

Industry:
Banking

Organization:
Bank of New Zealand

Description:
As one of New Zealand's leading financial services providers, Bank of New Zealand is dedicated to offering tailored financial solutions to assist its customers in achieving their financial goals with a comprehensive range of quality banking and financial services.

Business Problem:
Bank of New Zealand was enhancing business-critical Internet Banking software in a short timeframe and needed a proven development process backed by effective tools and professional services.

Solution:
Rational Solution:
Rational ClearCase
Rational ClearQuest
Rational RequisitePro
Rational Robot
Rational Rose
Rational Services
Rational Suite AnalystStudio
Rational TeamTest
Rational TestManager
Rational Unified Process
Rational University

Key Benefits:
Delivered a highly visible, customer-facing Internet Banking application on a tight schedule and within budget.
Established a sound, repeatable software development process supported by proven development tools.
Built a virtually defect-free application, resulting in a significant reduction in calls to the customer support center.

Rational software

Bank of New Zealand Develops Internet Banking and a Platform for the Future with Rational Unified Process, Rational Tools and Services

As one of New Zealand's leading financial services providers, Bank of New Zealand is dedicated to offering tailored financial solutions to assist its customers in achieving their financial goals. From the bank's foundation in the gold rush days of 1861, to being the first bank in the world to open for business in the new millennium, Bank of New Zealand has been committed to providing individuals and businesses with a comprehensive range of quality banking and financial services. As part of that commitment to quality and technical excellence, Bank of New Zealand has adopted the Rational Unified Process® – supported by Rational development tools and professional services – for their Internet platform software development projects.

Recently, Bank of New Zealand was looking to expand and enhance its Internet Banking application, and decided to replace existing outsourced software with a solution that they could develop, maintain and expand in-house. The project, sponsored by Bank of New Zealand's Managing Director, was critical to the bank's business plan; and as such, it needed to be delivered in a short timeframe. The project team had two principal goals. In addition to delivering a highly visible, customer-facing Internet Banking application on a tight schedule, the team was to establish a sound, repeatable software development process supported by proven development tools. The bank's objective was to implement a combination of methodology and tools that would augment their core development competencies for years to come.

For Bank of New Zealand's development team, Rational Software® was the obvious choice because Rational offers a comprehensive solution that combines tools, process and professional services. The team started by implementing key components of the Rational Unified Process, a proven methodology for software development based on best practices of software engineering. As the project progressed, the team gradually extended its use of the Rational Unified Process and

deployed a wide range of Rational development tools, including Rational® RequisitePro® for requirements management, Rational Rose® for visual modeling, Rational® ClearCase® for asset management, Rational® ClearQuest® for defect tracking, and Rational TeamTest for functional and performance testing. Throughout the project, Bank of New Zealand took advantage of Rational University training courses and Rational Professional Services to ensure efficient deployment of the new process and tools. The result was a striking success. The Internet Banking application was delivered to plan and was of such high quality that the bank has seen a dramatic decrease in support calls to its customer contact center. In fact, Bank of New Zealand now receives unsolicited compliments from customers in appreciation of the new service. Plus the bank's development team, which was already both talented and dedicated, now has the tools, process and expertise to build on the success of this project and further enhance the bank's competitive advantage.

According to Bruce Lake, Technology Project Director, the project was not just a success, but also a joy, "I've been with Bank of New Zealand for quite a long time and I've been involved in a number of large projects. I'd have to say this is by far the most successful and enjoyable project to be involved with. Because of the pragmatic way we implemented Rational tools, and the processes and disciplines around them, it was just such a pleasure to be a part of."

Iterative Development Process Yields Benefits

According to Martin Smith, Business Project Director, establishing a proven process was a key requirement given the project's aggressive schedule and its high visibility within Bank of



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– Martin Smith
Project Director

New Zealand. He recalls, "The Internet Banking project was the number one project within the bank at the time. Our Managing Director sponsored it, so it had a very high profile. As a result there were some expectations around the delivery date for the project. So underlying everything was a need to ensure we had a really robust process in place that would assist us in achieving those critical time constraints. That is why we looked to the Rational Unified Process. With that understanding, we also used Rational consultancy resources to help us build the process to make our first project with Rational a success. I think the key thing is that the bank chose to make a commitment to the Rational Unified Process and invest in the resources necessary to make a key timeframe. We used the capabilities and core competencies that existed within Bank of New Zealand, and augmented them with the Rational methodology and the Rational toolset to develop a solution in-house."

At Bank of New Zealand, managing risk during the development lifecycle is recognized as the key to predictable software development. Through iterative development, as advocated by the Rational Unified Process, Bank of New Zealand was able to minimize risk throughout the project. Greg McNeill, Process Engineer adds, "The way the Rational Unified Process is set up, you develop projects iteratively to actively manage risk. We agreed with those principles and the other key principles within the Rational Unified Process. In many respects we took a pragmatic approach to the process and we cut down what you typically would do if you were taking a more pure approach. But we stuck to the guiding principles and used iterations, based on developing the riskiest functions first."

From the outset the project faced a number of technical risks. The team had to ensure that the various components and technologies that made up their application infrastructure would work together. The project included both Java and TCL code as well as third-party components from Vignette. "We had never tried the whole end-to-end architecture before," McNeill explains. "We believed it would work but we'd never proven it before. To mitigate those risks we first developed a prototype as a proof of concept; but it was a prototype that could be really used. In this particular application, logging on and getting your account balance is the first key activity that most customers would do. So we developed that function first

to see if we could get the technology to work together, and also prove that our developers could build the application in a robust manner."

The delivery of a tested subset of the overall application and the iterative development process offered a number of other advantages as well. Project Director Martin Smith notes, "From a business and stakeholder perspective, one of the key things that iterative development provided was very early visibility to the business on what was actually being developed. Once the login function was developed, business stakeholders could actually see the application as it developed. Instead of talking about an executable piece of code, you could see it on the screen. That gave us a very strong buy-in right through every stage of the process because people could see what they were going to get. We just built on more functionality as we went, including account summaries, transaction history, fund transfers, bill payments, automatic payments and messaging. And if we needed any more resources or additional support along the way, the proven track record made that easier for us to achieve."

Requirements Management, Visual Modeling and Software Configuration Management

While Smith and Bank of New Zealand's Technology team recognize the importance of having a proven process in place, they also realize the need for effective tools that support the process throughout development. The business analysts at Bank of New Zealand relied on Rational Suite® AnalystStudio® – and Rational RequisitePro in particular – to help them record project requirements. Because the Internet Banking application under development was a replacement for an existing system, many of the requirements were already fairly well defined. Still, the business analyst team developed use cases and requirements using formal walkthrough processes and then loaded final requirements into Rational RequisitePro to make absolutely certain that everyone on the team knew exactly what the scope of the project was. "Because the project already had some history, a lot of the architecture had been defined before we even kicked off. But we went through a validation process; and all of the requirement artifacts were created in RequisitePro. We then went through a series of workshops, including some use case realizations to validate the developers' understanding of what was required," McNeill recalls.

After the workshops, the development team was able to model the main flows of the application in Rational Rose to confirm their understanding, before they started to code. Rational Rose provides developers with a powerful tool for visual modeling, component-based development, and round-trip engineering, and offers unmatched support for the Unified Modeling Language (UML).

As the project progressed, Bank of New Zealand developers used Rational ClearCase for version control of their Java source code, and the entire team used Rational ClearQuest to track defects. During functional testing, testers were able to log defects into Rational ClearQuest directly from test results generated by Rational testing tools.

The combination of the new development role of Process Engineer, the Rational Unified Process and Rational tools also helped improve team communication across the board, Smith says. "Everyone was talking the same language, both on the business side and the technical side. We had a common process that everyone shared - internally, business and systems people and externally with Rational consultants. Everyone knew that standard and could work with it, so the communication was really clear. When we said we were using the Rational process, or Rational ClearCase, for example, everyone knew exactly what we meant by that."

Ensuring Quality and Performance

As with any financial services software, the quality standards for Bank of New Zealand's Internet Banking application were very high. The development team made quality a priority early on in the development process, and performed functional tests with Rational® TeamTest after every iteration of the project. Rational TeamTest includes Rational® Robot for automated functional testing, and Rational TestManager for managing test activities. Gavin Horner, Technology Project Manager explains, "As we went through each iteration we would use Rational Robot to run the functional tests for that iteration. Then we would regression test using Rational Robot with everything else that had been done previously. So we continually built up a set of regression tests as we went. By the time we were ready to deploy into production there was really no question about the quality of what had been produced".

As a result, Bank of New Zealand was able to release a virtually defect-free application. We just don't have any significant defects," Horner adds. "When we went live we had just three little cosmetic problems that were so small they were not even worth touching. And subsequently we've had next to nothing. In fact, we get unsolicited e-mails from customers complimenting us on the quality of the product. There's no better endorsement really than that. People are often quick to criticize but not to extend their appreciation. So we're really, really happy about that. The level of technical calls to our support staff has plummeted because customers have very few issues at all - most calls being enquiries about future service enhancements."

For any Web-based software, performance is a key concern. In addition to knowing that their application would function properly, Bank of New Zealand needed to know that it would continue to function under real-world user loads. As soon as enough functionality had been developed, the bank's testers began performance testing using Rational TeamTest. "We wanted to understand whether or not the software would work under pressure at high loads. So we developed the transaction history function, which is the function that a lot of our customers will use, and one that can generate quite a lot of traffic because of the amount of data that could potentially come back to the customer. As soon as that was ready, very early in the project, we began stress testing. We wanted to understand whether it was going to work under load and we also wanted to test our hardware architecture, to help us understand what hardware requirements we were going to have," Bruce Lake, Technology Project Director says. "As part of the proof of concept, we tested up to 200 concurrent users. That gave us enough information to actually validate whether it was going to be sufficient. Further into the project, at the end of the formal stress and performance stage, we were testing up to 1,000 concurrent users." In addition to verifying performance, Lake reports, the testing team was also able to pinpoint and eliminate hardware and network issues using performance tests.

Coming Up to Speed Fast with Rational Professional Services

Given the time constraints faced by the project team, Bank of New Zealand could not afford any mistakes. With the whole team

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– Gavin Horner
Technology Project
Manager

using a new process and new tools, Bank of New Zealand decided to leverage the expertise offered by Rational Professional Services, primarily in the form of on-site consultancy and toolset mentoring. Bank of New Zealand also adopted the role of Process Engineer to act as a full time mentor to both project management and team members in the use of the Rational Unified Process. This was seen as a critical role and was widely acknowledged as being one of the key success factors for the Internet Banking project.

"The training was divided into two areas, process and tools. All of our business analysts took Rational University training courses, including Rational Unified Process Fundamentals and Requirements Management with Use Cases. In addition, all business analysts and key developers, testers, and project management took Fundamentals of Rational RequisitePro, as well. We also sent a few people to Fundamentals of Rational Rose and Principles of Managing Iterative Development. The training was good, and we knew that we would need it, so it was a part of the budget from the start," Lake continues. In hindsight, Lake feels that more focused training earlier in the project life cycle would have further benefited the project team.

Bank of New Zealand also brought in Rational consultants to their development offices in Wellington, to help them set up the development environment and provide hands-on mentoring tailored to their specific needs. In fact, Lake feels that having responsive, committed on-the-ground support from Rational consultants for advice and coaching was one of the most important benefits the bank realized. Lake was particularly impressed by a tool upgrade that took place during the project. He explains, "During the last stages of the project, we had to upgrade our Rational tools and we also had an upgrade to the server that the tools were running on. The upgrade was absolutely critical to the project because until that point we had some of our team working on a different version of the tools from others. The developers couldn't actually see the version of Rational ClearQuest that the testers were using. You could argue that that wasn't the end of the earth, but it was making a difference to the efficiency and the streamlining of the process.

Lake continues, "One weekend, after some pre-planning, we had two Rational consultants come in and working with our Rational tools support people, we did a complete upgrade of the server and a complete upgrade of all of the software including the client workstations. This was a really impressive effort and for everyone to come back in on Monday and have everything upgraded was just amazing."

Not A Typical First Project

As Team Leader Business Management, Greg du Bern takes pride in the fact that the project was delivered on time and with exceptionally high quality, especially since it was the team's first project with Rational tools and the Rational Unified Process. "If you read the textbooks, or ask a Rational consultant what they would recommend as a pilot project, they would not have picked this one. You would not choose the most business critical project with the highest visibility within the organization. We hadn't developed an Internet Banking application before, and given all the risks and the fact that we were using Rational tools for the first time with a new development environment, I think it was a major achievement that this project came in on time and on budget.

Smith adds, "If you look at what the bank was trying to achieve, it was particularly challenging. From one perspective it was technically challenging just building the application. But as well, we were deploying Rational tools, the Rational Unified Process and an environment that were all new to us. It was a success and we now have a platform to build upon that will give us competitive advantage going forward." That is proof of the quality of the people that Bank of New Zealand chose to use on the project, the commitment of the bank to the project, and the effectiveness of the Rational Unified Process, Rational tools and Rational Professional Services.

And finally, says Rachel Beath, Online Solutions Development Manager for Bank of New Zealand, "We are now reaping the benefits from the Rational process and tools established in this project, as we move into the next phase of Internet Banking development. There are refinements that we are making to the process that will increase the benefits further, and will enable us to deploy across other Web development initiatives."

About Rational

Rational provides a software development platform that improves the speed, quality, and predictability of software projects. This integrated, full life-cycle solution combines software engineering best practices, market-leading tools, and professional services. Ninety-six of the Fortune 100 rely on Rational tools and services to build better software, faster. This open platform is extended by partners who provide more than 500 complementary products and services.

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