

Industry:

Manufacturing

Organization:

Schneider Automation
www.schneiderautomation.com

Description:

A division of Schneider Electric, Schneider Automation is a leading manufacturer and worldwide marketer of high technology Programmable Logic Controllers (PLC's) and Motion Control Systems and software frameworks used in process automation and Industrial Control. Schneider Automation has development centers in North Andover, MA, USA; Sophia Antipolis, France; Seyssinet, France; and Seligenstadt, Germany.

Business Problem:

With a development team that spans three countries and two continents, Schneider Automation needed a software management solution that effectively supports geographically distributed development projects.

Rational Solution:

Rational ClearCase®
Rational ClearCase MultiSite®
Rational ClearQuest®
Rational RequisitePro®
Rational Rose®

Key Benefits:

Effectively managed parallel development efforts that spanned geographically distributed locations

Improved overall software quality with increased ability to access and prioritize defects

Accelerated development lifecycles by improving communication between development and test teams

Implemented a standardized, global process with a shared set of scalable, integrated tools

Improved efficiency and resource allocation with accurate quality an project management metrics

Rational and Schneider Automation

Schneider Automation Unites Global Development Efforts with Rational ClearCase and Rational ClearQuest

In today's global economy, more and more software development teams are finding that the developer in the next cubicle is actually a developer on another continent. As companies merge or acquire new businesses, it is not uncommon for the combined development organizations to span international borders and even oceans. Often the team is fragmented further as companies tap into distant sources of development talent for contractors. To be efficient and ultimately successful, these teams must overcome significant challenges.

For the past four years, Schneider Automation has been using Rational® ClearCase® and Rational ClearQuest® to capitalize on the benefits of having a diverse and talented development team and to meet the challenges of managing a widely distributed development project. A division of Schneider Electric, Schneider Automation is a leading manufacturer and worldwide marketer of high technology Programmable Logic Controllers (PLC's) and Motion Control Systems and software frameworks used in process automation and Industrial Control. With development centers in North Andover, MA, USA; Sophia Antipolis, France; Seyssinet, France; and Seligenstadt, Germany, Schneider Automation has a critical need for tools that effectively support geographically distributed development projects.

To fill this need, the Schneider Automation development team relies on Rational ClearCase and Rational ClearQuest. Rational ClearCase simplifies the process of change by providing teams with scalable and comprehensive version control, workspace management, process configurability, and build management. Rational ClearCase is complemented by Rational ClearQuest, a highly flexible and customizable defect and change tracking tool

that efficiently captures, tracks, and manages any type of change. Together, Rational ClearCase and Rational ClearQuest deliver a powerful, end-to-end software configuration management solution.

Jean-Luc Lauzely, Senior Software Engineer, Team Leader for Configuration Management Group, and Manfred Kirchner, Software Support Manager, Team Leader for the Defect Management Group, report that Rational tools have become an essential part of the software development process throughout Schneider Automation. "It would be impossible to develop our most important and largest projects – which span three countries, four internal sites, several external subcontractor sites, and include more than 300 developers and testers – without Rational ClearCase and ClearQuest," says J.L. Lauzely.

Choosing Rational

According to J.L. Lauzely, software development is a crucial part of Schneider Automation's success. "Our Automation product line is moving more and more towards software-oriented products. Schneider is evolving as a global company and we see software as increasingly important in this business and as a very high priority of our company now."

Our products control, monitor, protect, automate and supervise machines in industrial processes. About four years ago the company began a very large project that involves hardware, firmware and software, but primarily software. Before this project began, we recognized that we needed to create a global process based on standards with efficient tools.

Rational and Schneider Automation

The team at Schneider Automation started its search for those tools by compiling a list of requirements. Once that was done, J.L. Lauzely reports, Rational was the obvious choice.

"First, we narrowed the choices down to vendors that offer products to automate the development process as a core business. We also wanted a company that could provide a complete suite of tools, including software configuration management, software design, defect management, and process management as well. This was a key point in our selection process, to consider how well all the tools worked together as part of a complete package. Also any tools we selected had to have strong support for parallel development at multiple sites. We needed to manage parallel development effectively – to provide customer-specific targets, and to be able to re-use the same set of source for several projects. And finally, the tools had to be scalable for large development projects."

M. Kirchner adds, "We have both very small projects and very large multi-site projects. They have different needs, so we wanted an environment that supported both types of projects. Our most important challenge was to overcome the different histories and cultures that forces the organization to have a global standard."

J.L. Lauzely continues, "We evaluated four different options from a variety of vendors. After the requirements were clearly understood, the choice was clear. Selecting Rational ClearCase and Rational ClearQuest was an easy decision. Manfred and I were placed in charge of deploying both tools to create a complete software configuration management system and environment. We introduced Rational ClearCase and Rational ClearQuest for this large project, and now both the tools and the process that we implemented with them are used as a standard for our company. They are used for all new projects now.

Because their development team was spread across several distant locations, Schneider Automation also selected Rational ClearCase MultiSite® and plans to begin using Rational ClearQuest MultiSite in the near future.

Rational ClearCase MultiSite is the industry standard for remote team-based collaboration and has helped make parallel development practical for Schneider Automation. Rational ClearQuest MultiSite will complement Rational ClearCase MultiSite by leveraging the same proven technology to enable Schneider Automation to improve communication and to track defects and changes throughout the development lifecycle from their teams in Germany, France and the United States.

Compelling Rational ClearCase Benefits

Schneider Automation has realized tangible benefits from the use of Rational ClearCase and Rational ClearQuest, including those benefits that they expected and other advantages that they had not.

J.L. Lauzely notes, "Rational ClearCase helped us to avoid the pitfalls we experienced with our earlier tools. Previously we were unable to handle parallel development effectively; and parallel development is necessary to provide specific releases based on customer needs." The advanced branching and merging capabilities in Rational ClearCase facilitates incremental development, so Schneider Automation is able to develop three or more versions in parallel. While one version is in System Qualification, one is in Validation, and the third is the current code development version. Rational ClearCase allows Schneider Automation to manage all of this — plus client-specific versions — easily while helping to reduce build errors.

Unified Change Management (UCM) is an easy-to-adopt process for managing activities and artifacts across the software development lifecycle with Rational ClearCase and ClearQuest. "Also, Rational ClearCase and UCM are very good at helping you understand what you are doing and helping you formalize

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Configuration Management
Team Leader
Schneider Automation

your process, so that your process can be used consistently by your entire team," J.L. Lauzely continues. "For us, the use of a clearly documented out-of-the-box process is a major benefit of UCM. We found that with Rational ClearCase we could better formalize our developers' activity. This is a very valuable feature in ClearCase that defines what activities the developer is doing. This helped us establish a standard development process for all projects."

M. Kirchner notes that it was much easier to work with contractors after deploying Rational ClearCase, "Rational ClearCase also helped us include outside subcontractors in our environment. Some contractors work off site and some work on site." J.L. Lauzely agrees, "When they are on site, they apply the same process, and procedures as a regular developer here." Because they are using Rational ClearCase MultiSite, Schneider Automation can support a distributed developed team at multiple remote sites. Rational ClearCase MultiSite automatically replicates and synchronizes project data, providing local access to development artifacts. This allows Schneider Automation and their outside contractors to work on the same Rational ClearCase environment. Before deploying Rational ClearCase their development process was solely described in documents. Now Schneider Automation can provide contractors with not only paper documentation to describe the process but also templates – examples, process rules, and pre-defined architectures – to ensure that they follow the same process. J.L. Lauzely concludes, "Rational ClearCase helped us to make our process available as a tool; and it was very important for us to have this formal process in place. With Rational ClearCase, we were able to communicate and work together with new subcontractors very quickly."

Schneider Automation uses an incremental software development process that is very similar to the Rational Unified Process® (RUP) — a

web-enabled set of software engineering best practices that provide guidance to streamline a team's development activities. J.L. Lauzely notes, "We are working to customize RUP, one workflow after the other, according to our practices. Our goal is to create a "SUP" (Schneider Unified Process) matching our current process, and taking advantage of RUP richness. We see a big advantage in RUP to support deployment of process and practices."

Schneider Automation's developers appreciate Rational ClearCase. J.L. Lauzely notes, "We have several development environments: embedded, PC based, Web services, and we are using C++ and Java." Every developer and tester has fast and easy access to all development data in our multi-site environment using Rational tools. And our developers like the ability to access Rational ClearCase directly from Microsoft Visual Studio. The integration with Visual Studio is very important to them." M. Kirchner observes, "Using advanced ClearCase MultiSite features (automatic import, automatic error handling and notification on error) we succeed to ensure a 1 hour frequency for source vobs replication between our internal sites."

Improving Team Communication, Development Speed and Product Quality with Rational ClearQuest

M. Kirchner, who led the deployment of Rational ClearQuest, reports that Rational ClearQuest, like Rational ClearCase, helped Schneider Automation gain several significant competitive advantages. The connection between Rational ClearCase and Rational ClearQuest allows the team to track precisely which defect was in which version, what changes are in a release.

He explains, "The two major benefits that we received from deploying Rational ClearQuest are quality and speed. First of all, improving the quality of the product — with ClearQuest we are now better able to analyse and prioritize all the defects. As a result, we can more accurately

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Software Support Manager,
Team Leader for Defect
Management Group,
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ClearQuest helped us speed up the entire process between the reporting and closing of defects. Testers were better able to communicate exactly what the problem was and developers were able to reproduce those problems better. Testers are able to provide test results on one site, where developers may perform needed fixes on another site."

One of the biggest concerns J.L. Lauzely had was the high cost of program management. To help reduce overall costs, he wanted to detect any possible failures in the beginning of a project where they are typically easier to fix, not at the end.

Rational ClearQuest helped the Schneider Automation team create a process in order to be able to detect, analyze, and fix problems as early as possible in their incremental development process. Because Rational ClearQuest can be customized easily, the team can have a dedicated part of the process for the phases of development. This enabled developers to fix problems early in the project and shorten the overall development cycle.

"Rational ClearQuest provides not only metrics regarding quality of a release, but also accurate data for project management, which allows us to adapt and allocate resources to real needs." says J.L. Lauzely.

Most of the more than 400 Rational ClearQuest users at Schneider Automation use the Rational ClearQuest Web interface to access up-to-date project data. The Web interface makes Rational ClearQuest easier to deploy and easy for users to accept it faster. It is important that all the team members have access to the same information regarding the status of change requests and problem reports. The Rational ClearQuest Web interface allows everybody to have access to this information — and not only to the team inside the company, but also external subcontractors.

Using the ClearQuest Web interface, Schneider Automation's team can report and manage problems easily together.

Like the Web interface, the Rational ClearQuest GUI offers comprehensive querying, charting, and reporting capabilities that provide everyone on the Schneider Automation with an accurate assessment of project status.

Deploying Unified Change Management

Schneider Automation is in the early stages of deploying Unified Change Management (UCM), and J.L. Lauzely is enthusiastic about using UCM on future projects. "Our experience shows that we need to provide an integrated software configuration management solution for all our new projects. We have decided to move to UCM, and are currently running pilot projects with UCM. The first of these projects are in progress, and are doing well.

J.L. Lauzely also reports that less support has been required on UCM projects because the roles and the activities are well defined in the process. He adds, "We validated that UCM's process and roles are compliant with our CM policy. With activity based UCM, we expect better user acceptance, stronger process and also less support."

More Rational Tools

In addition to Rational ClearCase and Rational ClearQuest, Schneider Automation employs a wide variety of Rational tools with great success. "Schneider Automation has been using Rational tools for a long time. Our first product was Rational Rose®, which our architectural team uses for visual modeling. Of course, we version all of our Rose models with Rational ClearCase. The Rose models are part of the regular delivery of software components so they are versioned along with everything else," J.L. Lauzely explains.

"We are also using Rational RequisitePro® for requirements management on some projects, and we have plans to use it on many more projects. Manfred and I are convinced that we must push in this direction. We have already validated the integration between RequisitePro and ClearQuest; and we think the ability to track changes back to the original requirement will be very useful," continues J.L. Lauzely.

The testing team uses Rational TeamTest to ensure that the mission critical software developed by Schneider Automation meets their high standards for quality. M. Kirchner also has plans for automating the reporting of defects directly into Rational ClearQuest. "Very soon we will start using the integration between Rational TeamTest and ClearQuest, so any defects will be reported directly from TeamTest into the ClearQuest database," explains M. Kirchner.

By using a broad array of Rational development and testing tools, Schneider Automation benefits from synchronized product releases and a single point of contact for product support. They also leverage comprehensive, integrated tool support for the entire development lifecycle – from requirements and modeling, to software configuration management, testing and defect tracking – to increase efficiency and improve the repeatability of their development process.

Rational Professional Services Help Speed Implementation

When J.L. Lauzely and his team were getting started with the deployment of Rational ClearCase and ClearQuest, they took advantage of Rational Professional Services to help them hit the ground running. J.L. Lauzely made training mandatory for the software configuration team.

J.L. Lauzely has found that Rational consultants are a big help after initial deployment as well. He continues, "We have consultants come in for mentoring, to help us to deploy new versions, and every time we want to improve our configuration."

M. Kirchner is in full agreement, "The use of consulting services definitely helped to speed up deployment. We found it is better to rely on Rational's expertise to help our team learn the skills they need to use these tools. Consulting services for special proposals, like customizing or performance tuning also were a big help."

Working as a Single Global Team

With the help of Rational ClearCase and Rational ClearQuest, Schneider Automation's software configuration management team has united fragmented groups of developers into a cohesive, efficient development team. As a result, Schneider Automation and their customers have benefited from higher quality software, and faster releases.

J.L. Lauzely concludes, "Rational ClearCase, Rational ClearQuest, and the MultiSite add-ons allow us to work as a single global team. We rely on these tools to create and implement an accurate release process, to quickly respond to customer needs, to shorten development cycles with parallel development, to face the challenges of increasingly complex software, and to effectively manage the content of our releases. UCM, Rational ClearCase and Rational ClearQuest, together, have become indispensable for our development process."

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About Rational Software Corporation:

Rational Software 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. Founded in 1981, Rational is one of the world's largest software companies, with revenues of \$751.4 million in its twelve months ended December 31, 2001, and over 3,700 employees worldwide. Rational is a component of the Nasdaq-100 Index®. Additional information is available on the Internet at www.rational.com.

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