Rational software

Rational Software Keeps Datel's Developers — and End Users — On Track

Thousands of passengers who ride the trains throughout the UK every day rely on customer information systems from Datel Rail Systems. These systems help passengers monitor schedules and train progress by providing them with both timetable and real-time train information via a number of different display devices and audio systems. Similarly, railway operators depend on Datel's systems to help them manage the railway.

Datel also provides station and central information management systems for controlling and monitoring day-to-day railway operations on networks such as London Underground and the Heathrow Express Rail Link. System capabilities include CCTV, telephones, radios, supervisory control and data acquisition (SCADA), public address, ticketing, fire systems, tunnel ventilation, and signaling and administration.

Developing these mission-critical systems for the major railway companies can be a lengthy — lasting from one to five years — and complex process, involving millions of lines of code. They are also costly, often multimillion-pound developments. Delivering a product that satisfies the customer's requirements within a tight budget and often difficult time scales is an overriding concern for Datel's development team. Using a variety of development tools from Rational® Software, however, the company is better able to meet projected goals for quality, delivery, and cost.

Datel Seeks Benefits of CASE Tools

Vendor selection was driven by a desire to take advantage of the benefits offered by CASE tools, according to Company Operations Manager Dave Livesey. After performing an evaluation of various tools, looking for the benefits of CASE tools in general, increased productivity and a greater amount of control over process, Datel turned to Rational. "We saw Rational tools as being the market leaders," said Livesey. "We selected Rational for a combination of factors: company pedigree, affordability, and suitability of the tools evaluated."

Ada Shop Demands Ada Environment: Rational Apex Fits the Bill

The staff of approximately 60 developers, working on a combination of Sun and Compaq servers, uses the Ada development language — an outgrowth of the company's roots as a defense contractor. Once mandated, Ada has remained the "right language to use where there are significant safety related issues," said Livesey.

While large program development with Ada was effective, however, it was far from efficient, given the need to compile large amounts of code. "We needed to find a quicker way of compiling large amounts of code," explained Livesey. "Lack of compiler speed impacts productivity and costs money." Rational Apex Ada, an integrated environment for designing, developing and maintaining complex Ada applications, provided the solution.

The development team uses Rational Apex Ada extensively to control and compile the code into an executable program and realizes great benefits as a result. "By reducing compilation and linking times, Rational Apex Ada has provided significant improvements in productivity when used with large Ada programmes. It has also provided good integrated version control which has helped us with configuration management issues," said Livesey. "Our developers have provided tremendous positive feedback as to Apex Ada's speed of operation, reliability, and fairly rich set of features — of which configuration control is particularly well used."

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The team takes advantage of Rational SoDA documentation tool; supplied with Rational Rose, and has found it particularly productive. "The SoDA documentation tool has made the production of customer deliverable documentation very quick and easy," noted Livesey.

Rational Purify and Rational PureCoverage round out Datel's toolkit, providing run-time error and memory leak detection as well as code coverage analysis. "We simply found that these are the products our people feel happiest with," Livesey said.

Rational Rose Provides Desired UML Support

Developers at Datel also sought a sound modeling methodology that had PC platform support, and settled on the universal modeling language (UML) for its specific needs — subsequently choosing Rational Rose as its modeling tool. "We needed a sound method for software design which was well supported in the industry and was affordable. That's what we were looking for and that's why we chose UML and Rational Rose," Livesey explained.

Rational Rose has since successfully supported Datel's first attempts at using the UML on a live project. Developers use Rational Rose in the early stages of the lifecycle to analyze and document requirements, as well as to provide the language for software design. The tool is used primarily for UML support on Datel's development of Customer Information Systems, currently being deployed on a number of major UK railways, and for development of a Train Services Simulator Workstation for a major Asian railway corporation. Approximately five projects are concurrently in progress using Rational Rose.

Rational Tools Improve Productivity, Reduce Development Time and Costs

Since introducing Rational tools into its development environment, Datel has realized a number of benefits — improved configuration control, increased speed of operation, improved documentation, and an overall increase in productivity — all of which have allowed the company to deliver high-quality products faster and at reduced costs.

"We saw a significant improvement in productivity, and probably a tenfold increase in performance, during the coding/ testing phase of projects, where there can be large demand for compilation resources," Livesey said. "Rational Apex is the best Ada environment we've used. We originally selected it because it was the best product at the time — and we will continue to use it; it seems to be the best one around of its kind for the price. Rational Apex Ada still has the edge."

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