

Kodak's Professional DCS Division Enhances Software Testing and Quality with RequisitePro

Rational Software's RequisitePro helps Kodak's Professional Digital Camera Systems manage all of its software requirements and test cases across multiple projects in a single, centralized database. This centralization greatly improves the process of identifying, tracking and testing requirements in Kodak's fast-paced, team-based development environment.

The Eastman Kodak Company provides solutions ranging from film to paper, processing equipment and chemicals to Digital Science electronic devices, including digital cameras, scanners, CD media, inkjet paper, and high-end, dye-sublimation printers.

Jason Oliver, Software Quality Team Leader, oversees the Software Quality team responsible for the Kodak Professional DCS (Digital Camera System) family of digital cameras, the world's highest resolution portable digital cameras. His group develops camera firmware, software development kits, APIs, and the host user software that allows users to communicate with Kodak cameras for image capture and processing. Oliver is also the firmware quality lead engineer on multiple camera development projects. This role encompasses the design, development, and verification and validation lifecycle of the cameras' embedded software.

Software requirements are co-written by Kodak's cross-functional quality team, representing software development, human factors and ergonomics, marketing, manufacturing, and electronics. Oliver's team supports multiple products that are developed within Kodak's expansive Elmgrove facility in Rochester, New York.

Kodak's overall corporate direction is to improve process, and the company is using the CMM (Capability

Maturity Model) as part of its continuous improvement process. Oliver, who sits on Kodak's software steering committee, has a goal for his projects to reach CMM Level 3. A concern within Kodak's software arena is effectively managing software requirements.

Windows-based RequisitePro Eased Transition from Proprietary UNIX-based Application to PC and Mac Systems

Prior to implementing RequisitePro, Oliver's team used IEEE templates in MS Word, Framemaker and ASCII formats. The software quality lead was in charge of manually updating any changes to requirements. All changes were filtered through this one person responsible for updating the documents.

Oliver had developed a proprietary, UNIX- and Lotus Notes-based application called "TestBed." TestBed is intended to centralize SQA activities and provide commonality across projects by combining information from the CMM Process Handbook, requirements management, a test logs repository, a defect tracking system, a change control system, a document library, a KECP (Kodak Equipment Commercialization Process) deliverable management system, a lesson's learned repository, and a system for requesting administration support.

TestBed produced a test case matrix that supported

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traceability between requirements and tests. Oliver's team tracked the pass/fail status of each individual test in TestBed as it was executed and then generated on-line reports using a scripting language in UNIX that automatically updated records.

However, the team transferred over from a UNIX-based system to PC and Mac systems. Porting TestBed from UNIX would have involved considerable time and effort, so Oliver decided to transition to a Windows-based requirements management tool. Now Oliver exports requirement and test data directly from the RequisitePro database into TestBed.

RequisitePro Tracks and Manages Software Test Cases and Requirements Simultaneously

With RequisitePro, Oliver's team incorporates all test cases directly into RequisitePro. Tests are treated as requirements and tracked hierarchically using RequisitePro's suspect link feature. A traceability link becomes suspect if the requirement it is traced to or traced from changes after the link has been established. Simply put, if a requirement changes, all direct traceability relationships to and from it (including individual tests) become suspect.

"With RequisitePro's suspect links, my team members and I can immediately see changes that are made; no more manual tracing! A significant amount of time has been saved, and this process wouldn't get completed otherwise. Test plans wouldn't get updated with each spec update. They are now," said Oliver.

By tying tests directly to requirements, team members can automatically view the test status (pass/fail) for each individual requirement. Test logs are also maintained in RequisitePro, including a complete bug report and number identifications.

Oliver's team utilizes interactive test stations where testers keep RequisitePro running in real-time during tests. Testers mark each test either pass or fail as they are executed and then assign a bug ID number if necessary. At the end of the test, a RequisitePro attribute matrix is created and imported into TestBed. Because

RequisitePro provides the test team with the ability to automatically produce reports based on the data, it is very easy to create reports for viewing on the network.

"One of the important benefits of using RequisitePro is that it provides us with consistency across projects. All requirements and test cases are maintained in RequisitePro, with the same format and structure, including the quality plan, test plan, configuration management plan and specifications. This consistent process has helped us to improve overall software quality," said Oliver.

He added: "RequisitePro is truly seamless. It is so easy to keep test cases in sync with requirements. RequisitePro's test matrix keeps our development teams and test teams in sync with each other. And we get these benefits with a single tool instead of multiple tools. RequisitePro also helps us review our test procedures. It allows us to easily answer the question, 'Does the test case address the requirement correctly?' Testers can easily determine if all requirements have been covered during testing. No more wondering, 'Did I do this?'"

Kodak Chose RequisitePro Over Other Tools Because It's Easy to Implement and Easy to Use

When selecting a requirements management tool, Oliver evaluated RTM and DOORS in addition to RequisitePro.

He chose RequisitePro because the other tools' learning curves were excessive, and they required specialized servers and plug-ins. "It's hard enough to implement process improvement without having to completely change our culture and processes. RequisitePro had a minor impact on our current development environment. The speed of RequisitePro implementation meant that we had no significant learning curve," Oliver explained.

"The ease of use and flexibility of RequisitePro allowed me to integrate the software into our current environment without causing waves or encountering much resistance. The integration with MS Word was also a very large factor in selecting RequisitePro. It allowed the learning curve to remain small because we already use Word for our documentation. It also eased the sale to team members,

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In addition, Oliver selected RequisitePro for its uncomplicated maintenance, and easy project administration and setup.

RequisitePro's Customization Capabilities Support Kodak's Current Development Environment

Because Oliver's team supports multiple products (in some circumstances, Oliver's group maintains one test plan linked to six separate product specifications), it helps that RequisitePro supports customized views. Oliver has created views for Mac, PC, Windows 95 and Windows NT testing, so regardless of the system under test, testers can get up to speed quickly.

“Because RequisitePro lets us define our own attributes with each requirement type, it gave us the versatility to easily incorporate it into our current processes,” said Oliver. “The requirements and specifications are easy to maintain. The linkage between the requirements and test cases allows the updates to be quickly incorporated into the test plans and keeps the tests and requirements up to date. This means the test team can keep up with the

requirements as they change and mature. Another improvement over our previous process is the ability to quickly review test procedures. With the associated requirements a mouse-click away, reviews become very fast and easy to execute.”

Oliver added: “We have realized many benefits with RequisitePro. We now have requirements we can identify and track. Our requirements are more accurate. Documents are maintained as living documents on an ongoing basis. Test plans are up to date, and updating our specs is no longer a painful process.”

“In addition, RequisitePro has reduced our test development cycles and given us better specs. It provides us with accurate reports at any time from anywhere in the project,” he added.

RequisitePro has also increased the accuracy of Oliver's test procedures. He explained: “We can test at a minute detail. Nothing falls through the cracks. We also have an extremely detailed view of our specs. Most importantly, RequisitePro supports a consistent, repeatable process through a centralized tool across multiple projects. I now have a project roadmap to follow. RequisitePro is an indispensable tool for Kodak's test community.”

Kodak Digital Camera Systems Development Environment

- Needed automated, Windows-based tool for identifying, managing and testing requirements
- Cross-functional development team required immediate information on requirement and test changes
- Goal to achieve CMM Level 3
- Seeking to improve process, and increase requirement and test accuracy

RequisitePro Solutions for Kodak Digital Camera Systems

- Easy-to-use, centralized tool provides consistency in requirements and tests across multiple projects
- Status of requirements and tests are shared in real-time during testing with team members across departments and locations
- Customized views and reporting features reduce errors and improve test quality
- Testing process improved, with reduced software bugs and increased customer satisfaction

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