

Industry:
Hospitality/Service

Organization:
Choice Hotels

Description:
Choice Hotels International franchises more than 5,000 hotels, inns, all-suite hotels and resorts open and under development in 42 countries under the Comfort Inn, Comfort Suites, Quality, Clarion, Sleep, Rodeway Inn, Econo Lodge and MainStay Suites brands.

Business Problem:
Choice needed powerful defect tracking and requirements management tools to support their entire process. Also, they needed an effective automated testing tool to reduce regression test time.

Solution:
Rational ClearCase, Rational ClearQuest, Rational RequisitePro, Rational Rose, Rational Soda, Rational Suite AnalystStudio, Rational Suite TestStudio, Rational TeamTest, Rational Unified Process

Key Benefits:
Achieved a 1440% return on investment (ROI) on Rational Suite through increased developer productivity, QA staff productivity, and application availability

Saved approximately \$1 million through increased application and web availability as a result of higher quality releases

Ensured the integrity of its complex code base

Increased system up-time, improved customer satisfaction, and improved team coordination and project control

Rational software

Choice Hotels has No Reservations about Staying with Rational

Choice Hotels International is not your average hotel chain. Choice was recently named the number one lodging franchise chain in Entrepreneur Magazine's annual Franchise 500. As an organization, Choice franchises more than 5,000 hotels, inns, all-suite hotels and resorts open and under development in 42 countries under the Comfort Inn, Comfort Suites, Quality, Clarion, Sleep, Rodeway Inn, Econo Lodge and MainStay Suites brands. As if that were not enough to set them apart from their competition, Choice develops all of its software in-house using tools from Rational® Software. In an industry not typically associated with high-tech expertise, Choice has shunned third-party, prefabricated hotel management software. Instead, they have succeeded by assembling a highly talented team of analysts, developers and testers and arming them with Rational Suite® AnalystStudio® and Rational Suite TestStudio®.

Choice's success and continued growth is due, in no small part, to the efficiency of its development team. Choice relies on this team to deliver high-quality software, in ever-shrinking development cycles. And the team, in turn, relies on Rational Software to do just that. The benefits of developing with Rational tools go right to Choice's bottom line. Choice recently measured the return on investment (ROI) from Rational Suite at a remarkable 1440%. Essentially, the gains that Choice recognized in developer productivity, QA staff productivity, and application availability have outweighed the costs of their Rational tools by more than fourteen to one.

In addition to the 1440% ROI, Rational has helped Choice by increasing software quality, accelerating development, and improving their business in a variety of ways, including: increased developer and tester productivity, increased application availability, increased

system up-time, improved customer satisfaction, and improved team coordination and project control.

For Chad Mason, Manager of Quality Assurance for Choice Hotels, it is easy to identify the most important benefits. "First, Rational tools have dramatically reduced the time required to regression test applications. They have helped us establish a repeatable process for gathering requests and generating requirements, and enabled us to put a mechanism in place to follow all of that through the development lifecycle. As a result we've gained much more confidence — even bordering on arrogance — in the products we release. We know we're good, we know our process is sound and we know we're going to put out a good product."

Chad adds, "Rational's tools have enabled us to put a process in place that has reduced development and testing time, created higher quality releases, and afforded us the opportunity to track defects, requests and requirements more effectively. Rational gives us the tools to do what we want to do, to do it well, and to do it easily."

No More Sleepless Nights

Chad has been with Choice for over nine years. In that time he has helped the company evolve its software from DOS-based applications, through client-server and GUI applications, to today's Java- and Web-based software.

In the early days of Choice's development efforts Chad remembers the development process as less than bulletproof. "At the very beginning we didn't have a full quality assurance department. Also, we had no central point to store defects and enhancement information. We needed a good defect tracking tool to make sure that everything was



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recorded and documented so we could have that information moving forward.” Choice selected Rational ClearQuest® — Rational’s highly flexible defect tracking and change management tool and a key component of Rational Suite AnalystStudio — and the situation began improving immediately. “Before we started using Rational ClearQuest we were tracking defects with Word documents and email messages. Now we have everyone going through one central point for enhancement requests and defect tracking and we know that everything is fully documented. We have a better handle on the state of our projects. It is working out very well for us,” Chad notes.

Scott Williams, manager of process automation for Choice, agrees, “The Rational ClearQuest tool has allowed us, for the first time, to bring a formal process into place. We now have a central location for our users to submit enhancement requests via the ClearQuest Web interface. That has, in fact, allowed us to open up that tool directly to our 5000 hotels, which has sped up our development process. The tool has also allowed us integration with the other Rational products so that we can tie a defect or enhancement request directly to a requirement. Additionally, it has extensive querying capabilities and reporting capabilities that we are taking full advantage of.”

Chad reports that Rational ClearQuest and Rational ClearQuest Web are the most-used Rational tools in the company, both at the start of projects and throughout the development lifecycle, “I can go in at any point in the project and ask my test team, ‘Where do we stand?’ With Rational ClearQuest they can tell me immediately how many requirements have been tested, and how many are left to test. I can also use ClearQuest to determine how many critical defects exist at any time. Our directors need to know that information to plan effectively and assess the impact on release schedules.”

A Week’s Worth of Testing in One Day

Over time, the complexity and the number of applications that Choice developed continued to grow. “As things progressed it became clear that we needed an automated testing solution as well. We support so many applications that it just made sense to start automating some of the repetitive tasks. We started researching automated testing tools. Because we were already using Rational ClearQuest and had success with it, Rational Robot was an easy decision,” Chad reports. Rational Suite TestStudio includes Rational Robot for automated functional testing and regression testing. In addition to helping choice ensure the quality of its software, Rational Robot has saved both time and money, and has played a big part in Rational Suite’s considerable ROI for Choice. Chad continues, “As an example, Rational Robot has reduced test time for regression tests on one of our applications from one week to less than one day. And the one day isn’t even a full eight hours, because the tester can fire off the tests in the morning and come back to verify the results later.”

Chad’s team includes about 12 testers and 5 process engineers. Together they are responsible for ensuring the quality of all the software development by Choice’s approximately 70 developers. Choice develops and tests a wide range of applications including:

- Property management applications – used at individual franchises for checking guests in and out, housekeeping, and all of the financials
- Reservations Systems – used by Choice’s reservations agents
- Guest Relations – to handle customer service issues
- Choice Privileges – Choice’s frequent traveler program
- Choice’s full-service public Web site (<http://www.choice-hotels.com>) used by customers to research hotel locations, check amenities and make or change reservations
- An extensive intranet used by in-house employees, field employees and hotel owners themselves

"Our quality assurance department supports everything that the company builds, and all of our software is coded in-house — we don't buy anything off the shelf. There are about twenty different applications and projects that we are responsible for testing at any given time. We have applications that are written in a myriad of languages — PowerBuilder, Delphi, Visual C++, Java, XML and HTML — and we haven't found anything that Robot hasn't been able to handle," Chad says.

From Requests to Requirements to Tests

There is no wasted effort by Choice's development team, because everyone on the team knows exactly what the project requirements are at all times. The team uses Rational RequisitePro®, the market-leading requirements management solution, to create and maintain requirements throughout development and to track them all the way through to the project's completion. Chad explains the process, "One of the functions of our process management department is to take the requests gathered in Rational ClearQuest from the various user communities and generate requirements from them in Rational RequisitePro®. We then go through a 'vision document' process — to establish a vision for the release. At this point there are no dates or real specifics, we just determine what the release is going to be. Next the formal requirements are written — technical requirements and user requirements. And the development staff writes their software requirements. All of this is done in Rational RequisitePro. Then my testers take all that information, mainly the user requirements, and they generate test requirements also using RequisitePro. The test requirements are put in a formal document that we called a 'test strategy'. This is a kind of test plan that addresses resources, platforms, what is going to be tested, what is going to be automated, what is going to be tested manually and so on."

With Rational ClearQuest, Rational RequisitePro, Rational Robot and other Rational tools, Choice has established a full lifecycle process — from enhancement requests and defect reports, to requirements, test plan and test results — which has significantly increased the productivity of Choice's development team while improving quality and speeding

development. "Before we had the formal requirements process, we would get a release to QA, and we would sometimes not have a very good idea of what features were in it or how it should be tested. With Rational, we've been able to improve the quality of our releases because now we know what is in each and every release, and we know exactly what to test. And we can test it faster because we're not worrying about areas of the application that weren't even touched," Chad continues. "There is a significant time savings from the development staff point of view as well. In the past they were just told something like 'Implement guest privileges functionality into your application', and they had to assume what that meant. Now with formal requirements, it is easy for them to go through and say 'I need to put this on this page, it has to interact with that process. This is the deliverable. This is the kind of data it has to accept.' We've seen an increase in productivity every year. Whereas in the past a developer may have spent 50% of the time coding and 50% figuring out what they had to do, now our developers can spend 80% or more of their time coding."

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Automated Testing — The Rest of the Story

Choice uses Rational Robot for all of its automated functional testing. Rational Robot is an award-winning testing tool that builds test scripts by recording user activity (such as keystrokes and mouse clicks) as well as the properties of display elements (like buttons, controls, Web pages). Testers either record or write Robot scripts and then play them back for regression testing and functional testing of their applications. Robot records its tests in an extensive, BASIC-like scripting language. Chad is particularly proud of his team and their ability to use Robot to its fullest capabilities. Chad boasts, "I've talked with Robot users around the country and around the world, and I would say the people I have using Robot are some of the best out there, and I am so fortunate for that. What our team has done is we have developed a front end that we use for Robot. Rational Robot's language is very powerful and easy to use. We wanted to make it easier for our people that have no programming experience, so we implemented a data-driven engine for Robot that enables testers to create reusable scripts, even if they have absolutely no programming experience. To make a script you use a GUI that we've written and a map of the application that you'll be testing. You select the page you want to be in, and then the action you want to perform on it — type text into it, click on it, right-click on it, or verify some property. You create a series of steps; those steps turn into tests, which turn into suites. The flexibility of Robot's scripting language has saved us time and reduced costs because it enabled us to create our own front-end which we can use us to develop tests with personnel that have no programming or test development experience."

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The programmers on Chad's team also benefited from the simplicity of Rational's scripting language, which makes it easy to learn.

Chad continues, "With Rational Robot, it is much easier to get someone up and running than other functional testing tools. Rational's BASIC-based language is much more intuitive — whether someone has programming language or not. That alone allowed us to get a jump-start and save time. I can't even estimate how much time we've saved, because I don't have any idea how much longer it would have taken with another tool. I do know that we're very comfortable with Rational Robot. We have what I consider to be a short learning curve, and we're confident that Robot is finding any problems that may crop up, so we're very happy with the product."

Taking a Load Off By Putting a Load On

As Choice's software evolved from client/server applications with a GUI front-end to Web-based applications with a Web-browser front-end, the need for effective load testing became more and more evident. Choice needed to know how their applications would perform under heavy user loads, and they needed to know where and how to allocate system resources to improve performance. Once again, Chad and his team turned to Rational Suite TestStudio, this time to ensure that the applications they released not only functioned properly, but continued to function properly under realistic workloads. Chad explains, "We started using the load testing capabilities of Rational Suite TestStudio about two years ago. For our load tests we used the built-in Virtual User recorder to create scripts. Converting scripts from single user to multi-user was straightforward. We created datapools and workload schedules graphically. For example, in one schedule half the virtual users were browsing around, the other half were using certain parts of the application. And when I wanted to see if I could kill our app, I would force all the virtual users into performing the same action — we were never able to kill it though. We feel the tests we've created are realistic, and I can simulate heavy loads by having many people performing one action at one time."

Although Choice's current load testing process is not as formal as their functional testing process, plans are under way to create a suite of load tests that will run with each and every regression test. Already their performance testing has paid off in a number of ways. Chad and his team used Rational Suite TestStudio to analyze the comprehensive results from their load tests and pinpointed system resource limitations that were slowing performance. "Rational Suite TestStudio has helped us improve the quality of our applications because it has identified bottlenecks — for example, some hardware related network issues that we alleviated — allowing us to take the corrective action before they are released into production."

In the years that Choice has been using Rational Suite TestStudio, system up-time has increased each year, even as the volume of users and the complexity of their applications has increased. Over that same period Web site revenues tripled, and the company estimates that it saved close to \$1 million through increased application and Web availability as a result of higher quality releases. Chad concludes, "In the past, when we put application into production we just had to hope it would meet standards under a given load. Now, with Rational Suite TestStudio we can guarantee that it will meet standards before it is released."

A Quick Spin Through the Lifecycle

Rational tools support every phase of the development lifecycle. At Choice, the development and QA teams have been using Rational ClearQuest, Rational RequisitePro and Rational Robot with great success for years. Gradually, as needs arose, Choice has deployed a wide range of Rational tools and resources including Rational Rose, Rational SoDA and the Rational Unified Process. "Rational got its start at Choice in QA, and slowly but surely I'm seeing it spread throughout the company as other people see the success we're having with the tools and they find out there's a tool that can help them too," Chad observes.

Developers at Choice are using Rational Rose®, the world's leading visual modeling tool, to model their applications and speed development. "I know the people that are using Rose are just very pleased with it," Chad reports. Also, the Choice team uses Rational SoDA® to automate the sometime tedious task of generating system documentation. Rational SoDA (Software Documentation Automation) creates reports and documentation directly from up-to-the-minute project information maintained by Rational tool databases. Chad reports, "We use SoDA to produce documentation from our requirements, test results, enhancement requests and more — a little bit of everything actually. It grabs information from all the Rational tools and combines it into one spot. No one really wants to spend time writing reports. SoDA takes care of it all for us, so we can work on other things."

The Rational Unified Process® (RUP®) is a customizable, online knowledge base of best practices for software development. Like Rational SoDA, Rational ClearQuest, and Rational RequisitePro, the Rational Unified Process is part of a platform of team unifying tools that provide a foundation for each member of the Rational Suite family. Choice has used the Rational Unified Process to guide their implementation of Rational tools. "It can be hard to take any given process and just plug it in. So we took bits and pieces from RUP and melded it into our own process." Scott and Chad agree that one of the biggest benefits that Choice has realized from the use of Rational tools and the Rational Unified Process is the ability to formalize their software develop process.

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Rational Services

Chad and his team have taken advantage of the training and expertise offered by Rational University classes. Rational University offers courses on software development methodologies such as requirements management, object-orientated analysis and design, functional and performance testing, change management, as well as product training courses covering the broad range of Rational products. Chad notes, "We've actually attended three Rational University courses. The first was on test automation, and that was when we first starting out with Rational Robot. After that we attended a class on Rational ClearQuest, which helped us customize ClearQuest for our particular needs. Most recently, I attended a 3-day class on load testing at Rational University with one of my engineers and that gave me everything I needed to get going."

Chad continues, "The classes gave us the insight that you can't necessarily get from documentation. It's a big help to sit down with experts and work through the creation of schema for Rational ClearQuest, or schedules for load testing and virtual user scripts, for example. We went to the courses with limited knowledge, and came back able to use the tools right away as they were meant to be used – which, of course, saves us time."

A Comfortable Place to Stay

According to both Scott and Chad, the key competitive advantage that Choice has gained by using Rational tools is the ability to implement a sound, repeatable software development process. Scott explains, "The biggest benefit that we've received from the Rational products is that they have allowed us as a company to formalize a process for software development. The tools integration between Rational RequisitePro, Rational ClearQuest, Rational Rose, and Rational Robot allows us to trace a software request from the user all the way through the development cycle, until that request becomes a reality and it's delivered in a software release. As a result, our development cycle is much quicker, much more smooth, and much more productive." And for Choice Hotels, that makes staying with Rational as comfortable as staying at a Choice hotel is for one of their customers.

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.

IBM Rational software

Dual Headquarters

18880 Homestead Road
Cupertino, CA 95014

20 Maguire Road
Lexington, MA 02421

Toll-free: (800) 728-1212
Web: www.ibm.com/rational

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