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Webservices Pipeline

Case Study: Thomson Prometric

Choosing a Web services management vendor for an SOA transformation

By Alice LaPlante

As Thomson Prometric began to explore how to migrate from a monolithic application architecture to a service-oriented architecture (SOA), it quickly realized that implementing a Web services management strategy to monitor and manage the SOA environment was critical to the success of the project.

"We were challenged in the architectural construct of moving from a heterogeneous environment into a homogeneous service-oriented architecture," says Christopher Crowhurst, Thomson Prometric's vice president of enterprise architecture.

More importantly, Thomson was told by the president and CEO of the firm that the organization's goal was to become the leading provider of integrated information solutions.

"What that means, is that our goal was to blend information with technology and applications to create systems to help our customers make better decisions faster," says Crowhurst.

The Thomson Corporation, with 2003 revenues of \$7.6 billion, is a global leader in providing integrated information solutions to business and professional customers. Thomson provides value-added information, software tools and applications to more than 20 million users in the fields of law, tax, accounting, financial services, higher education, reference information, corporate training and assessment, scientific research and healthcare. With operational headquarters in Stamford, Connecticut., Thomson has approximately 39,000 employees and provides services in approximately 130 countries.

Thomson Prometric is a wholly owned subsidiary of Thomson Corp., and a global leader in technology-enabled testing and assessment services for academic, professional, government, corporate and information technology markets. It delivers standardized tests for 300 clients, in 26 languages, over the Web or through a global network of testing centers in 134 countries. Based in Baltimore, Md., Thomson Prometric employs 3,000 employees worldwide.

As a result of corporate growth, which has occurred both organically and through acquisition, Thomson Prometric now has thousands of test centers located throughout the world. "Coordinating and integrating those operations presented quite a challenge," says Crowhurst.

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Thomson Prometric's history was in the publishing business and it is now a significant owner of information and data such as patent, legal, and medical libraries, "so we were really focused on our capability to create information solutions to

provide to our customers."

Web services provide flexibility to help IT departments adapt to rapidly changing business requirements. However, as Web services applications become more complex and migrate beyond the firewall, the need to reliably manage end-to-end communications is critical.

Thomson Prometric selected Actional's Web services management solution as part of a global initiative to implement a new SOA environment. With Actional's Web services management platform, Thomson Prometric will be able to further improve responsiveness to customers, facilitate new product offerings and enhance business agility, while reducing the cost and burden associated with maintaining and integrating disparate application environments.

"Given their industry leadership and focus on innovation, it comes as no surprise that Thomson Prometric is one of the innovative companies that is leveraging breakthroughs in technology and progressing towards the adoption of a service-oriented application environment that will enable them to move toward becoming a dynamically responsive organization," said Judith Hurwitz, president, Hurwitz & Associates. "By leveraging a Web services management platform, Thomson Prometric is poised to capture the full value that Web services can provide across its entire global network."

With Actional's Web services management platform, Thomson will be able to proactively monitor its Web services performance and increase global service level agreement (SLA) compliance. Furthermore, Thomson Prometric is now able to obtain metric analysis for corporate initiatives, thus allowing the IT department to fully support Thomson's business goals.

"Many companies believe Web services and SOAs are important for building a technology infrastructure to help drive business agility, but few organizations are really comprehensive and proactive in their approach," said Tom Ryan, CEO of Actional. "It is refreshing and exciting to see a company such as Thomson Prometric move beyond the theoretical and aggressively implement critical technological innovations such as Web services in a global and systematic fashion."

To get to what Crowhurst called the "state of bliss" that would be a true SOA, his firm identified what it saw as seven steps to success:

The starting point was to define how systems were going to connect into the SOA; from that, Thomson created a set of policies defining the security and integration framework of the SOA. The Thomson architectural team then designed the fundamental archi-

ture for the SOA, after which it identified the core business processes, to begin to take apart these heterogeneous systems, and identified the similarities in services provided by each of these systems. Then it created the schema that would be the center of the SOA, which provided the vocabulary to be shared so that each system would be able to communicate with others, and facilitate integration of the systems. Then there was the implementation, and finally, the integration phases.

Through the work of defining the SOA, Thomson also identified what Crowhurst called "a clear need" for a Web services management tool, especially for Steps 2 through 5.

Thomson went through a highly structured way of choosing a vendor. It created a proof of concept (POC) document that it presented to each of six vendors that contained a set of test cases that were very close to what Thomson was actually trying to do with its business and which replicated the actual challenges it faced when migrating to an SOA.

"We started with the publishing and the automation of that publishing through Web services, and a test case that showed how the Web services management tool could transform the request from the legacy system into requests to the new SOA," says Crowhurst.

Another test case involved UDDI integration, both internal and external, "as we were especially interested in seeing how the Web services management vendors toolsets worked with UDDI," says Crowhurst. Then finally, he knew that the versioning of interfaces was going to be a challenge, so he created some test cases to test the Web services tools' ability to version interfaces.

Thomson then created what Crowhurst called "success criteria": what his firm was looking for in the Web services technology in terms of performance, flexibility, and extensibility. "Finally, we set expectation for the vendor in terms of their track record, their financials, their understanding of the market," says Crowhurst. "We knew this was a very young industry and we needed to know we were betting on the right horse."

There were a wide number of vendor options, but Crowhurst narrowed it down to the six that he felt had "the most robust solutions." His team then prepared an environment, and the services to place under management, so each vendor had a consistent environment in which to come into.

"We conducted our POC in a very aggressive way," notes Crowhurst. "Each vendor was given one 8-hour window in which to perform the POC. Of course they all objected and asked for more time, but we stuck to the rule that they had to come in and run our test cases within one day." Among other things, says Crowhurst, this was an excellent way of checking the quality of the vendor's support staff.

Thomson's starting environment was a very classic stovepipe heterogeneous environment. There was a bottom set of data stores; then a complex set of middleware where the business logic resided in many different places; and finally, at the top, a number of different presentation layers.

"In the worst case scenario there were seven different paths from a presentation tier down to a data tier," says Crowhurst. "This made it very difficult to synchronize changes, and also provided inconsistent customer service level, made it very hard to monitor the health of the overall network."

The first thing Thomson did was publish its Web services into a local, private UDDI registry. The Web services management proxy would retrieve the endpoint from the UDDI and then re-expose the interface to the firewall, which then published the new interface to the UDDI of the client machine. "This provided us with several layers of loose coupling, and also allowed us to manage

change of the Web services in both our XML firewall and also, effectively, our client," says Crowhurst. "We used the UDDI so we had location independence, and to allow us to do quality of service load balancing."

An important point was that Thomson felt it could not rely on its service providers to perform this level of due diligence about their interface versioning. "So we placed these consumers under management as well," says Crowhurst. By putting a management proxy in front of them and the service provider, Thomson ended up promoting the end point of the management proxy into UDDI and subsequently consuming it as a client. "We felt this enabled us to protect ourselves from changes created in service providers' interfaces," he says.

The first thing Thomson did was to wrap the middleware in SOAP, and then provided interfaces into an orchestration tool, using the Actional Web services management tool to act as an agent on each of the middleware services, and subsequently as an intermediary or proxy to perform transformation for promoting the document request into the orchestration tier. "Outside of each of the orchestration layers there was a layer of transformation handling the outbound and the inbound requests so that the clients were able to continue to use the legacy interfaces that they were used to," says Crowhurst. As clients are migrated to the new infrastructure, the lower layers of transformations will be removed, however "the top layer of transformations will survive as long as the legacy middleware is supported," he says.

The logical architecture of the system was designed to support a geographically dispersed set of data centers. At the time of the initial architectural design, Thomson had three data centers to consider, and it used the Actional Web services management tools to isolate the consumers from knowledge of which data center they were accessing. "In some cases we created a holistic interface where each of the data centers was set up to lead back to the same set of services; in other case we created a geographically-specific interface," says Crowhurst. He said there were some specific challenges in the case of data privacy, and the design had to accommodate the fact that certain data created, for example, in Europe, was not accessible by the data center in the United States in order to comply with European data privacy laws.

One piece of advice Crowhurst had for others about to test web services management tools: to create realistic tests. "It's easy to create test in which you test for what you know will be problem areas, but which are really not realistic given your particular needs, says Crowhurst. "For example, what performance do you really need? Identify that in advance rather than set unrealistic goals that can't be met by the product."

"Every vendor will tell you they can do everything if you let them, so don't get distracted by some glitzy feature that they want to show you," continued Crowhurst. "Stay focused on what you need, on what you're trying to measure, and make your decision based upon that." If you've written your test cases correctly and accurately identified your metrics in advance, you will be able to make a decision precisely on how the product meets your needs, says Crowhurst.

