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Ready for prime time? By Irene Tham

Technology hurdles

Web services represent futuristic software development where applications are linked over the Internet by an established set of open standards. These standards include Extensible Markup Language (XML), Universal Description, Discovery and Integration (UDDI), and Simple Object Access Protocol (SOAP).

In Asia, Web services are viewed by 30 per cent of Asian companies as the most critical IT investment, according to last year's IDC survey of over 2,800 companies in the Asia-Pacific region.

However, business-to-business exchanges mostly take place among a closed group of manufacturers, distributors and among government bodies, says Greta James, Gartner's regional research director. "Trading communities in Asia are usually very small in size—in the tens rather than the thousands," she notes.

One of the key challenges to mass enterprise adoption of Web services is the immaturity of common standards, James says. For instance, the standards for managing end-to-end business transactions are not yet in place, splitting among major languages, including Business Process Execution Language for Web Services (BPEL4WS) and Web Services Choreography Interface (WSCI).

BPEL4WS is proposed by vendors such as IBM, Microsoft, BEA Systems, SAP and Siebel Systems, while WSCI is backed by Sun Microsystems and Oracle.

"Besides," says James, "how does one make sure that a request arrives within a specified time frame and once only? And how does one know if the request is not intercepted by a corporate firewall?"

Administrative limitations

Technology imperfection, however, is not Rashidah Bolhassan's chief concern. "My challenges have more to do with human policies than with technology," says the CEO of Malaysia's Sarawak State Library. Rashidah, who makes IT decisions for the state's research library, spearheaded a computerisation program and Web services implementation in 1999. She oversaw the deployment of Oracle database solutions that connect the Sarawak State Library to nine smaller libraries scattered across the state.

Thanks to the linking of library databases using Web services standards such as XML and common bibliographic exchange format MARC, or MAchine-Readable Cataloguing, Sarawak residents can search and view book titles available for loan from all 10 libraries. Individuals can also request inter-library loans online without having to travel across the state.

However, inter-library loans are arranged by the libraries, not members. This means that users have to get their local libraries to borrow or reserve a book from another library on their behalf if they are not members. The local library will convey the requisition via e-mail to the relevant library.

"Although it is technically possible for users to request books directly from another library over the Web, our policies do not allow that," says Rashidah. "The Sarawak State Library does not have jurisdiction over the members of other libraries in the state, and vice versa."

Despite administrative constraints, the Sarawak State Library has met its business objectives using Web services. The organisation is able to share its vast resources comprising over 40,000 titles —including books, CDs, audio-visual materials and monographs—with residents outside the capital, Kuching, where it is located, says Rashidah.

"We are able to reach a wider audience without having to build roads and set up transport infrastructure. Instead, we've extended our reach by linking our database with those of other libraries in Sarawak using Web services," she says.

The integration project also allows the state to operate and share a central database for all bibliographic records. "This way, we can reduce the cost of purchasing multiple copies of the same digital content, reserving our budget for the acquisition of more titles," Rashidah adds. She declined to reveal cost savings.

Among future plans, the Sarawak State Library is developing a system for the easy retrieval and storage of historical records such as published research findings, documentaries of Sarawak and genealogies. The system will be designed to communicate with the servers of other libraries across the state for resource sharing, she notes.

Opening doors
While the adoption of Web services standards has quickened and eased information sharing for some, the availability of common standards for data exchange has also created new business opportunities for others.

One such beneficiary is Singapore-based Trusted Hub. Set up two years ago, the company provides managed services in the creation, storage and management of electronic documents. E-records created and stored for customers can be used as court evidence should a dispute arise between parties involved in an e-commerce transaction.

"Trusted Hub functions as an e-record repository for customers. Thus, it is vital to our business to interface with customers' myriad systems to exchange information," says Bryan Wong, the company's president.

Web services provide the answer to his organisation's technology needs. "It's a platform that is ready to adapt to existing or new systems rapidly," says Wong, who was involved in designing Trusted Hub's IT platform. In addition, Web services offer integration on the cheap, unlike traditional enterprise application integration (EAI) processes which involve specialised software and often a costly consulting component. "Software development should always be cheap because our customers outsource the storage and management of e-records to cut cost," Wong notes.

Not always a smooth journey
Trusted Hub has built its Web services engine using Microsoft Visual Studio .NET, SQL Database and BizTalk Server.

The start-up is managing the financial, investment, procurement, human resources, medical and insurance policy data of John Hancock Financial Services, Manulife Insurance, NTUC Income Insurance Cooperative, Singapore Power, the Robinsons Group, Temasek Holdings and the Singapore National Eye Centre.

However, Trusted Hub's Web services journey has not always been smooth. "We often experience system slowness when there are too many layers talking to each other and when one transmits non-textual information," says Wong. Because XML is a format for text, graphical elements have to be translated into text before the data is transmitted. "Thus, there is a certain amount of overhead needed to wrap and unwrap messages," Wong adds.

"It can be tempting to design the entire system using Web services components. But if real-time processing is important, one might want to review if Web services are absolutely necessary."