ITKO Case Study

i2 High-Tech Practice

Overview
Redesigning and implementing a new eCommerce solution for one of the Top 5 high-tech manufacturers in the world is no small feat. End customers in this field expect complete control over product configuration, instant feedback on prices and delivery dates, and a system that is both responsive and accurate.

A long-time customer of ITKO’s LISA SOA Testing software within its own development process, i2’s field implementation teams are applying ITKO software and services to enhance their testing capabilities and ensure customer satisfaction and high performance levels in deployment.

The Challenge
For many Internet-facing development projects, software testing has not changed much since the client-server days. Typically testing is done by developers at the code level to find structural flaws, and then the next time any validation occurs is at the presentation layer as “acceptance” testing of a finished user interface. This approach worked when the entire business process could be delivered as a singularly developed application. But in today’s services-based architectures are solving harder business problems, and much of the business complexity behind the interface cannot be touched by conventional testing methods.

Supply chain solutions provider i2 recently moved a global consumer electronics firm’s eCommerce site to an SOA (Service-Oriented Architecture) approach. Comprehensive testing would be mandatory to ensure that the new site, and all of the complex integrations behind it, would improve the buying experience. Challenges included:

- Testing and stabilizing a high-performance consumer electronics eCommerce website supported by deep supply chain configuration, pricing, availability, and other functionality within a 5 month timeframe
- Coordinating testing collaboration across more than 400 development and QA team members from i2 and the client as they develop individual components as part of a larger integrated deployment
- Moving from the labor-intensive and often shallow process of manually testing at the user interface layer only to testing the entire application in a deeper, more reusable automated fashion.

“Part of [the customer’s] existing validation process was doing manual functional testing as a continuous signoff criteria throughout development,” said Chris Morhard, senior director of High-Tech programs for i2. “They had 25 person team focused on just functional testing.

“Manual testing is interesting at first, but then it becomes rote work, and it becomes less effective because of redundancy. And it is also not scalable. When you are starting to talk about multiple project sites, and needing 10 people manually testing every day for every site, you are building an organization of about 250 people to test - and that’s not a scalable model in today’s world,” Morhard said.

Why ITKO?
i2 had already used LISA within its own development organization, so the company already had familiarity with LISA testing at the product level. But taking LISA to customers in the field required a
broader commitment than just a testing tool. Testing SOA applications requires a specialized set of skills that many organizations do not have within their own development teams.

“We needed a partner who could scale rapidly with us, and we had looked at a couple other solutions on the market,” said Morhard. “Because of our familiarity with LISA and the overall skill level of the people in the company, we felt it was a very good fit to deploy ITKO into this project.

“ITKO was willing and able to deploy resources very quickly to the project, both on-shore and offshore teams, in a cost effective way. [ITKO] brought specific skill levels especially around SOA, that augmented i2’s consulting testing capabilities and fit well with our strategy and methodology.”

The i2 High-tech team needed to automate testing of:

- The web UI level (HTML/HTTP traffic)
- Data integration at an XML layer (from Web Services)
- ESB messaging layers
- Java objects/EJB
- i2’s business workflow and business logic engines
- Validating results and values at the data layer

“The ITKO software proved instrumental in effectively testing to simulate the responses from the services we were calling,” said Morhard.

“For i2, the value of the ITKO services and software solution was the fact that we can provide a way to test the entire SOA solution from end to end, and reduce business risk,” said Satendar Bhatia, VP of Strategic Alliances, ITKO. “Experienced testing resources equipped with LISA can test at a functional level, at an integration level, and continuously at load and runtime.”

The new site has over 300 pages, 300 million lines of code, and multiple layers of SOA components. i2 can now test every aspect of the application on a daily basis. ITKO offers i2 the solution through a services partnership specifically designed for the implementation needs of software vendors.

“ITKO is able to address the pain point of testing SOA applications, without a cost burden to the i2, or their end customer,” said ITKO’s Bhatia. “With our ITKO-iQ services model, the efficiency of our testing methodology fits within the expected testing budget, and saves software companies, and their customers, time and costs once spent manually testing and trying to debug SOA applications without deep enough test coverage.”

The Solution

i2’s supply chain and eCommerce software is deployed through web interfaces utilizing a SOA approach, for maximum flexibility in working with the customer’s unique legacy systems or databases. The program team ran LISA test cases at the web interface layer, but the majority of the business logic was tested at both a database integration level, and a services publishing level.

ITKO kicked off the project by providing a highly experienced SOA Architect to define the vision for how all of the interdependent service components of the site could be effectively tested. Since each service in an SOA may have a unique owner, special attention was paid to test collaboration: how the ITKO resources (both on-site and off shore), i2 project and development teams, and the end customer’s development, QA and business teams would all share test cases in an iterative process, thereby ensuring trust that the implemented system would work as required once all the pieces were in place.

“ITKO brought terrific people to our project, they had a very high level of knowledge of testing methodology, and a very strong understanding of their tool and how it operates within a SOA environment,” i2’s Morhard said. “At a strategy, planning, test case development and execution level, ITKO had the skill and knowledge of the industry best practices around testing.”
With a strategy in place, i2 then conducted LISA Jumpstart training sessions of 2 or 3 days for the i2 and client side resources involved in testing. Since LISA software allows deep testing without coding, ramp up happened quickly.

“This kind of test coverage doesn’t happen by accident,” said Morhard. “We’re a provider of services and software for web interfaces that integrate to the supply chain, and our expertise is not in testing. There was no way we were going to ramp that capability up within our team. A number of people on our customer side also learned how to do automated testing with LISA quite rapidly.”

Once the strategy and training sessions were completed, ITKO resources worked with i2 teams on test planning and execution phases of the project. LISA tests started at a unit and functional level, and those same test cases were then rolled into regression tests that would run with each build, using LISA Continuous Build Testing functionality. Reuse of functional tests through regression, load and performance testing is one of the core features of the LISA solution.

“ITKO had one resource automating tests, almost touchlessly in LISA, and we were running tests every night against the latest build,” said Morhard. “That’s one way of comparing the productivity you can get with real automation.”

Finally, the team needed visibility into the progress of testing, in order to ensure the target release date would still be viable. LISA provided the team with detailed metrics from every aspect of the SOA application, including server-side data, application level issues, performance or scalability problems, and functional issues that did not meet expected business behaviors. These reports were published to the team on a daily basis to track progress.

The Results
Formerly the end customer employed 10-15 people just to continually test only the end result UI behaviors of their system. Now, with a highly reusable and complete test suite in place, i2 can conduct the same process with one part-time resource using LISA, at a higher level of accuracy, as the automation capabilities of LISA erase the margin for error inherent in manual testing.

“We cycled our software builds every day, and we recycled fixes into the builds the next day,” Morhard said. “That allowed us to take what was expected to be a 9-month project, and crunch it into 4½ months. Our project sponsor had done this type of project 4 times and the quickest he’d ever done it was in 9 months.”
Delivering a project on time would mean little if the SOA system did not meet customer needs in deployment. And this system would need to hold up to more than 100 thousand users a day during peak periods, each conducting complex configuration and transaction processes.

“ITKO is also conducting PSR (Performance, Scalability and Reliability) Testing, which is providing insight into the software itself, enabling us to correct many issues. Anecdotally I would say this is one of the fastest eCommerce sites on the market today, and that is a direct result of PSR testing,” Morhard said. “We’ve had no downtime. Absolutely zero downtime since we went live. And I think that’s a very good measure of how well we tested,” Morhard said.

“That’s one component, the end result. You can go and measure “defects found” and things like that, but that is a normal project process. The speed at which you test, and the ability to recycle your testing is another way of looking at it. If we didn’t have ITKO people and software absolutely embedded in this project, we would have never made the go-live date.”

ITKO’s services and software offering enabled i2 to achieve the critical testing requirement of SOA Lifecycle Governance. Effective testing in a governance sense is more than a process of ensuring that all the components are bug-free and technically compliant. It is a matter of ensuring that all of the services that the SOA application consumes are continuing to meet the business requirements as they continually evolve.

Next Steps?
i2 will continue to incorporate LISA testing and ITKO-iQ services to cover the quality lifecycle needs that arise as they implement the electronic storefront solution globally. In a daily operational role, i2 will use LISA Continuous Deployment Testing software to monitor the implementation as the site evolves and responds to customer demands.

“The site changes on a daily basis, and there is a lot of complexity that is touched, and we need to be very careful and make sure we run a full regression testing each day,” Morhard said.

ITKO’s Satendar Bhatia describes the value of ITKO-iQ services to a software company like i2. “Our ITKO-iQ service and software offering provides low risk to the end customer, as it is simply considered a part of the testing services process. Expert testers using a SOA-ready testing solution like LISA provide better testing throughout the course of the implementation. Then at the end of the project, the customer can continue to leverage the test suites and maintain test coverage if they wish, by continuously testing with LISA.”

Additional Resources:
View the video version of this case study at:
http://www.ITKO.com/site/resources/ITKO_Case_i2_final100k.wmv
Find out more about ITKO-iQ™ service offerings at:
http://www.ITKO.com/site/services/

About ITKO
ITKO’s LISA is the Platform for Agile, Composite Application Development, helping customers to reshape their enterprise application development lifecycles. Our LISA virtualization and validation software optimizes complex and cloud-based applications throughout the software lifecycle, eliminating costly constraints and defects, while improving agility in an environment of constant change.

ITKO’s LISA solutions eliminate software dependences, decrease release times, and increase the reliability of composite applications that leverage cloud computing, SOA, BPM, integration suites, and ESBs. ITKO’s global customers include 5 of the top 6 Fortune 500 commercial banks, 5 of the top 6 Fortune 500 telecommunication firms as well as leading firms in insurance, travel, retail, utilities and government agencies. ITKO is a CA Technologies company. For more information, visit http://www.ITKO.com.