

**Industry:**  
Hardware

**Organization:**  
Équipe Communications  
Corporation

**Description:**  
Based in Acton, Massachusetts, Équipe Communications is focused on delivering products and solutions to carriers and service providers to enable new services and higher capacity networks to be deployed. The company's next generation products provide an Optical On-Ramp™ to the exploding optical network core to allow service providers to leverage their existing edge infrastructure and deploy revenue-generating services.

**Business Problem:**  
To build software for customers who demand high levels of scalability and quality, Équipe needed a scalable, reliable and easy-to use change management solution — including both tools and processes.

**Rational Solution:**  
Rational ClearCase  
Unified Change Management  
(UCM)

**Key Benefits:**  
Improved development speed by eliminating time-wasting activities and managing change at the activity level, not the file level

Ensured accurate, reliable builds

Significantly reduced training time and software setup time by deploying an intuitive, out-of-the box change management process

Reduced costs with a scalable software configuration management system that can grow as they grow

Quickly isolated integration issues and other problems in early stages of development.

**Rational** software

# Équipe Communications: Taking Optical Networks to the Edge with Rational ClearCase and UCM

## Here's a question:

Which of the following tasks is the most difficult?

- Developing quality software from the ground up on schedule
- Launching a successful start-up
- Building a product for carriers and service providers who demand unprecedented levels of scalability, availability and QoS (Quality of Service)

Now imagine that instead of just one, you had to do them all simultaneously. That is exactly the challenge the team at Équipe Communications™ faced a little more than a year ago. Based in Acton, Massachusetts, Équipe Communications Corporation is developing a Multi-layer Optical On-Ramp to the growing optical network core that allows telecommunications service providers to leverage their existing network edge infrastructure and offer new services. The company is committed to delivering products and solutions to enable these new services and facilitate deployment of higher capacity networks.

Équipe is the only start-up in its industry that is building a Multi-layer Optical On-Ramp specifically designed for facilities-based carriers, and they are using Rational® tools to build it. Équipe Communication's Évail™ system software is specifically designed to solve the software reliability and scalability problems that carrier networks are experiencing today and properly prepare carriers for tomorrow's networks.

Faced with the need to develop this complex, multi-platform, mission-critical core system — while simultaneously managing the time and budget constraints of a start-up — Équipe Communications turned to Rational ClearCase® and Unified Change Management process. Rational ClearCase is the market-leading software configuration management (SCM) system that helps automate the tasks required to write, release, and maintain high-quality software.

Unified Change Management (UCM) is a best practices change management process that can be used out-of-the-box to organize cross-functional software development teams and their work products. UCM is enabled by Rational ClearCase and Rational ClearQuest®, Rational's highly flexible defect and change tracking system.

With UCM, teams use activities and components to organize their work in a way that complements an iterative software development process. For Mike Mahler, a Principal Software Engineer at Équipe, that is an important point. Mahler explains, "Without UCM, engineers have to manage config specs (configuration specifications); they have to check with appropriate people to make sure they are right. While the nature of some projects requires this level of customization, others do not. Because UCM offers a process that can be used right out of the box, it is ideal for projects like ours that are very modular. Plus, we know that with Rational ClearCase we have the flexibility to make changes if we need to. UCM minimizes the chances of process errors, and ensures that we'll ship high quality and reproducible builds. The analogy I like to use is this: software development is like baking a cake. With UCM, engineers can follow a recipe, throw the cake in the oven and it comes out right."

On a project with millions of lines of code and almost 40 version object databases (VOBs), that is a both a crucial requirement and a big benefit. Mahler's assessment of Rational ClearCase and UCM is backed by his considerable experience with them in a variety of capacities. He has been using Rational ClearCase ever since the first version was released more than eight years ago.

## Recognizing False Economy

In addition to being a developer at Équipe, Mahler has responsibility for the software development environment. This could include the evaluation, procurement and implementation of the



development tools used by the engineering team. Today, almost 75% of the Équipe team is directly involved in software engineering and development. There are two main development efforts underway — one UNIX®-based, the other on Windows®. Clearly, multi-platform support was an issue in the decision making process that Équipe used to select an SCM solution.

The final decision, however, was not all that difficult. From the outset, the Équipe team knew that Rational ClearCase was exactly what they needed. Mahler explains, “Many of us came from companies that used Rational ClearCase. When I came here, I was happy to find out that Équipe had just recently selected Rational ClearCase, because I had used it before and it was very successful.”

Mahler firmly believes that Rational ClearCase will save Équipe time, money, and headaches as they continue to grow. “One of the reasons we chose ClearCase is that other competitive products don’t offer the ability to manage releases in an organized fashion. For example, many start-ups opt for using less robust systems such as open-source version control systems.” Mahler notes. “They don’t want to pay the money for a more complete SCM solution because they are under the gun to keep costs down and get those first rounds utilized the best they can. I think not going with ClearCase is pure false economy. You wind up attached to a product that does not have the ability to handle multiple releases — on multiple platforms — concurrently. Rational ClearCase and UCM is money well-spent for us.”

### **Improving Development Speed (and Quality)**

Mahler is certain that Rational ClearCase and UCM are helping the team develop faster — potentially up to six months faster than would be possible without UCM — because they eliminate time-wasting activities.

Mahler describes how UCM was employed at each stage as the project progressed, “We didn’t just turn on UCM and start shipping code. We’re a start-up and we had to make a product first. For about six months we just used UCM as a configuration specification manager. We let our engineers re-base and

deliver code whenever they wanted because it was all new development — everyone was working on code independently. And UCM worked very well in that respect — it is very adaptable that way.”

Mahler continues, “I can compare how we’re using UCM now, to how we used it at first. From that perspective, we went from measuring integration time in weeks to a day or two, from the time we knew whether something was wrong to tracking it down in the code.”

Integration issues and other problems are not uncommon in the early stages of development. Rational ClearCase helped Équipe’s engineers isolate the cause of these problems

quickly and saved time by helping the team ensure accurate, reliable builds from the start. Essentially, Rational ClearCase helped save time by improving quality. Mahler notes, “The real hidden savings is the reduction of instances where an engineer inadvertently generates a bad image, only to eventually find the problem was build related. The ability to point to a particular delivery, with a single set of files that have changed, is priceless. And the engineers can do it themselves; they don’t have to get the release engineer to research it.”

### **Improving Quality (and Development Speed)**

Here’s another question: How many times have you shipped a product and had a customer complain of a bug that was supposed to have been fixed? Mahler knows, from his experience at previous companies, the consequences and the causes of doing just that, and is using UCM to ensure that it does not happen at Équipe. He calls the phenomenon “bug creep” and adds, “Probably half the time it is caused by a bad build. Someone built the wrong code, or didn’t merge properly and reintroduced the bug. That is probably the biggest time waster — the engineer fixes a bug, they assume it is in the build and then they go crazy for a week trying to figure out why their fix didn’t work, when they know that it should.”

“With UCM, it is very difficult not to merge properly. It is also very difficult not to deliver something and have everybody see it. Developers don’t stay on a branch — the inte-

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gration branch concept is very clean with regards to getting feedback on a build. That feedback loop — which starts when QA comes back to engineering with bugs, which then have to be translated into what component each bug was in and what delivery may have caused it — has been reduced from days to hours with UCM," says Mahler. "In addition to simplifying merges, UCM gives us the ability to work with activities, and this level of abstraction is a tremendous benefit. For example, UCM can compare baselines and tell us exactly what's in a build — not just in terms of versions, but in terms of activities. With UCM we can instantly see the difference between tonight's build and last night's build are activities a, b, and c."

At Équipe, the quality of their software and the speed at which they can develop it are of paramount importance. Mahler remembers, "It came down to two main reasons why Équipe decided to go with Rational, and those are ease-of-use and quality. The ease-of-use saves us time, because new engineers can get going very quickly with UCM. Also, the increased quality of the code is critical because we are going after very large scale carriers — people that you can't make a mistake with or they will not come back to you as a customer."

### Easy to Learn, Simple to Use

For Équipe, one of the biggest benefits of using UCM has been the speed with which their team is able to start using it effectively. As Mahler states, "Even people with little or no Rational ClearCase experience can get up and running in one day. That means that the ramp-up time for engineers has really gone from weeks to hours." The quick learning curve with UCM has further accelerated development speed, reduced overall costs, and all but eliminated the need for lengthy training sessions. "One of the best features of UCM is the ability to get people up to speed without having to give them extensive training. We have people here who had never used ClearCase, and with UCM they can start using it productively almost immediately. That is a big win."

### Ramping Up with Rational e-development Services

Although Équipe did not need extensive training to use UCM, they have taken full advantage of Rational e-development services, including consultants. Mahler explains, "There is a certain amount of setup effort that saves a lot of time later on and we did use Rational customer support for that. Our education needs went from having to train many users, to having to train a few, and that's a big savings in cost and efficiency. Once one or two people understood what they needed to do, everyone else was able to follow along in a very quick fashion."

Similarly, for any questions that cropped-up along the way, Équipe has found Rational's support team to be very responsive. Mahler remembers, "I submitted a question late on a Friday night, and got the answer on Saturday. We're getting the support we need, and that is important. When we see the features that we requested show up in a future release it does a lot for our relationship."

### More Tools, More Success

In addition to Rational ClearCase, Rational ClearQuest and UCM, Équipe's software engineers are using Rational Rose® — the world's leading visual modeling tool — to drive their development process forward. Engineers at Équipe use Rational Rose to model their applications and databases, maintain accurate and up-to-date documentation of their application, and promote better understanding of the project by mapping their code objects to the underlying database tables. Like code and other artifacts, all of the models are baselined using Rational ClearCase, ensuring that corresponding versions of models and code remain synchronized throughout development.

In the future, Équipe plans to deploy Rational Purify® to help pinpoint run-time errors such as memory leaks and memory access errors. Rational Purify is so easy-to-use, it can easily be employed by developers each time they check in code, to make sure that their most recent changes have not introduced run-time errors.

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## **A Partner that Understands the Importance of Teamwork**

The Rational ClearCase product family, Rational ClearCase and UCM, is a collection of tools and resources designed to bring development teams together, to help them collaborate more effectively, and to help them develop better software in less time. It's not surprising that Équipe would find Rational's strong commitment to the team a perfect fit. "Équipe" is the French word for "Team". Teamwork is at the heart of everything that Équipe does. They work as a team. They compete as a team. And, in Rational ClearCase, Rational ClearQuest and UCM they have found the tools they need to succeed as a team.

## **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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