

Sears Builds Enterprise-Wide Solution Delivery Framework with IBM Rational Unified Process

Overview

■ The Challenge

Sears' software development teams were using several disparate processes and tools to build applications. The lack of a single, consistent process was driving up development costs and incurring delays. In addition, Sears faced regulatory mandates that required repeatable, auditable, and consistent development practices.

■ The Solution

The company developed its Solution Delivery Framework -- an enterprise implementation of the IBM® Rational Unified Process® methodology, customized to meet Sears' many requirements. The process is supported by integrated development tools from IBM Rational® for requirements management, software artifact management, model-driven development, defect and change management, and test management.

■ The Benefit

Sears now has a custom-tailored, consistent process in place enterprise-wide, backed by integrated development tools. Sears expects to meet or exceed the goals it established for the project including a reduction in overall project delivery time by 10 percent; increased developer and tester productivity through the use of standard tools and best practices; and a 20 percent reduction in application support costs related to project defects.

A leading broadline retailer of merchandise and related services, Sears, Roebuck and Co. offers a wide range of home merchandise, apparel and automotive products and services through more than 2,300 Sears-branded and affiliated stores in the U.S. and Canada. Sears also offers a variety of merchandise and services through sears.com, landsend.com and specialty catalogs. Sears is the only retailer where consumers can find each

of the Kenmore, Craftsman, DieHard and Lands' End brands together -- among the most trusted and preferred brands in the U.S. The company is also the largest provider of product repair services with more than 14 million service calls made annually.

Fulfilling Sears' vision of being the preferred and most trusted resource for the products and services that enhance home and family life requires a high degree of commitment and dedication from Sears' more than 1000 IT personnel. Recently Sears' leadership recognized there were several challenges that were hampering its IT group's ability to consistently deliver cost-effective, timely solutions that address business needs .

Sears developers were using a wide range of disparate processes to build applications -- some were using a waterfall approach, others were using a process that was no longer being supported by the consulting firm that

had implemented it, and others were using improvised methodologies. John Morrison, IT Methodology Consultant at Sears, recalls, "One of our central challenges was the use of multiple methodologies throughout IT. Associates were interpreting these methodologies in different ways to get things done. This added excess cost and extra time to our projects because at the start of every project the team had to establish the roles for the project, decide which artifacts were going to be used, and who was going to create them. It was an ad hoc and costly exercise, with no repeatability. Without a consistent, repeatable methodology, you have no way to pass on the process knowledge you've acquired."

Technical Challenges

In addition to these issues, Sears development teams were facing some technical challenges in the areas of requirements management and software artifact management. Morrison continues, "The requirements documents and artifacts were inconsistent across projects. And our source code was not being versioned consistently." Regulatory requirements of the Sarbanes-Oxley Act drove the need for consistent, reliable management of software development artifacts. "Sarbanes-Oxley made it an absolute requirement," notes Morrison.

Sears began work on a project to address all of these needs with a consistent process supported by integrated software development tools. Sears' Solution Delivery Framework is an enterprise implementation of IBM® Rational Unified Process®, customized to meet Sears' many requirements, and integrated with IBM Rational tools for requirements management, software artifact management, model-driven development, defect and change management and test management. IBM Rational Unified Process, or RUP®, is a software development process platform based on proven best practices that enables Sears to deliver customized yet consistent process guidance to its project teams.

The goals of the Solution Delivery Framework are aggressive and include:

- *Eliminate time spent clarifying roles activities and artifacts*
- *Reduce average person-hours required to complete development initiatives and reduce time to market*
- *Shorten system discovery time by maintaining consistent documentation*

- *Leverage tools to automate and streamline solution delivery activities, for example, change management*
- *Facilitate communication among IT practitioners and business with common practices and artifacts*
- *Produce higher quality solutions through improved test processes, coverage, effectiveness and speed*
- *Improve solution alignment with business needs via business architecture models*
- *Mitigate risk, accommodate changing business requirements, and detect miscommunications early in the life-cycle with an iterative (rather than waterfall) solution delivery methodology*
- *Reduce rework related to quality of requirements*
- *Improve flexibility with resource management; eliminate reliance upon heroics*
- *Develop more accurate forecasting resulting in more predictable time and budget estimates*

Today, as Sears rolls the Solution Delivery Framework out to its development teams, many of these objectives have already been accomplished, and Morrison is confident in Sears' ability to meet or exceed all of them using IBM Rational solutions.

Earlier Success Contributed to Selection of RUP

Sears had already used RUP and IBM Rational development tools with great success in developing the store software for its home remodeling store format, The Great Indoors. This success – along with a recommendation from a leading consulting firm to use RUP – factored in Sears decision to use IBM Rational tools and processes across the company. Morrison notes, “We did a full RUP and a full Rational tool implementation for The Great Indoors starting in February of 2000. After several releases in which we applied lessons learned, we finally experienced a flawless deployment -- when the applications went out to the stores the developers sat around the office waiting for the phone to start ringing with problem reports. Well, the phones never rang and the project manager said, ‘This is what deployment is supposed to be like.’ The knowledge I gained from that experience made me confident in recommending RUP as the solution for the whole enterprise.”

Incorporating COTS packages

Morrison, who was the Methodology Lead for the Solution Delivery Framework effort, reports that as the project charter was being completed, Sears' leadership recognized the need to shift from strictly custom development to COTS (commercial-off-the-shelf) development. “This was another huge driver for this project. Our direction changed, and we wanted to start using more COTS packages and reduce the amount of customization that we needed on those packages. So we knew we needed to extend the RUP with additional content that dealt with package selection and integration,” says Morrison.

Morrison and his team decided to leverage the approach suggested by Carnegie Mellon's Software Engineering Institute (SEI). SEI's Evolutionary Process for Integrating COTS-Based Systems, or EPIC, illustrates how to select and deploy COTS packages using RUP as a good systems practices model. Morrison explains, “We took the EPIC guidance and incorporated it into the RUP, adding three new workflows: Marketplace, Procurement, and Business Process Change Management. We are very excited about employing these workflows because they have potential for a broader application than just COTS.”

Customizing RUP with RUP Builder

The Sears team used RUP Builder to configure their process and used Rational Process Workbench® to create a Plug-In that contained the new workflows, as well as customized version of existing workflows. Sears then used RUP Builder to generate and publish its Solution Delivery Framework Web site so that can be accessed by IT team members throughout the organization.

Using the RUP Organizer feature of Rational Process Workbench, Sears was able to easily integrate elements of its existing process guidance and content with RUP. Morrison notes, “We added infrastructure activities into the Analysis and Design workflow of RUP. And we made significant changes to the business modeling, requirements and configuration management workflows. Using RUP builder we created a Plug-In that has all of this additional content as well as the COTS material from EPIC.”

The Solution Delivery Framework, while providing a consistent process foundation, also allows project managers flexibility to handle a range of projects. Morrison explains, “RUP Builder enables project managers to configure their own RUP process based upon the characteristics of their projects. That is not really practical for our needs, because our primary goal is to move everyone from multiple processes

to one common process. Instead we created an enhanced version of the RUP that really gives the project managers everything they need and then we provided project management tools to help them select resource allocation matrices and work breakdown structures that are tailored to different types of projects.”

For Morrison, one of the biggest benefits of RUP Builder was the ability to repeatedly publish the Solution Delivery Framework as part of an iterative development process. “I think that is unique,” he says. “We were constantly evolving our process. We were able to publish our site repeatedly – every couple of days if we needed to. The content of each workflow is owned by an IT community within Sears. (For example, analysts own the Business Modeling and the Requirements workflows, and architects own the Analysis & Design workflow.) The initial input to refine or extend the process content of RUP came from these communities – SDF Workflow Leads gathered change requests from them and submitted them into Rational ClearQuest®. From there, we looked at all the change requests and decided which ones would be in the next release. Then we would use RUP Builder to regenerate and republish the Web site so that it could be presented to the development communities.”

Implementing the Process with IBM Rational Tools

Over time, Sears plans to roll out a wide range of IBM Rational development tools to support the Solution Delivery Framework and RUP, including IBM Rational Rose® XDE™ Developer for model-driven development, IBM Rational Test Manager for test case management, and IBM Rational ClearQuest to track defects and enhancement requests on development projects. Initially however, Sears is addressing its most immediate needs first by adopting IBM Rational ClearCase® for software artifact management and IBM Rational RequisitePro® for requirements management.

Morrison recalls, “We started with our key workflows and our two biggest pain points—requirements and source code. We were not consistently managing our source code, but now we are using IBM Rational ClearCase and bringing our source code under control.” Because Rational ClearCase is integrated with IBM WebSphere® Studio Application Developer, Sears developers also save time by checking out and checking in files directly from their IDE (Integrated Development Environment).

Enforcing Consistent Requirements and Business Rules

To ensure project requirements were being defined and managed with consistency and accuracy across the organization, Sears leveraged IBM

Rational RequisitePro and customized the requirements workflow in RUP, tailoring to Sears specific needs. Morrison explains, “We wanted our teams to use a consistent style for use cases and business rules. Our strategy is to create use cases independent of the user interface and with business rules extracted. For example, if we have a use case which says, ‘the system displays customer information,’ then we have a business rule which says precisely what that information is. This approach gives the business a chance to control things at a higher level rather than having everything buried within the use case. And we can re-use that business rule for multiple use cases – it just works a lot better for us.”

The Rational RequisitePro Extensibility Interface – a COM-Based API -- provided Sears with direct access to requirements data. When the team added new COTS content based upon SEI EPIC to the requirements workflow, it also added business rules. Sears developed a Business Rules Capture Utility as an add-on to Rational RequisitePro. This utility captures business rules according to industry standard patterns and stores them in Rational RequisitePro. “Our business rules are traced to statements in use cases, and eventually we will manage business rules across Rational RequisitePro projects at the application and enterprise level. We can now guarantee a much higher

quality of business rules, because we have an automated way to enforce quality," Morrison notes.

Morrison adds, "Many people who focus on business rules regard business rules as the central requirement type. But our approach puts RUP and the Unified Modeling Language (UML) at the center -- and business rules in a supporting role. For us, business rules are a further definition of the use case requirement."

Training and Services Provide Answers and Assistance

Throughout the development and implementation of the Solution Delivery Framework, Sears relied on IBM Rational Services for consulting and training support to accelerate the project. "We put a lot of energy into creating a well-defined training curriculum, which includes IBM Rational University classes, Web-based training and bringing instructors in for on-site training -- some of which was customized for us. Overall, I think it has been very helpful. We also received consulting help from Rational Professional Services when we refined the Analysis and Design workflow, and the Business Modeling workflow," explains Morrison.

In addition, Sears engaged ECMS, Inc. for help in deploying a technical infrastructure to support the Solution Delivery Framework. ECMS is an

IBM Business Partner specializing in Rational Software best practices. Morrison notes, "ECMS was definitely a part of our success. We had them build the architecture and the environment, because we did not want to allocate the resources to do it ourselves."

Business Benefits

Although Sears has just begun to employ the Solution Delivery Framework, it is already benefiting from having a single consistent development process that is custom-tailored to meet the specific needs of Sears -- including support for COTS, meeting regulatory requirements, and providing Sears entire development team a single, proven methodology and supporting tools. With the Solution Delivery Framework and Rational tools, Morrison is confident in Sears' ability to achieve the key business goals of the project.

"I expect that we will exceed those percentages. Just by virtue of rolling out the RUP, I think you can achieve these things. We will achieve even better results because we have addressed the specific needs of Sears. In my opinion we have one of the best implementations of Rational Unified Process in the country, because we did it the right way. The Solution Delivery Framework is a great asset for Sears, and it has integrity because RUP is its foundation," Morrison concludes.



© Copyright IBM Corporation 2004

IBM Corporation
Route 100
Somers, NY 10589
U.S.A.

Produced in the United States of America
10-04

All Rights Reserved

IBM and the IBM logo, ClearCase, ClearQuest, Rational, Rational Process Workbench, Rational Rose, Rational Unified Process, RequisitePro, RUP, WebSphere and XDE are trademarks of International Business Machines Corporation in the United States, other countries, or both.

Other company, product or service names may be trademarks or service marks of others.