

E-Business Technologies

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Internet technologies have revolutionized the business world by creating a global online marketplace. Appropriate understanding for the technologies and the impact of different design choices of technologies (including the Internet and open systems) dramatically affects both functional and non-functional aspects of the e-business solution.

Introduction

In a few short years, e-business has gone from a simple concept to an undeniable reality, and for good reason. It works for everyone: consumers, businesses, and governments.

The e-business technologies are based on all the technologies existed on e-commerce, extranets, virtual organizations, publishing.



Figure 1. e-Business support

Technology options

The next model maximizes the use of open standards and protocols versus proprietary technologies.

The most important technologies used in e-business and implemented by IBM Software Strategy for e-business are: Java, Extensible Markup Language (XML), Java 2 Platform, Enterprise Edition (J2EE), Presentation layer, Web application server, Integration server, Protocols, Objects, Struts, Eclipse, MVC patterns, Common Object Request Broker Architecture (CORBA), Transactions.

Many of these technology choices continue to evolve and expand as the open standards specification evolves to include a broader view of the enterprise architecture. Next figure demonstrates some of the common e-business technologies. Some technologies, such as Java and XML, can apply to more than one layer.

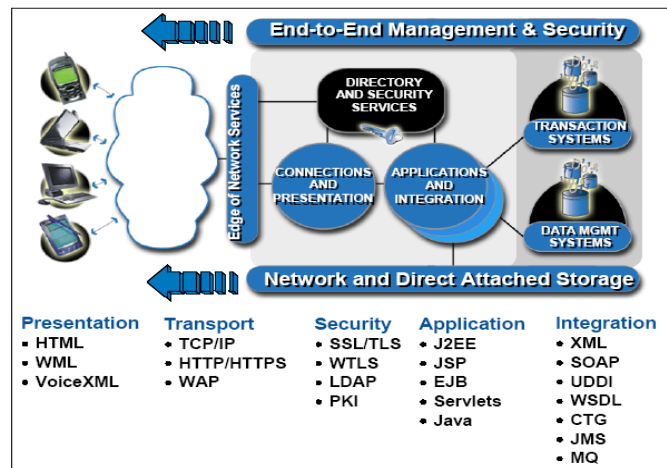


Figure 2. IBM e-business: Technology, Solution, and Design Overview

Trends in e-business technologies

As e-business continues to develop, various technologies associated with computing underlie its evolution. Currently, the Java™ programming language and platform, the Extensible Markup Language, and trans-coding are emerging as major technologies for performing e-business functions.

There are four major trends that will come along for the emerging e-business technologies of the Java programming language, Extensible Markup Language (XML), and trans-coding:

- Continued integration of Java and XML into robust middleware (such as the IBM WebSphere software platform)
- Continued and accelerated standardization of Java and XML technologies for infrastructure and industries
- Use of trans-coding and XML technologies to support a much wider range of clients of every description, both synchronous and asynchronous
- The move from tightly coupled applications to loosely coupled Web services

Two developments have taken us a giant step closer to the world of Web services:

- In September 2000, IBM, Microsoft, Sun Microsystems, Ariba, and 32 other companies announced the Universal Description, Discovery, and Integration (**UDDI**) initiative. UDDI defines a set of specifications enabling Web services and includes shared operation of a globally distributed set of synchronized UDDI registries for such services. (<http://www.uddi.org>)
- Also in September, IBM and Microsoft announced the Web Services Description Language (**WSDL**), a jointly developed specification that offers a common way to describe the capabilities of Web services.

By lowering barriers to entry, Web services technologies such as UDDI and WSDL will enable Net Generation companies to quickly get to market with their offerings and generate sustainable profits and consistent growth. IBM offers a Web Services Toolkit that works with UDDI and WSDL and includes tools to create and publish Web services, as well as a copy of the WSDL specification. (<http://www.alphaworks.ibm.com/tech/webse rvicestoolkit>).

Many companies are working together to make the Web services vision happens, and IBM is proud to be a leader in this effort.

Next SOA

The new version of SOA (Service Oriented Architecture) is OSOA, which means the Open SOA.

- **OASIS** (Organization for the Advancement of Structured Information Standards) is a not-for-profit, international consortium that drives the development, convergence, and adoption of e-business standards. The consortium produces more Web services standards than any other organization along with standards for security, e-business, and standardization efforts in the public sector and for application-specific markets. Founded in 1993, OASIS has more than 5,000 participants representing over 600 organizations and individual members in 100 countries. (www.oasis-open.org)

- **Open SOA** - represents an informal group of industry leaders that share a common interest: defining a language-neutral programming model that meets the needs of enterprise developers who are developing software that exploits Service Oriented Architecture characteristics and benefits (www.osoa.org)

- **SCA** (Service Component Architecture)- is a model that aims to encompass a wide range of technologies for service components and for the access methods, which are used to connect them. For components, this includes not only different programming languages, but also frameworks and environments commonly used with those languages. For access methods, SCA compositions allow for the use of various communication and service access technologies that are in common use, including, for example, Web services, Messaging systems, and Remote Procedure Call (RPC).

- **SDO** (Service Data Objects) - provides a set of capabilities for handling business data in a form that is independent of the source or the target of the data. Handling data is key to any business application, but in solutions using SOA, data may have a range of underlying formats. There is data held in relational databases (RDB), and there is data in XML format transmitted via Web services, for example. SDO also aims to support a wide range of different programming languages, so that services may be written in any language and yet still be able to benefit from the capabilities of SDO.

Since November 2005, 18 companies have joined the effort to work on new industry specifications aimed at simplifying SOA application development. Partner companies include BEA Systems, Cape Clear, IBM Corporation, Interface21, IONA, Oracle, Princeton Technologies, Progress Software, Red Hat, Rogue Wave Software, SAP AG, Siemens AG, Software AG, Sun Microsystems, Sybase, TIBCO Software, and Xcalia. Together, these companies have achieved significant progress around SCA and SDO specifications.

On March 21, 2007 are finished the specifi-

cations. They announced the creation of industry standards around service oriented architectures (SOA), that key Service Component Architecture (SCA) and Service Data Objects (SDO) specifications have completed incubation and will be formally submitted to OASIS for advancement through its open standards process.

The SCA and SDO specifications can help organizations to more easily create new and transform existing IT assets, enabling reusable services that may be rapidly assembled to meet changing business requirements. These specifications greatly reduce complexity associated with developing applications by providing a way to unify services regardless of programming language and deployment platform. Both are technologies designed to simplify the representation of business logic and business data. Early customers are already implementing and gaining value.

Conclusion

The primary values of e-business, such as cost savings, revenue growth, and customer satisfaction, are proving to be only the tip of the iceberg. Having realized the benefit of Web-enabling individual business processes, many companies now seek further return on investment (ROI) by integrating new and existing e-business applications and technologies. The key to their success is to find a way to give customers what they want without the expense of traditional business operations.

The direction toward Web services will particularly help “Net Generation” companies—

companies that are born on the Web—to become successful by allowing their services to be easily discovered worldwide and easily integrated with other services ranging in scale from other Net Generation services to enterprise-scale services.

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