Chapter 8.11
Web Services and B2B Collaboration

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INTRODUCTION

Web service technology is moving into the mainstream. HTTP-based integration is proving more useful than prior approaches for integrating heterogeneous and distributed systems. Web service architectures are quickly advancing beyond and becoming more complex than their initial XML (extensible markup language)/SOAP (simple object access protocol)/UDDI (universal description, discovery, and integration) architectures. With added specifications, Web services are creating a service-oriented computing paradigm with their attendant terms and concepts, such as Web service networks, Web service management platforms, and service-oriented architectures (SOA), among others. Aided by Web services, business-to-business (B2B) integration topologies are growing in diversity to support various options for B2B collaboration. Web services are now the primary technical direction enabling this diversification of B2B collaborations (e-collabora-

tion) among value chain partners and customers. They form the foundation for the development of a new generation of B2B applications and the architecture for integrating enterprise applications (Kreger, 2003). Web services promise to increase these partnering companies' flexibility, agility, competitiveness, as well as opportunities to reduce development cost and time.

BACKGROUND

B2B Collaboration

The Internet has reshaped industry value chains and redefined e-business as collaborative commerce. In this environment, companies collaborate with suppliers, distributors, service providers, and customers to produce value for customers. Such collaboration turns participating companies into virtual enterprises that emphasize rapid exchange of information among participating companies

and inter-organizational systems to facilitate communication, coordination, and collaboration. A new IT-enabled intermediation and an integrated virtual value chain are emerging. The Internet facilitates supply chain integration through greater coordination and collaboration among all members of a company's supply chain (Lee & Whang, 2001). Such integration emphasizes information sharing, transparency, data integrity, and flexibility. Its benefits are clear: cost and time reduction, real-time communication, lead-time reduction, and improved collaborative planning and forecasting.

Web Services Growth

Businesses have indicated strong interests in deploying Web services in the near future. A recent Yankee Group survey of 437 companies reports that 48% of respondents have already deployed Web services and another 39% expect to deploy the technology within a year (Scurmacz, 2004). The top reasons for early adoption include: (1) the ability for an enterprise to enhance its capability to collaborate with external partners (77%); (2) the ability to reduce complexity in distributed applications (66%); (3) the ability to drive increased revenue in the next two years (66%); and (4) the ability to lower development costs (58%).

In a February 2002 Gartner survey, 27% of the IT respondents indicated that they would be using Web services in a systems integration project within 12 months. By February 2003, that number had risen to 42% (Cantera, 2003). The technology research firm, IDC, predicts that Web services will spur software, hardware, and service sales of $21 billion in the U.S. by 2007 (Muse, 2003).

WEB SERVICES TODAY

B2B e-commerce is entering a phase of technological maturity in which major open standards are adopted to enable inter-firm integration and collaboration. Web services are a significant enabler of this move toward inter-firm cooperation by promoting technology trust between enterprises through their deployment and use. The role of Web services in B2B e-commerce builds technology trust and indirectly influences performance outcomes.

Types of B2B Collaborations

Companies have various options in pursuing B2B collaborations (Ranganathan, 2003). Web service technology can be implemented to support these

Table 1. Web services for B2B collaboration: Options, requirements, and value propositions

Collaboration Options	Requirements	Values of Web Services
Buyer-based, one-to-many private exchange	Forge a strong collaboration with supply chain partners	Lower cost of transactions, increased integration
Seller-based, one-to-many private exchange	Foster collaboration with the end customers	Customer retention
One-to-one proprietary linkages	Extend a firm's traditional EDI- or EAI-integration	Enhanced application integration
Independent, public many-to-many exchange	Strengthen the role of intermediary in the exchange	Economies of scale, security, access
Consortia-based many-to-many exchange	Attain common goals of participating companies	Process integration, flexibility

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