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# Planning and Implementing SOA

Ensuring the Successful Deployment of  
a Services-based Approach

**December 2006**

# SECTION 11: Glossary

**ActiveX**

Microsoft's suite of object-oriented programming tools and technologies.

**Adapter**

Integration software that is used to connect an application to an integration server.

**Application Programming Interface (API)**

The prescribed method by which an application program can make requests to an O/S or to another program.

**Application Server**

Layer of software that provides a scalable link between Web applications and back-end applications, and typically offers features such as security, clustering and failover, and load balancing.

**BizTalk**

The .NET technology that provides orchestration between business processes, especially legacy business processes.

**Business Activity Monitoring (BAM)**

A process that identifies the ways in which the provision of instant access to disparate data sources and applications within an organisation can optimise the speed and efficiency with which business decisions are made.

**Business Process Execution Language for Web Services (BPEL4WS)**

A specification for a programming language that enables the completion of a task to be achieved using a combination of Web services, which may have been provided by multiple companies. BPEL4WS was written by developers from BEA Systems, IBM, and Microsoft. It combines, and replaces, IBM's Web Services Flow Language (WSFL) and Microsoft's XLANG, and is also commonly referred to in the industry as BPEL, or BPEL4WS.

**Business Process Integration (BPI)**

The sharing of business information amongst disparate business systems, to enable companies to streamline their activities, reduce operational costs, and improve responsiveness to customer demands.

**Business Process Management (BPM)**

The discovery and fragmentation of business processes that can be placed within a framework to create extensibility of the initial process and process activities.

**Business Process Management Initiative (BPMI)**

An industry consortium that aims to standardise the management of business processes that span multiple applications, departments, and partnerships, both behind the firewall and over the Internet. Members include BEA Systems, Fujitsu, IBM, and Sun Microsystems.

**Business Process Re-engineering (BPR)**

The strategic analysis of business processes and the planning and implementation of improved business processes.

**Common Gateway Interface (CGI)**

A standard way for a Web server to pass a Web user's request to an application program.

**Component Object Model (COM)**

Microsoft's software architecture for assembling applications from binary software components. It provides the underlying foundation for higher-level services.

**COM+**

An extension to COM that adds a new set of system services for components during runtime. It can be seen as Microsoft's answer to EJBs.

**Common Object Request Broker Architecture (CORBA)**

A specification and architecture for creating, deploying, and managing distributed objects. Communication across different objects in a distributed network is carried out through an interface broker.

## **Corporate Portal**

An internal Web site (Intranet) that provides proprietary, enterprise-wide information to company employees, as well as access to selected public Web sites and vertical market Web sites (suppliers, vendors, etc.). It includes a search engine for internal documents as well as the ability to customise the portal page for different user groups and individuals.

## **Customer Information Control System (CICS)**

An IBM mainframe transactional processing monitor technology.

## **Customer Relationship Management (CRM)**

An information-industry term for the methodologies, software, and (usually) Internet capabilities that help an organisation manage customer relationships in an organised manner.

## **Distributed Component Object Model (DCOM)**

Microsoft's set of program interfaces that give interoperability between client and server objects. It is conceptually equivalent to CORBA.

## **Document Type Definition (DTD)**

A type of file associated with SGML and XML documents that defines how the tags should be interpreted by the application presenting the document.

## **Dynamic HTML (DHTML)**

A term for the combination of new HTML tags and options that enable more interactive Web content.

## **electronic business XML (ebXML)**

Specifications that are intended to utilise XML as a means of securing data interchange between businesses. It is this utilisation, rather than XML itself, which would replace EDI.

## **Electronic Data Interchange (EDI)**

A standard format for exchanging business data. Two main standards currently exist (ANSI X12 and EDIFACT) and these standards are gradually being merged.

## **Enterprise Application Integration (EAI)**

A software framework that enables links between applications on an organisation-wide scale. Provides different types of interfaces, such as data integration, application integration, and process integration, to cope with the requirements of different software packages.

## **Enterprise Information Portal (EIP)**

A concept for a Web-based application that serves as a single gateway to an organisation's information and knowledge base for employees and possibly for customers, business partners, and the general public as well.

## **Enterprise Information System (EIS)**

Any information system used within an enterprise.

## **Enterprise JavaBean (EJB)**

A component architecture for developing and deploying distributed business applications. EJBs offer the advantage of being able to control change at the server, rather than having to update each individual computer with a client whenever a new program component is changed or added. They have the additional advantage of being reusable in multiple applications. To deploy an EJB component it must be part of a specific application, known as a container.

## **Enterprise Resource Planning (ERP)**

A suite of software that aims to support all the core functions of an organisation, including areas such as: inventory control, accounting, production, logistics, and human resources, in an integrated whole, providing a tied-together enterprise.

## **Enterprise Service Bus (ESB)**

A messaging structure that is an extension of the bus model. ESB undertakes content-based routing and transformations as part of a set of functionality previously undertaken by other elements in the technical infrastructure. There is an ongoing discussion as to whether an ESB is a product or a conceptual architectural element.

**Extranet**

A private network that uses the Internet protocol and the public telecommunication system to securely share part of a business' information or operations with suppliers, vendors, partners, customers, or other businesses.

**File Transfer Protocol (FTP)**

An Internet standard for the transmission of files.

**Granularity**

An expression of complexity of a process or service. Codified in two terms: 'fine-grained' and 'coarse-grained'. The former would be used to represent, for example, a single call or action, whilst the latter would be used to represent a higher-level process such as the issuing of a purchase order. The term has no concept of division between the two uses, and is context sensitive.

**HTTP over SSL (HTTPS)**

A Web protocol developed by Netscape, and implemented in its browser. It is, in effect, Netscape's implementation of SSL as a sub-layer under HTTP. It should not be confused with S-HTTP.

**HyperText Markup Language (HTML)**

A markup language designed to display material in a browser. As with XML, it consists of a series of tags, but unlike XML it contains information about the way in which text is displayed and does not describe the data.

**HyperText Transfer Protocol (HTTP)**

The foundation of the Internet, it defines the format and transmission of messages and the actions to be taken by browsers and servers.

**Interface Definition Language (IDL)**

Describes function interfaces for RPCs in order that a compiler can generate proxy and stub code.

**Internet Inter-ORB Protocol (IIOP)**

A protocol to implement CORBA solutions over the Internet. It extends HTTP by allowing the transmission of complex objects.

**Internet Protocol (IP)**

Most commonly seen with TCP as TCP/IP. IP specifies packet format and addressing schema.

**Intranet**

A private network that is contained within an organisation and can consist of many inter-linked local area networks, and also uses leased lines in the wide area network.

**Java 2 Enterprise Edition (J2EE)**

Defines the standard for developing multi-tier applications using Java. J2EE simplifies enterprise applications by basing them on standardised, modular components; by providing a complete set of services to those components; and by handling many details of application behaviour automatically without the need for complex programming.

**Java Authentication and Authorisation Service (JAAS)**

An integral part of J2SDK 1.4, JAAS is a J2EE API for managing security, enabling services to authenticate and enforce access controls upon users.

**Java Applet – or Applet**

A small program that can be sent in conjunction with a Web page, and can perform limited functionality tasks on the client device using client resource.

**JavaBean**

An object-oriented programming interface from Sun Microsystems that provides the functionality to create reusable applications.

**Java Connector Architecture (JCA)**

A specification for building Web-based applications on the J2EE platform.

**Java DataBase Connectivity (JDBC)**

A Java API allowing Java programs to execute SQL statements, giving connectivity to multiple RDBMSs.

## **Java Messaging Service (JMS)**

An API enabling the creation of message-based applications that communicate both with each other within an application server and with external applications on other servers.

## **Java Naming and Directory Interface (JNDI)**

The J2EE API for naming and locating specific instances and business information assets, enabling seamless connectivity to heterogeneous enterprise naming and directory services.

## **Java Servlet – or Servlet**

A small program that runs server-side but is not implemented with CGI. The advantage over the CGI implementation is that user requests are invoked as threads in a single daemon process rather than invoking a program process for each request.

## **Lightweight Directory Access Protocol (LDAP)**

A software protocol for enabling anyone to locate organisations, individuals, and other resources such as files and devices in a network, whether on the Internet or on a corporate Intranet.

## **Message Broker**

A key component of EAI that directs the flow of data between applications whilst also providing services such as data transformation and message routing.

## **Message Oriented Middleware (MOM)**

Messaging middleware describing how requests are handled, typically through Publish/Subscribe or Queue.

## **Message Queuing**

An asynchronous form of communication between applications, whereby messages are delivered in batches.

## **Message Routing**

An integration process that entails messages being routed to particular applications according to defined business rules.

## **Metadata**

Data that describes or defines another piece or related pieces of data.

## **Middleware**

A general term for any program that serves to 'glue together' or mediate between two separate and usually already existing programs. A common application of middleware is to provide programs written for access to a particular database with the ability to access other databases.

## **Multipurpose Internet Mail Extensions (MIME)**

A specification for formatting non-ASCII characters for transmission over the Internet.

## **.NET**

Microsoft's Web services initiative that includes development tools, a runtime platform, and Web-based services such as authentication, personalisation, and security.

## **Object Management Group (OMG)**

An early industry consortium that defined the original CORBA specifications.

## **Object Request Broker (ORB)**

The program that acts as the broker between a request for a service to a component, ensuring that the request is satisfied.

## **On-Line Analytical Processing (OLAP)**

Computer processing that allows users to easily and selectively extract and view data from different points-of-view.

## **On-Line Transaction Processing (OLTP)**

A class of program that facilitates and manages transaction-oriented applications.

## **Open DataBase Connectivity (ODBC)**

An open API for accessing SQL-enabled databases, and executing SQL statements.

## **Passport**

Microsoft's authentication technology for single sign-on, giving access to all Passport-participating sites.

**Peer-to-Peer (P2P)**

A type of transient Internet network that allows a group of computer users with the same networking program to connect with each other, and directly access files from one another's hard drives.

**Personal Digital Assistant (PDA)**

A term for any small, mobile, hand-held device that provides computing, and information storage and retrieval capabilities for personal or business use. Often used for keeping schedules, calendars, and address book information easily available.

**Personalisation**

The concept and techniques of delivering Web-based content that is tailored to an individual user's needs or preferences.

**Portal**

A Web 'supersite' that provides a variety of services, including Web searching, news, white and yellow page directories, free e-mail, discussion groups, on-line shopping, and links to other sites. Web portals are the Web equivalent of the original on-line services, such as CompuServe and AOL. Although the term was initially used to refer to general-purpose sites, it is increasingly being used to refer to vertical-market sites that offer the same services, but only to a particular industry such as banking, insurance, or computing.

**Public Key Infrastructure (PKI)**

The use of a public and private cryptographic key pair allows secure trading to be carried out over public networks with the use of a trusted authority.

**Portlets**

Software components that deliver specific information into the portal environment.

**Relational DataBase Management System (RDBMS)**

The accepted way of storing and managing data by use of related tables.

**Remote Method Invocation (RMI)**

Java protocols that allow Java programs to communicate in a distributed environment.

**Remote Procedure Call (RPC)**

A protocol that allows a program to execute another program in a distributed environment. Classed as an early form of middleware.

**Repository**

In XML terms, a repository is a central location where schemas and vocabularies can be stored. The repository may be public, to allow any party to reference the information, or it may be private and restricted to a defined trading community.

**Secure HTTP (S-HTTP)**

An extension to HTTP that allows the secure exchange of files on the Web. S-HTTP is an alternative to SSL and is used when the user has to be authenticated. It should not be confused with HTTPS.

**Secure Sockets Layer (SSL)**

A common protocol for managing the security of a message over the Internet.

**Security Assertion Markup Language (SAML)**

An XML-based security standard that provides support for the exchange of user authentication information and the use of single sign-on capabilities.

**Service Oriented Architecture (SOA)**

An architectural concept that places process components delivered as consumable services at its heart.

**Simple Mail Transport Protocol (SMTP)**

A TCP/IP protocol used in sending and receiving e-mail. Most commonly, SMTP is used for sending, and either POP3 or IMAP is used for receiving.

**Simple Object Access Protocol (SOAP)**

A lightweight XML-based protocol consisting of three parts: an envelope that contains a message and how it should be processed, rules for expressing instances of application-defined data types, and a convention for representing RPCs and responses.

**Standard Generalized Markup Language (SGML)**

A standard for specifying a document markup language or tag set. Both HTML and XML are examples of SGML-based languages.

**Straight Through Processing (STP)**

Enables transactions to travel directly across multiple IT systems and be successfully completed without manual intervention.

**Transaction Processing Monitor (TPM)**

A program that monitors a transaction as it passes from one application to another in a process, and ensures that it finishes completely. If an error occurs, appropriate action to undo the transaction may be taken.

**Transmission and Control Protocol (TCP)**

Most commonly seen with IP as TCP/IP, TCP guarantees sequential delivery of packets between two hosts.

**Universal Discovery, Description, and Integration (UDDI)**

A platform-agnostic initiative for describing and discovering the availability of Web services, along with details on how connections can be made.

**Web Interface Definition Language (WIDL)**

A meta-language implementing a service-based architecture over the document-based resource of the Web.

**Web Service**

A broad definition that considers the delivery of application functionality over the Internet, without regard to platform or O/S specifics.

**Web Service Choreography Interface (WSCI)**

Builds upon the WSDL, providing a picture of the types of messages, their sequence, and additional attributes that need to be determined to enable applications to successfully interact. WSCI is concerned solely with the observable behaviour of a Web service, as opposed to the process by which it was created. It helps to track the sequence of messages, logical dependencies, and exception handling, which occur when applications are made up of multiple Web services from potentially different sources.

**Web Services Description Language (WSDL)**

An XML format for describing network services as a set of endpoints or ports operating on messages containing either document-oriented or procedure-oriented information.

**Web Services Flow Language (WSFL)**

IBM's proposal for the implementation of an overlying layer of the Web services stack that will bring workflow and BPM to a service-based delivery model.

**Web Services Interoperability Organisation (WSI)**

An organisation set up to promote and support Web services implementation and interoperability. At the time of writing, it included IBM, Microsoft, BEA Systems, Hewlett-Packard, Intel, and SAP, among others.

**Web Service User Interface (WSUI)**

An initiative for a proposed standard that would allow SOAP-RPC, XML, or SOAP WSDL interfaces to be described as complex, multi-page, end-user applications that can be embedded in Web sites.

**Wireless Application Protocol (WAP)**

A specification for a set of communication protocols to standardise the way that wireless devices, such as cellular telephones and radio transceivers, can be used for Internet access, including e-mail and the World Wide Web.

**Wireless Markup Language (WML)**

A language that allows the text portions of Web pages to be presented on cellular telephones and PDAs via wireless access.

**World Wide Web Consortium (W3C)**

An industry consortium which seeks to promote standards for the evolution of the Web, and interoperability between WWW products by producing specifications and reference software. Although industry members fund the W3C, it is vendor-neutral, and its products are freely available to all.

**XLANG**

Microsoft's proposed notation for the specification of message-exchange behaviour for the automation of processes.

**eXtensible Markup Language (XML)**

Markup language, derived from SGML, defined by the W3C as a Recommendation in 1998. Used as a metalanguage to describe data, it is now finding widespread application in areas such as application integration, content management, electronic data interchange, and wireless communications. XML is 'extensible' because, unlike HTML, the markup symbols are unlimited and self-defining. Using an XSL Stylesheet, XML can be transformed for display as HTML on a Web page, or to alternative formats for display on other types of client device.

**eXtensible Stylesheet Language (XSL)**

A language used for creating a stylesheet that describes how data sent using XML is presented to the recipient.

**eXtensible Stylesheet Language Transformation (XSLT)**

A template that describes how one XML document should be transformed into another XML document (usually with a different vocabulary). Used as a data transformation technique when transferring data between different applications.

**xSP**

A generic term for any kind of service provider on the Internet. The two main kinds of service provider are the Internet Service Provider (ISP), which provides users with connection to the Internet and sometimes offers hosting and other services, and the Application Service Provider (ASP), which provides remote access to one or more computer applications.

## This Report reveals:

- The essential considerations when planning and implementing SOA.
- How to use SOA to transform the way the organisation operates.
- The pitfalls to avoid when deploying SOA.
- Why becoming a process-centric enterprise complements SOA.
- How to separate the hype from the reality of SOA.
- A roadmap for the deployment of SOA.
- The importance of taking into account the impact of SOA on the wider IT environment.
- The challenges of developing data architecture to support SOA.
- How early adopters are gaining advantage from SOA.

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Analysis without compromise

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