

Web Services – Catalyst for Agility

Web services are pieces of application logic from different sources that can be accessed, used and combined to form new applications to solve business problems. While on the surface this may seem very simple, it actually represents a significant architectural shift in computer systems and has far-reaching implications for driving breakthrough value in supply chain management.

Web services represent the new generation of a computing trend that started with distributed systems in the 1980s and led to the client-server architecture of the 1990s. This trend involves the progressive unbundling of monolithic systems into components that can be more flexibly deployed. In the first generation of computer application software, the complete application ran as one code source on a massive computer, typically a mainframe.

The distributed computing phase in the 1980s led to the distribution of this application code across smaller, mini-computers. Concurrent with this was the separation of the database from the application and the ability to run the database on computing equipment apart from the application code.

Movement toward unbundling

The client-server architecture phase in the 1990s led to further unbundling of systems by separating user-specific interaction code from the application logic. This added flexibility by dramatically improving user interfaces and by allowing them to run locally on personal computers. The Web architecture extended this phase by allowing computer clients to be zero-footprint interfaces accessible via personal computers through Web browsers.

The current Web-services generation is perhaps the most revolutionary of all in this continued movement toward unbundling. This new generation offers the most promise to enable companies to move from functionally-driven organizations to cross-functional, process-driven supply chains. One of the biggest challenges companies face in driving breakthrough supply chain management improvements is achieving cross-functional integration. The enterprise resource planning (ERP) movement—while offering improved standardization—actually exacerbated this challenge by offering monolithic, functionally oriented modules that further reinforced functional organizational barriers. The current focus on business process management frameworks and platforms validates the notion that ERP has failed to drive any significant value in moving companies to a cross-functional process orientation.

Organizations, software systems (applications) and business processes are highly intertwined in the “silo” model. And each creates significant inertia to change. Changing any one of them in an attempt to drive value will not yield the desired results; they must all change together.

The catalyst for such change is Web services. With such services, software applications are no longer monolithic. Their capabilities are served up as unbundled Web services. These Web services from various applications that support different organizations and business processes can be brought together to drive process innovation.

The mechanism by which these Web services can be exposed and then configured together to form new applications is called a platform. Platforms can be generic, in which case they are essentially technologies without any business-process context, or they can be domain-specific, involving embedded capabilities as well as business-process starting points to reduce the time needed to create applications.

The i2 Agile Business Process Platform is an example of a domain-specific platform that focuses on supply chain management. It is designed for scalability, performance, reliability and interoperability with Web services.

Domain-specific languages

The domain-specific languages offered by the Agile Business Process Platform include languages for business rules, model declaration, process definition, Web page layout, bulk data adapters, validations and service composition. These languages are designed with inherent considerations of dynamism, introspection, customization, extension, localization and execution. Because it is an executable model, the solution can be constructed, run, tested and modified in short, iterative cycles.

The platform encompasses a comprehensive development environment (i2 Studio) with modeling toolkit, Web page builder, and graphical process designer, as well as business-rules editors with execution and debugging support. It makes it easier for i2 developers, partners and customers to collaborate, focusing on business—not technological—issues.

Kelly Thomas is the senior vice president and general manager of i2's Automotive, Aerospace and Defense, Industrial and Metals group. **Bhavesh Soni** is a chief architect in i2's Research and Development organization and a distinguished member of the technical staff.