The power of enterprise integration

Part 2: Unraveling the mystery of enterprise application integration

By Terri Rylander

Today's businesses are challenged to keep pace with an ever-increasing rate of change due to new global markets, intense competition, regulatory laws and evolving technologies. One of the greatest challenges is keeping enterprise systems and processes progressing at that same tempo.

Businesses have different systems to support various business processes, such as customer relationship management (CRM) and enterprise resource planning (ERP), not to mention several smaller, function-specific systems. Over time, the collection of systems includes a multitude of applications, often on proprietary software and hardware.

Each of these systems typically has its own IT development and support staff. As business changes are addressed, project teams are formed to implement these changes in the affected systems. However, these changes are often more complex than they first appear and typically affect several systems. This ties up IT resources on projects working to keep up with changes in the business.

Enterprise application integration (EAI) is probably one of the most profound technological advances to come about in the past several years. EAI is the integration of business applications (systems and processes) in a seamless manner, regardless of their underlying technology. With EAI, business processes, applications and data can be shared and reused across the internal and even external IT infrastructure. This is very beneficial when several applications are affected by the same processes or functions. Some of the business benefits include:

> Reducing system complexity and redundant IT efforts
> Creating greater agility and flexibility
> Setting the foundation to launch new business capabilities

Considering business processes at their smallest logical unit of work, any applications that have common functions are candidates for integration. For example, when customers visit a company's Web site and make address changes to their profile, that business process and data can be shared with the customer billing application and the campaign management application using the "update customer address" function. (See figure.) Each application leverages functions in other applications, increasing the capabilities—and therefore value—to the business.

Example business process

enlarge
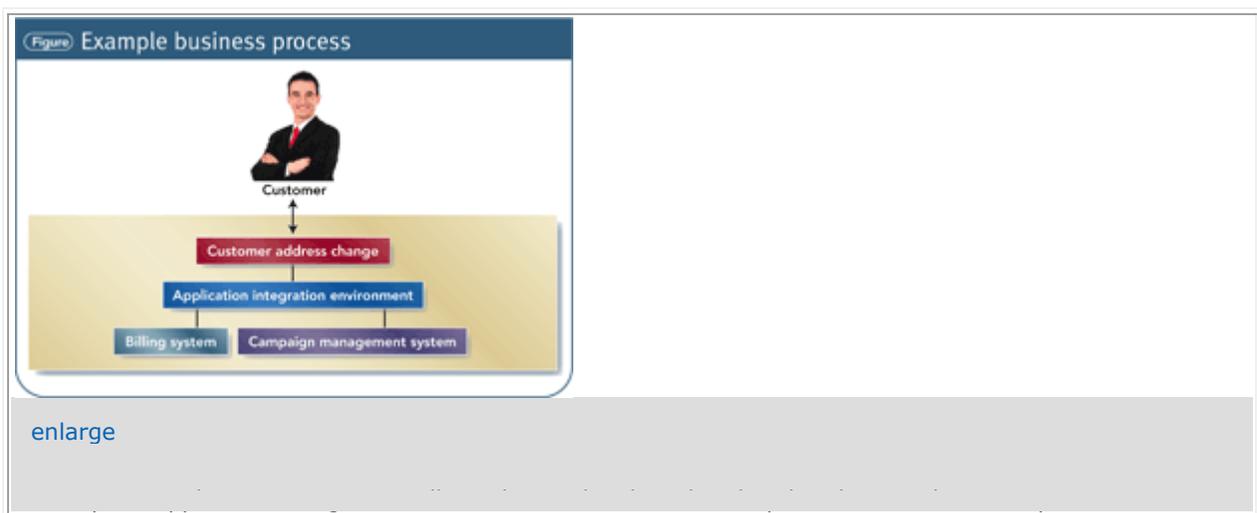
functions.

EAI relies on communication
For applications to integrate, they must be able to communicate with one another. Underlying EAI is a relatively new concept called service-oriented architecture (SOA). SOA is a conceptual business architecture in which modules of business or application functionality are known as services, and these services can be invoked by messages from other services through a common communication language.

Communication is fundamental to SOA, but it is not as simple as sending and receiving messages. These messages between applications must be properly addressed, routed, timed and sometimes queued. In order to communicate efficiently, standards have been developed that allow systems to leverage the network either internally or over the Internet.

Web services take advantage of these standards to make applications available over the network. A Web service is a business process or application wrapped with messaging instructions and made accessible over the network. Many Web services are available and in use today. Personalized, dynamic home pages, like MyYahoo, rely on Web services to deliver customized content. Typical consumer Web service applications are stock tickers, real-time weather bugs, personalized horoscopes, local movie information, dynamic news clips and local traffic updates.

In order for a Web service to be called up, the message must contain information that defines the item being sent and a description of the interface that the message must communicate through. For the applications and business process modules to be found, the service must also be published in a directory that describes the intended audience, either public or private. The standard messaging protocol that supports Web services is an XML-based language called Web Services Description Language (WSDL).

.NET and Java
Microsoft's .NET allows developers to create Windows and Web applications that can run on any Windows machine, whether the language is C#, Visual Basic or another programming language.

Java Virtual Machine and the Java language are the same as .NET's common language infrastructure (CLI) and C# and is available across platforms.

Service level agreements and security
With EAI, a failure in one application may affect many others. For this reason, managing your SOA becomes extremely important. Protecting your applications from intruders becomes even more critical when your applications are integrated with other applications outside the company's firewall. It's imperative that service level agreements (SLAs) and security policies be met and addressed not only at the application level but also at the business process level.

System monitoring should be in place to address:

> SLAs. Making sure system uptime and performance are within expected parameters required by the business
> Performance. Tracking service request response times for optimization
> Security. Monitoring security events and maintaining audit trails

One may rightly wonder how applications that communicate across firewalls distinguish between an anonymous customer request and an intruder disguised as a customer. Fortunately, standards and protocols such as Simple Object Access Protocol (SOAP) allow security information to be included inside the messages. However, the firewall must be SOAP-aware and have XML-based security capabilities.

Setting the strategy for EAI
While EAI offers many significant benefits to the business, certain considerations must be taken into account

when deciding to take the leap and begin integration. A strategy must be developed that helps the business realize those benefits.

EAI needs to be supported at the highest level. It's not something to be taken lightly. EAI requires a significant up-front investment and commitment, and the benefits may not begin to be realized until well down the road when multiple applications become integrated.

Management must stay committed to the vision, because time does not stand still. The existing business applications will continue to change, and the EAI standards and protocols will continue to evolve. A flexible roadmap must be developed to accommodate these changes, and the EAI vision must be continually evangelized with the organization.

The business must not only buy in to the vision but must also participate in creating the integrated environment. Applications and business processes need to be modeled and analyzed for potential integration, and the business needs to participate in prioritizing activities and building the roadmap.

A commitment to EAI standards is as important as a commitment to the vision. As new applications are put in place, they should already meet standards that comply with EAI, rejecting any proprietary or vendor-specific protocols.

Future possibilities

In the future, more and more applications will be managed and hosted by software vendors. Although not a new concept, "Software as a service" (SaaS) is a new buzzword for renting hosted solutions, replacing the previous term of application service provider (ASP). SaaS is a delivery model that today makes most sense for businesses with limited IT resources and skills. Customer service and sales force automation applications are among the most popular, with Salesforce.com being one of the most recognized in the space.

Recently in an *InformationWeek* Research Software As A Service survey, 29% of respondents said they already use SaaS for one or more applications. It's easy to see the day when businesses will integrate their own applications with those managed by the vendor. However, integrating vendor-hosted applications with those of the business has inherent challenges. Service levels and security are major hurdles. While theoretically technology is not the limiting factor, business leaders of larger corporations will likely wait for early adopters to work out the kinks.

EAI is no easy task, but the benefits are tremendous. According to the AberdeenGroup report "Enterprise Service Bus and SOA Middleware Benchmark Report" from June 2006, nine out of 10 companies are adopting or planning to adopt SOAs. Clearly, organizations cannot afford to ignore EAI any longer. Competitive pressures and global flattening demand the need for an architecture that communicates not only across the business but one that extends to partner and customer applications as well. **T**

This is the second in a series of four articles on enterprise integration. Part one discussed the strategic advantages of integrating the enterprise and an overview of the various integration components. Part three will explore enterprise information integration and the value of combining operational, analytical, structured and unstructured data. The final article will take a look at the new information worker and how advances in technology help employees leverage the human capital they possess.

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http://www.teradata.com/tdmo/v07n04/Features/UnravelingTheMystery.aspx