Rational. software

Jeppesen standardizes on the IBM Rational Unified Process methodology across its global development team.

Overview

- ***Challenge***
  Jeppesen wanted to build on its reputation for managing and publishing high-quality aviation and marine data by ensuring that the software it develops reflects the same levels of accuracy, dependability and usability.
- ***Solution***
  The company used IBM Rational Method Composer software to create a customized version of the IBM RUP methodology that incorporates proven project management best practices, including those from Boeing, its parent company. Jeppesen is implementing the process supported by IBM Rational software development solutions with help from IBM Business Partner cognence, Inc.
- ***Key Benefits***
  Since adopting IBM Rational solutions, Jeppesen has increased the repeatability of its development processes and improved software quality. In addition to establishing an engineering system, Jeppesen is focusing on leveraging tools in support of its processes. For example, software build times have been cut by 90 percent, increasing productivity and enabling the organization to focus on system improvements. And, adherence to a well-defined process has simplified compliance with federal aviation standards.

Pilots around the world depend on Jeppesen aviation charts to help them safely and efficiently reach their destinations. A subsidiary of The Boeing Company, Jeppesen serves the aviation, marine and rail marketplaces, printing and distributing about one billion paper aviation charts annually.

Though they've relied on paper charts for years, pilots and airlines are now accessing Jeppesen charts and data electronically with increasing frequency. As this shift gains momentum, Jeppesen is working hard to ensure that the digital solutions it develops are every bit as dependable, usable and accurate as the paper charts on which its reputation was built. "Jeppesen has developed a tremendous amount of expertise to ensure that the information on our charts is absolutely right and—just as important—useful to a pilot," says Austin Klahn, CIO of Jeppesen. "Our goal is for Jeppesen to become known—not just in the aviation industry but in the software engineering industry as well—for the quality of the software we develop. To do that, we need to conceive, execute and deliver products that work well and that are useful."

Jeppesen has created the Jeppesen Unified Process (JUP), a tailored version of the IBM Rational® Unified Process®, or IBM RUP®, methodology. JUP incorporates RUP software development practices with project management best practices from Boeing and the Project Management Institute's Project Management Body of Knowledge (PMBOK) Guide. "We are standardizing on RUP across Jeppesen Technology Services (JTS), our international technical organization. I am deeply committed to the concepts behind RUP, which I see as fundamental software development best practices that have been codified," says Klahn.

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Key Components

Software

- *IBM Rational Build Forge*
- *IBM Rational ClearCase*
- *IBM Rational ClearCase MultiSite*
- *IBM Rational ClearQuest*
- *IBM Rational Method Composer*
- *IBM Rational RequisitePro*
- *IBM Rational Unified Process*

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>
> *—Fred Kaemerer, director in Jeppesen Technology Services*

Jeppesen's adoption of RUP has been supported by IBM Business Partner cognence, which has provided not just process mentoring, but also tool configuration, administration and mentoring for a range of IBM Rational software development solutions including IBM Rational Method Composer, IBM Rational RequisitePro®, IBM Rational ClearCase®, IBM Rational ClearQuest® and IBM Rational Build Forge® software. "We also provided training on topics such as object-oriented analysis and design, service-oriented architectures and the Unified Modeling Language (UML)," notes Rolf Reitzig, CEO of cognence.

Customizing the IBM RUP methodology

IBM Rational Method Composer provided a platform for customizing RUP to meet the needs of Jeppesen's 800-member international development team. Fred Kaemerer, director in Jeppesen's Technology Services organization, championed Jeppesen's project to standardize on RUP and create JUP. He explains, "As we're adopting RUP, we are using Rational Method Composer to infuse project management elements from Boeing and the PMBOK into it. Rational Method Composer is one of the vehicles that enables us to effect a culture change in software engineering and what we do as an organization."

Martina Mauzy, manager for software engineering tools in Jeppesen's Center of Excellence, adds, "In the past, it was difficult for our team to find the information they needed on our intranet. With Rational Method Composer, all of our process assets are managed in one searchable library, so everyone can find what they are looking for."

Helping to simplify compliance

Jeppesen develops a wide range of software, including Web applications, flight deck software, consumer products and internal systems. Much of it is governed by federal regulations requiring compliance with the following standards:

- *DO-200A: Standards for Processing Aeronautical Data*
- *DO-178B: Software Considerations in Airborne Systems and Equipment Certification*

Standardizing on a disciplined methodology supported by automated tools has helped Jeppesen streamline its compliance efforts. "One of the key elements of DO-200A is traceability," notes Mauzy. "Using the integration between Rational RequisitePro and Rational ClearQuest, for example, we can trace requirements to defect reports and change requests. We also flag specific compliance-related requirements in Rational RequisitePro to track them throughout development." Kyle Fritsch, senior manager of Jeppesen's Center of Excellence, adds, "Our designated engineering representative, authorized by the FAA [Federal Aviation Administration], has approved Rational RequisitePro as a mechanism for supporting overall system certification. In fact, almost all the Rational solutions we use help in some aspect of compliance."

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Unifying a global team

Jeppesen's development team is distributed throughout several sites in North America and Europe. The result of a series of acquisitions, this distributed team previously lacked a common methodology, which complicated cross-site collaboration. The global adoption of a single RUP-based process has helped to bring the team together, and the company plans on using Rational RequisitePro and IBM Rational ClearCase MultiSite® software to further simplify geographically distributed development. Jeppesen teams are already using Rational ClearCase for software configuration management, and some developers use the IBM Rational ClearCase Remote Client to work remotely.

Reducing build times

One area in which Jeppesen has already measured substantial improvement is the automation of software build procedures. The team automated its previously manual build process using Rational Build Forge and cut build times by about 90 percent. Team members who once spent time monitoring and troubleshooting builds now spend their time on more productive work. "That was a really big benefit across the entire company, and I think many people underestimate how much value that brings. Cutting build times from hours to minutes by automating the build process is very important for iterative development," Fritsch notes.

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Enjoying a remarkable nonevent

The integration of RUP best practices and Jeppesen's preferred project management practices has provided a framework for efficiently implementing IBM Rational software development tools. Though still in the early stages of the initiative, Jeppesen is already seeing improvements in quality, predictability and repeatability. "By tackling larger risks first, as RUP recommends, we are able to shed light sooner on our challenges, giving us more control in our development efforts. Prior to adopting RUP, we sometimes waited until the end to address these risks, and by then they had much larger impacts," says Kaemerer.

Klahn notes another improvement. "In the past, we've had major projects that were late. When we rolled out a major system it would cause a lot of stress. Since adopting Rational solutions, these rollouts have become nonevents. In a recent senior leadership meeting, our CEO asked about the delivery of a vital system that was scheduled to go into production. The answer was that it was going to happen and everyone was ready to go—that it was a 'nonevent'. That's a good example of the progress we've made."

For more information

To learn more about how you can use IBM Rational solutions to improve your development environment and processes, contact your IBM Business Partner or IBM representative, or visit:

ibm.com/software/rational

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