IBM

Leader in Health Insurance Adopts IBM Rational Unified Process and IBM Rational Development Tools across the Enterprise

Overview

■ **The Challenge**
Without a consistent, enterprise-wide development process and integrated tools to support it, the development team at a leading health insurance company was hampered in its efforts to reduce costs and time-to-market, while increasing quality, flexibility, and responsiveness on software development initiatives.

■ **The Solution**
The company adopted Rational Unified Process® (RUP®) and a broad range of IBM® Rational® development tools to provide a comprehensive, integrated solution for improving organizational effectiveness and efficiency. With sponsorship from the highest levels of management and support from IBM Rational services, the team has embarked on an enterprise-wide deployment of RUP and the IBM Software Development Platform.

■ **The Benefit**
In its initial return on investment estimates, the company projected a 20 percent increase in efficiency and an ROI of 300 percent over a three year period. Several months

into the deployment, the company is confident that it will meet or exceed those estimates, and has already seen improvements in many areas, including improved alignment with business needs.

A leading health insurance company in the southeastern United States relies on its extensive software development group – which includes approximately 300 business and systems analysts, 400 developers, and 140 testers — to build and deliver systems that help the company to drive its strategies and fulfill its mission. In the past, the company's development teams used a variety of processes and disparate tools to build those systems. Over the years, many processes were used — including commercially available and homegrown waterfall methodologies. The company recognized an opportunity to improve operational efficiency and effectiveness by replacing the wide variety of processes and disparate point products with a consistent methodology supported by an integrated set of development tools.

Joshua Barnes, an independent consultant for the company, recalls, "Like many large organizations, we had a number of disjointed point solution tools, different methodologies, and methodologies that were not followed consistently. We recognized

that we really needed a single software development process — one that was built on best practices — and an integrated set of supporting tools. We wanted tools that were not only integrated with each other, but also tools that were going to support this process."

Process, Tools and Services Provide a Complete Solution

The company made the decision to adopt IBM Rational Unified Process, or RUP, and tools from the IBM Software Development Platform enterprise-wide. The decision was based in part on earlier successes with Rational tools and RUP principles on individual projects. For example, the company's analysts and developers are already using IBM Rational Rose® XDE™ Developer for model-driven development using the Unified Modeling Language (UML). "IBM Rational Rose and the Unified Modeling Language are already very well established here. That was one of the first tools to really catch on here," notes Barnes, who is now leading the implementation of RUP and IBM Rational tools at the company.

Another compelling factor in the decision was that the company saw IBM Rational as being able to provide a comprehensive solution that comprises a proven methodology,

integrated tools for the entire software development lifecycle, and professional training and consulting services. Barnes adds, "The goal was to increase organizational effectiveness and efficiency and establish an environment of consistent and repeatable processes that would raise the quality of our solutions, reduce time to market, and reduce solution development costs. That was really the catalyst to bring in RUP and the IBM Rational tools."

ROI Estimated at 300 Percent

Before finalizing the decision to adopt RUP and deploy IBM Rational tools, the company's IT leadership wanted a more quantitative analysis of the expected benefits, specifically the projected return on investment. Barnes recalls, "We met with people from virtually every role on the team — from directors to technicians and the spectrum in-between — to find out their pain points. At the same time we were looking at it from a business perspective, to see how the IBM Rational solution could address those pain points and add value."

The team identified four key areas in which IBM Rational tools and RUP would have the greatest immediate impact:

· the software development process

· requirements management

· testing, in particular automating the testing effort

· configuration and change management

Based on interviews with project managers, analysts, developers, and testers the group determined how much time was being spent currently in each of the nine disciplines, or workflows, of RUP. Barnes continues, "The next step was to perform some analysis to determine how much of a benefit we expected to get from utilizing best practices in RUP and combining that with the appropriate IBM Rational tool. We estimated approximately a 20 percent increase in efficiency, and those estimates were based on efficiency in actual projects." The team then took into account the percentage of projects the team expected to be able to use IBM Rational tools during the first year and for subsequent years, as well as total cost of ownership, including training and infrastructure expenses.

Barnes concludes "Taking all of that into consideration, we ended up with a projected 300 percent return on investment, which, I think is actually conservative."

According to Barnes, the ROI analysis provided extra assurance to the company's IT leaders. "It was one of the key factors that gave management the level of confidence to standardize on RUP as our software development process and to select the IBM Rational tools to support that process."

Moving Forward

Once the decision was made, the company began to work rapidly to implement IBM Rational Unified Processes and several IBM Rational tools. Recognizing that upper

management sponsorship and enterprise-level commitment would be vital to rapid adoption, the company created a Rational Enablement Office as an enterprise-level support organization. This group is responsible for executing an "implementation through execution" strategy on pilot projects using RUP and IBM Rational tools.

The second component of the implementation effort is the Development Environment Initiative (DEI). This group takes lessons learned during the pilot projects in various disciplines, assimilates them into a custom-tailored process, and instantiates them across the entire development organization.

In the first year, the team is focused on implementing IBM Rational RequisitePro® for requirements management; IBM Rational ClearQuest ®and IBM Rational ClearCase® for configuration and change management; and IBM Rational Robot, IBM Rational TestManager and IBM Rational Functional Tester for automated testing.

Barnes notes that this approach has significant benefits, "We really have a symbiotic relationship in which the enablement office's pilot projects are feeding the Development Environment Initiative's process owners. Those process owners are then taking it to areas in the organization that we have not yet run a pilot in. By the time we want to start a pilot project there, they

are going to benefit from the lessons learned in three key disciplines, and we are going to have a jump start on running that pilot."

From Domain Experts to Discipline Experts

Another major goal of these two groups is to increase flexibility in resource allocation between projects. The company's development organization has been divided into independent software groups or "factories". Each of these groups focuses on a specific domain, such as Customer Relationship Management (CRM), Enterprise Resource Planning (ERP) and Supply Chain Management (SCM). Historically, each group used their own development process and tools, which made it difficult to reallocate developers from one group to another as needed.

A director within the company's IT Strategy and Business Services group also serves as technical and business lead of the Development Environment Initiative. This director reports that RUP and IBM Rational tools are helping DEI develop a more flexible and responsive development organization. He explains, "What we are doing on the pilot projects is using RUP and Rational tools — all the way from beginning to end — vertically within our software factories. Then, from a DEI perspective, we are taking various disciplines and instantiating them into the other factories, to establish a level of consistency and repeatability. For example, in the requirements discipline we have agreed on the style of use cases we are going to use."

He continues, "In our organization, the CRM factory would handle requirements one way, and the SCM factory would do them another way. As a result the process and the people are not interchangeable. We are in the process of taking people who are domain experts in ERP for example and turning them into discipline experts in requirements management and other disciplines. This gives us greater freedom to move people around to other projects that need their help."

Customizing RUP

From the start, the DEI planned to gather feedback from pilot projects and then use that feedback to customize RUP to the specific needs of the company. On the pilot projects, however, the team decided to intentionally limit any changes to the process until they had gained better insight into the impact of modifications. The DEI's technical lead recalls, "We made a conscious decision to use RUP out of the box as much as possible. We wanted to get some experience and understanding, and not just jump in and start making modifications."

Now that the team has accumulated more experience, they are ready to start creating a RUP plug-in using Rational Process Workbench® and configuring the process using RUP Builder. The plug-in will contain not only company-specific guidance, but also samples of artifacts, such as use cases and test plans, to provide concrete examples of style

and content. "We have arrived at a point where we have enough content, lessons learned, and a level of maturity within the organization that we can start building a thin plug-in for RUP. And instead of providing just a template, we can go a step further. We can provide actual samples from a particular environment and particular domain for our team to really see what is expected and what they are going to be accountable for," says Barnes.

Training and Mentoring Play a Key Role

Training and consulting services from IBM Rational have helped accelerate the adoption of new processes and tools at the company. The team has developed a strategy that combines just-in-time on-site training with mentoring to provide ongoing knowledge transfer. Barnes explains, "We are using IBM Rational services extensively. They are our external mentors, and they are providing our on-site training. We are partnering company employees with IBM consultants, so that we can transfer knowledge to our team and develop our own set of mentors that are employed here in each of the disciplines. IBM really stepped up to help us with our implementation by providing some excellent mentors."

He adds, "The IBM consultants are able to tailor the training to the context of our domain. We conduct our on-site training in a just-in-time fashion, and then we put the analysts and developers right onto a project. So we combine training with mentoring immediately. The two go hand in hand."

Requirements Management and Software Configuration Management

On the initial pilot projects, the use of IBM Rational tools is already having a positive effect on efficiency and on the team's ability to implement the best practices of IBM Rational Unified Process.

IBM Rational RequisitePro has helped the team better manage requirements and project risk. Barnes reports, "In the past, requirements management here was no different from many other large organizations. Much of it was done manually with Excel spread sheets, PowerPoint presentations, e-mail, or huge 500-page requirements documents." With Rational RequisitePro the team can take advantage of the familiarity of Microsoft® Word to create and review requirements documents, and at the same time benefit from all the power of a database to sort, prioritize and track requirements, including custom attributes. "With all of the inherent functionality of Rational RequisitePro, we are gaining a lot of efficiency. Our project manager is also managing risk using Rational RequisitePro and a custom attribute type," says Barnes.

Like requirements management, much of the company's defect tracking was based on Excel spreadsheets and manual procedures. Now the team is using IBM Rational ClearQuest to more effectively track defects, manage enhancement requests, assign tasks and monitor project progress. "Our project manager relies heavily on Rational ClearQuest. Simply using Rational ClearQuest to replace our internally developed issue tracking tool was key for us," Barnes adds.

Using IBM Rational ClearQuest together with IBM Rational ClearCase for software artifact management provides the development organization with a comprehensive software configuration management solution. Together, Rational ClearQuest and Rational ClearCase support Unified Change Management – an out-of-the-box, activities-based process for managing change. The company's developers are leveraging the integration between Rational ClearCase and the team's chosen IDE (Integrated Development Environment), IBM Rational Application Developer for WebSphere® Software, to streamline the day-to-day activities of developers as they check-in and check-out code and other artifacts.

Improving Quality, Traceability, and Reuse

IBM Rational tools for automated testing and test management played a big part in the company's ROI estimate. Using IBM Rational TestManager, IBM Rational Robot and IBM Rational Functional Tester in an iterative process helps the company's quality assurance team find and address problems earlier as they automate many manual testing tasks. "Quality was one of the larger categories of our ROI calculation. We looked at all facets of quality, including a reduction in maintenance costs, less defects being pushed out into production, and test automation. We had been depending heavily on manual testing for most functional testing, regression testing, environmental testing, and so on. We have been able to prove with one of the testing labs the benefits that the automated tools are providing us," says Barnes.

By linking requirements in Rational RequisitePro to individual test cases in Rational TestManager, the team can establish traceability throughout development and better assess the impact of change. Barnes explains, "We can look at the traceability from a requirement all the way down to a test case in Rational TestManager and clearly see the impacts that a change will have. For instance, we caught a rather large change in a requirement on one of our pilot projects. At first it looked like a pretty big issue, but we caught it early on so it was much less expensive to address. In the past with our waterfall methodology, we would not have found it until user acceptance testing where it would have been exponentially more expensive to fix."

The company sees the reuse of artifacts as another key benefit of RUP and integrated development tools. "Increasing reuse is definitely a value proposition for us. We are looking at reusing patterns, components, use cases, some of our non-functional requirements, and the regression suite of tests that we are building. We are

even looking to 'reuse' the knowledge within our resources, through our mentoring programs," notes Barnes.

A Unique Approach and an Overwhelmingly Positive Response

Both Barnes and the DEI technical lead are confident that the development teams will meet or exceed the projected return on investment with RUP and IBM Rational development tools. Support from business leadership has been a key to implementing the organization's strategic decision to deploy IBM Rational solutions. According to the technical lead, that support and the company's approach are helping to bring about a culture change in the development organization. "I think the approach that we have taken in partnering the RUP Enablement Office with Development Environment Initiative is unique. We understand that what we are doing is really bringing to the table a cultural change."

Barnes adds that early feedback from the company's business users is adding to the team's confidence. He concludes, "The response from the business has been overwhelmingly positive. For the first time they feel that they are driving an IT project and that they are able to see what we are going to deliver to them. We are able to make mid-course corrections on new requirements that they could not have imagined until they had seen part of the working executable. They too have a high level of confidence with what

they are seeing in these early iterations. They know the solution we deliver is going to meet their needs and we are exceeding their expectations."