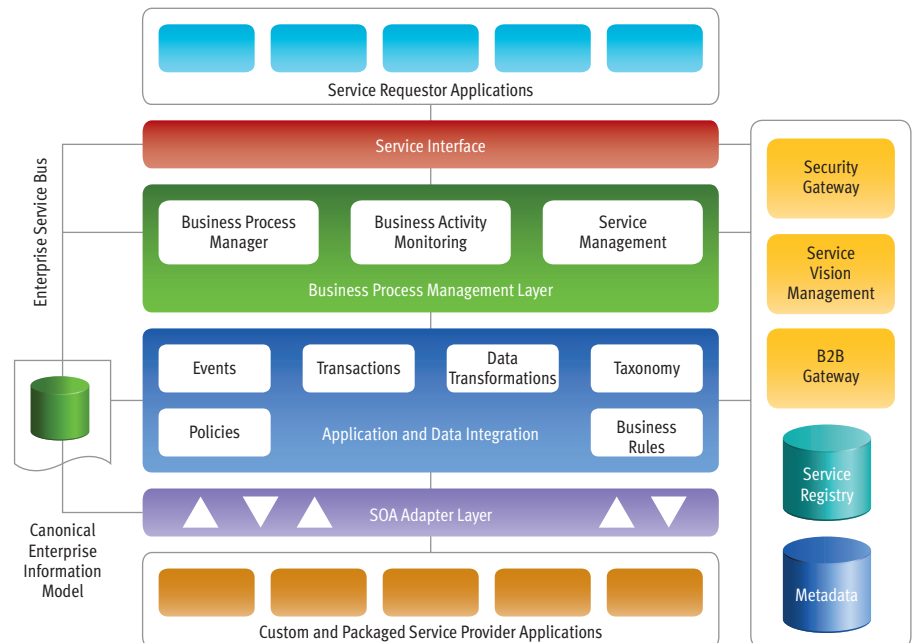


Figure 1. SOA Blueprint

## Summary

A gradual, phase-by-phase adoption of SOA beginning with the basic service infrastructure, enhancing that infrastructure by introducing the ESB, and, finally, opening the architecture to external partners is the recommended approach.

SOA will deliver the greatest business value to those organizations which are undergoing transformation. The alignment of business process, application functionality, and data flow built on SOA can deliver the enhanced efficiency and business agility which organizations need.



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