

## HP OpenView R&D Unit



### FAST FACTS

#### Company

Hewlett-Packard Company (HP), the technology solutions provider

#### Industry

Technology

#### Geography

United States, EMEA, Asia Pacific

#### Challenges

- Streamline product feature

#### Definition

- Follow a new requirements engineering process
- Improve requirements management

#### Solution

- Borland<sup>®</sup> CaliberRM™

#### Results

- Improved software quality
- Better planning
- Risk-based testing

### COMPANY

Hewlett-Packard Company (HP) is a technology solutions provider to consumers, businesses, and institutions around the world. The company's offerings span IT infrastructure, global services, business and home computing, and imaging and printing. With more than 145,000 customers, the HP OpenView research and development (R&D) unit is charged with consolidating the market-leading position of HP OpenView in network management, system management, and service level management. The unit's job is to develop modular solutions for end-to-end monitoring and management, along with Quality of Service software to enable sound IT governance.

### CHALLENGES

The issue of software quality is top of mind at the world's leading technology companies. With its software organization spread over three continents, the HP OpenView R&D unit wanted to be sure its development activities delivered results that were consistent across interface, functionality, and quality.

#### Streamline product feature definition

With the company continuing to make acquisitions, move into new market segments, and update its products during the course of their lifecycles, the HP OpenView team wanted to move beyond the point where each product team defined product features in isolation. With this in mind, the Engineering and Quality Director of HP's Management Software Organization began an effort to define and implement infrastructure and software development methods on behalf of all HP OpenView teams, which totaled several hundred developers.

#### Follow a new requirements engineering process

Established five years ago, the Management Software Organization took as its first task the training of project leaders and marketing teams in requirements management techniques. The following year, the new requirements management method was launched as a pilot project in Germany. The new method gave equal consideration to management issues and engineering ones. Product teams managed requirements using a process adapted from the Volere requirements specification model, where each requirement was classified, validated, and assigned to a project. All of this was done in accordance with a portfolio strategy, designed to ensure that selected features and capabilities permeated the whole product line. In this way, a product requirement could develop into a component requirement, which in turn could become a solution for several other products.

#### Improve requirements management

The team understood that in order to improve accuracy and ultimately the quality of its deliverables, its complex and hierarchical requirements needed a proper framework. With between 50 and 1,000 requirements per project, HP development could not rely on notations on the back of an envelope, or even Microsoft<sup>®</sup> PowerPoint<sup>®</sup>, to communicate requirements.

### SOLUTION

HP OpenView deployed the Borland CaliberRM solution to replace its informal requirements management processes with an automated solution that improves software quality. HP adopted a component-based approach that provides its products a common user interface and allows software assets to be managed so as to maximize reuse. This approach enables HP

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— Gerald Heller, Software Engineering Consultant

products to function together in a totally integrated manner. A robust requirements management solution, CaliberRM fulfilled the framework role from day one.

According to Jean-Pierre Dacher, Engineering and Quality Director of HP’s Management Software Organization, three distinct user types have merged. “The requirements management process relies on a single dedicated individual, an expert who handles requirements management for the organization as a whole,” explained Dacher. “Second, there are our active users, who input information and make use of the system’s discussion boards; they have varying degrees of experience, and may be marketing people, project leaders, program managers, or lead developers. Finally, for engineers whose primary interest is to view the current status of requirements, and for general communication needs, we implemented tools for converting, summarizing, and reporting data. These tools all run on the central framework.”

The discipline of the new requirements engineering approach has had a positive effect on every activity in the development cycle. Because there is a single point of access to requirements, all members of a project team, wherever they are in the world, can obtain timely, well-documented information about the intended software deliverable. Teams can then tackle their respective tasks in parallel, working from requirements that are well understood and validated. They can also anticipate what training, hardware, and software they will need to accomplish their tasks.

The initial design phase was first to benefit from the new framework, but the requirements engineering approach has been equally relevant to the testing phases, and constituted a second area of focus for the efforts of the Management Software Organization.

## RESULTS

The automated system built around the Borland product is saving the HP OpenView team both time and money.

### Improved software quality

For HP OpenView development team members, holding requirements in a structured form facilitates research and understanding. It is now easy for an individual user to monitor the status of a specific requirement. The system also supports project data integration from areas such as project management and testing. Now in its third year, the framework is being deployed worldwide. Dacher commented: “As our programs get more sophisticated, the number of active users of the system increases steadily. As a result, our architects are noticing quality improvements in terms of both the accuracy and the completeness of requirements.”

### Better planning

While helping users assess and validate their requirements, CaliberRM also enables priorities to be defined. The tool makes explicit all of the requirements that may be candidates for inclusion in a given software release or iteration, and can group requirements by theme. These capabilities make for better-planned projects. “We’re starting to collect metrics about the requirements process itself, with a view to identifying potential organizational improvements,” said software engineering consultant Gerald Heller, who leads the improvement program. “By using, and building on, the reporting capabilities of CaliberRM, we are able to create an objective picture of our business, which can be used to fine-tune processes and predict how projects will go.”

### Risk-based testing

Quality is now taken into account as early as the preliminary definition stage, when a testing review takes place. During implementation, the quality testing team can work in parallel with developers, establishing test plans and running tests in a variety of target environments. “By deriving test cases from requirements, we are able to adopt a risk-based approach to

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