Achieving ROI
with Rational ClearCase

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Introduction

Software configuration management (SCM) tools are the glue that holds together the various components and phases of the application life cycle. SCM tools organize and control the process and artifacts of application development and deployment.

But what is the true value of SCM tools to a business? For this study, IDC interviewed selected users of the Rational ClearCase SCM solution. These case studies are more than just customer testimonials. The interviews were specifically constructed to elicit quantitative measures of the return-on-investment (ROI) attributable to the use of Rational ClearCase.

The Software Configuration Management Market Trends

As software application development continues to become increasingly complex due to diverse platforms and distributed environments, SCM tools have expanded in features to cover a broad functional spectrum — from simplistic configuration management and version control to more sophisticated tasks, such as process management and change request tracking.

The move to the Web, in general, and to ebusiness, in particular, has added a whole new dimension to SCM. Whereas traditional software projects may see releases a few times a year at most, Web applications change at a much higher rate (measured in terms of weeks, days, or even hours). Also, traditional applications support the business, but ebusiness applications *are* the business. As a result, the cost of failure and demand for high quality are far beyond anything previously seen.

All of these factors, including complexity, diversity, rapid turnaround for changes, and cost of failure, combine to drive the demand for modern, sophisticated SCM tools for conventional and Web-based applications. Those in the best position to thrive in this changing industry will be vendors providing tools that can help developers respond to the rapid changes that are the hallmark of ebusiness.

Analyze the Future

Moreover, modern SCM tools need to seamlessly accommodate the various skill sets of the development teams and readily scale to meet the requirements of enterprise application development. And despite the complexities of Web application development and deployment, winning tools will be easy to learn and use.

Rational ClearCase: Overview

Rational Software is a leading vendor in the SCM space with its Rational ClearCase product. Designed to facilitate efficient software development and deployment, Rational ClearCase is a full-featured SCM tool supporting version control, workspace management, build and release management, and process configurability. Major Rational ClearCase features are described below:

Parallel Development/Automatic Branching and Merge Manager

Rational ClearCase supports parallel development through automatic, unlimited branching and a merge manager that effectively eliminates the typical problems found in parallel development, such as lost code and recurring bugs. The merge manager can merge up to 32 named branches either manually or automatically.

Multisite Development Support

Many organizations must contend with the challenge of keeping the development efforts of distributed development staff members synchronized. Offering dynamic replicas of project databases, automated transfer of changes, and encrypted email, Rational ClearCase provides a robust mechanism for managing remote software development with its Rational ClearCase MultiSite add-on tool.

Build Management

Build management can be a time-consuming and complex process, especially when parallel development is employed. To streamline and speed this process, Rational ClearCase automates it. By creating a "bill of materials" to facilitate fast and accurate builds, ClearCase enables build engineers to perform a build of current or previous source structures. It also provides improved recoverability for development organizations.

ROI Case Study Methodology

IDC employed a structured interviewing methodology to collect return-on-investment (ROI) qualitative and quantitative data for three Rational ClearCase customers. The same methodology was employed for all of the case studies. The list of companies to be interviewed was supplied by Rational Software and all are Rational ClearCase customers.

ROI Defined

In order to assess the benefits of a Rational ClearCase solution, it is first important to define what is meant by ROI. For the purposes of this study, ROI is defined as follows:

> The ROI associated with the use of Rational ClearCase to accomplish the software configuration management function is defined as the net quantifiable benefit (NQB) associated with the use of ClearCase as a percentage of the net cost (NC) associated with the usage of ClearCase.

ROI Components Defined

Net quantifiable benefit (NQB) is the difference between the savings achieved through the implementation of a Rational ClearCase solution versus either not implementing the solution at all or implementing configuration management in a different way. NQB can be either direct in terms of incremental revenue gained or expense saved or indirect from the redeployment of resources to tasks that the organization would alternatively have had to hire new and like resources to perform. These benefits were projected to future years, for which a present value was calculated.

Net cost (NC) is the difference between the total cost and expenses associated with the Rational ClearCase solution (e.g., human and other resources used, costs of licenses, additional equipment required) and the similar costs associated with the most likely alternative solution (which can be none at all).

ROI Calculation

ROI is the ratio of total net benefit divided by total net cost.

ROI is the ratio of total net benefit divided by total net cost. This ratio is equal to one when net benefits equal net cost, which represents stasis, equilibrium, or no improvement. A ratio less than one reflects a negative improvement and a ratio greater than one reflects a positive improvement.

ROI is frequently expressed as a percentage, in which case the ROI result is multiplied by 100. The percentage ROI calculation can thus be represented as:

$$ROI = (NQB/NC) \times 100\%$$

Other ROI Considerations

ROI is also a relative measure in that the benefits and costs of the Rational ClearCase solution are compared to an alternative solution. An alternative solution is typically what the organization had been doing to address this business problem prior to the implementation of ClearCase. It follows that NQB and NC will be defined differently for each interviewee situation, and in some cases, the results will not be as quantifiable as in others.

To perform "true" ROI analysis, a savings or revenue that is recognized in terms of personnel resources can only be included in the ROI analysis if those resources have been eliminated as a result of the product implementation. That is rarely the case. Resources are more likely to be assigned to other projects or areas where they are needed. It can still be said that the savings are real because if the staff had not been reassigned, additional resources would have to be hired.

In the following case studies, increased productivity, shortened development cycles, and reduced recovery times have not led to the elimination of personnel. Instead, these gains have been used to facilitate additional releases or allow alternative tasks to be performed by the existing staff. The argument can be made that to achieve the same productivity levels, additional personnel would have to be hired. Therefore, although this is a more qualitative form of ROI analysis, the benefits derived by the use of Rational ClearCase are quite real.

ROI Data Collection Methodology

To collect the data, IDC conducted telephone interviews in October 2000. The purpose of the interviews was to understand the business problems these organizations sought to solve, the role of Rational ClearCase in solving these business problems, and the ROI associated with the implementation of ClearCase.

IDC established a series of predefined questions for use in the ROI interviews. These questions were designed to enable the collection of complete ROI data as well as to provide a consistent framework for analyzing that data. These questions enabled IDC to understand the organization's general approach to development and deployment as well as to evaluate the relative attributes, benefits, and costs associated with ClearCase.

A three-year "ROI horizon" was employed. Therefore, all of the ROI data shown is for accumulated actual and projected savings over a fixed three-year period — from 1999 through 2001.

All ROI calculations and numbers generated for the case studies have been generated by IDC.

Case Studies

Three Rational ClearCase customers were interviewed for this study. The case studies are presented below (in alphabetical order).

BindView

Company Overview and Business Environment

BindView develops network system administration and security software for large enterprises. Key customers include large banks as well as large computer equipment vendors.

Current IT Environment

BindView consists of four offices with headquarters in Houston, Texas and three remote offices in San Francisco, California; Boston, Massachusetts; and India. The development process includes daily changes and a nightly build with the resulting code going to quality assurance for testing. With offices in multiple time zones and countries, BindView was in need of a robust SCM tool to streamline development processes and release cycles.

Emerging Needs and Role of Rational ClearCase

By implementing Rational ClearCase, BindView recognized productivity and revenue gains, and improved customer support.

By implementing Rational ClearCase, BindView recognized productivity and revenue gains as well as improved customer support. Parallel development streams in conjunction with strong branch and merge capabilities helped to shorten development cycles while keeping the development team's efforts synchronized.

ROI Analysis

Net quantifiable benefits (NQB). IDC estimates the BindView total NQB is $12.1 million over a three-year period. The result is derived from increased license sales and savings resulting from increased developer productivity.

Net costs (NC). Estimated costs are $600,000 including license, maintenance, and administrative costs over the three years, 1999–2001.

The resulting ROI, within the BindView organization, was a factor of 20 or 2000%.

Qualitative Benefits Associated with Using Rational ClearCase

By using Rational ClearCase, BindView cited the following additional benefits:

- Support for parallel development streams with branch and merge capabilities

- Support for multiplatform and multisite development

- Integration of all areas into configuration management, including documentation

- Reduced development cycles

- Reliable daily builds

- Improved disaster recovery

- Increased developer productivity

CrossKeys

Company Overview and Business Environment

CrossKeys is a global software and services provider focusing on performance management solutions for large, carrier-scale telecommunications companies and local exchange competitors.

Current IT Environment

CrossKeys has a centralized IT group, with a corporate mandate that spans the company and manages issues related to the PC-based desktop from the network back. A separate organization, the Development Environment Group, has a mandate specifically related to the Software Development and Engineering Group and is responsible for software configuration management and tools.

Emerging Needs and Role of Rational ClearCase

Prior to implementing Rational ClearCase, CrossKeys was using SCM freeware. As the company grew and its needs became more complex, the freeware could not adequately meet CrossKeys' SCM needs. In particular, it did not support the ability to easily create one-off (or "variant") releases.

By introducing the use of Rational ClearCase companywide, CrossKeys has been able to overcome these obstacles, as well as improve the security of its source code. ClearCase provides a consistent development and build environment, multiplatform and multisite capabilities and is able to handle the range of artifacts used to build and deliver CrossKeys' products.

ROI Analysis

Prior to Rational ClearCase implementation, CrossKeys required two weeks to return to a previous version of the software. With ClearCase, the time was reduced to two days.

Net quantifiable benefits (NQB). CrossKeys experienced NQB primarily in the area of developer productivity. Prior to Rational ClearCase implementation, CrossKeys required two weeks to return to a previous version of the software. With ClearCase, the time was reduced to two days.

CrossKeys has also recognized productivity gains resulting from a reduction of build breaks from approximately 100–120 per year to approximately 10 per year with Rational ClearCase. In addition, by leveraging strong branch and merge capabilities, developers were organized into smaller teams with increased efficiency.

The combination of these benefits contributes to an NQB of $7.3 million across the three-year ROI horizon from 1999–2001.

Net costs (NC). The total three-year NC of implementing and maintaining Rational ClearCase and providing on-going training to developers is estimated at $1.7 million.

The resulting ROI for the CrossKeys organization is 4.4 or 443%.

Qualitative Benefits Associated with Using Rational ClearCase

By using Rational ClearCase, CrossKeys has achieved the following additional benefits:

- Support for parallel development streams

- Support for multiplatform and multisite development

- Ability to create one-off (variant) releases

- Improved recovery capabilities

- Reduced build breaks

- Consistent development and build environment

- Scalability for complex projects

- Robust artifact support

Wells Fargo

Company Overview and Business Environment

Wells Fargo, the seventh largest bank in the United States, is a diversified financial services company. As a bank, Wells Fargo is subject to stringent audit and security requirements, which apply directly to its application software development. The Client Server Software Libraries and Distribution department is responsible for software distribution and version control bankwide.

Current IT Environment

The IT environment within Wells Fargo is decentralized. Each application development community within Wells Fargo has the flexibility to select and implement any application development tools it desires to create new products and services. However, all groups are required to use the software version control (ClearCase) and distribution tools mandated by management.

ROI Analysis

Well Fargo experienced an approximate increase in productivity of 25% from company-wide development teams in 1999. This increase in productivity is expected to be 50% by 2001.

Net quantifiable benefits (NQB). Well Fargo experienced an approximate increase in productivity of 25% from company-wide development teams in 1999. This increase in productivity is expected to be 50% by 2001. The company also experienced a decrease in recovery time due to the automated bill of materials generated by Rational ClearCase.

The resulting ROI for Wells Fargo is 8.9, or 888%.

Qualitative Benefits Associated with Using Rational ClearCase

By using Rational ClearCase, Wells Fargo achieves the following qualitative benefits:

- Standardized infrastructure for version control and software distribution

- Improved levels of software management and quality

- Reduction in software recovery times

- Reduction in production release cycles

- A fast, reliable, error-free life-cycle process

IDC Analysis and Conclusions

From these case studies, IDC found that there were clear and quantifiable benefits in implementing Rational ClearCase in these organizations.

From these case studies, IDC found that there were clear and quantifiable benefits to implementing Rational ClearCase in these organizations. Though there were individual differences from organization to organization, the benefits derived centered on productivity gains in the areas of shorter development cycles, reduced disaster recovery times, and overall developer efficiencies (see Table 1). Although these gains did not result in the elimination of personnel, it freed up resources that could be applied to other tasks.

Table 1
Benefits Achieved by Rational ClearCase Respondents

Company	Employees	Developers	Critical Business Issue	Quantifiable Benefits from Rational ClearCase
BindView Corporation	700	325	Manage geographically separate parallel development teams	Streamlined builds Shortened release cycles
CrossKeys Systems Corporation	375	180	Quickly deliver one-off software releases	Increased developer productivity
				Reduced number of build breaks
Wells Fargo	102,000	3,000	Adhere to audit/security regulations	Increased developer productivity
				Decreased time-to-recover prior releases

Source: IDC, 2001

In reviewing the ROI results, there was a wide divergence in the ROI achieved by the participating interviewees. It is important to examine the causes of these differences.

First, one of the firms interviewed was replacing incumbent SCM software where others were not. As such, there was an existing cost of the incumbent software that was subtracted from the cost of Rational ClearCase to reflect only incremental costs. For that organization, the cost of ClearCase was relatively low. Second, while some organizations had implemented ClearCase recently, leading to the inclusion of initial license costs in the NC figure, others had accrued those costs prior to the ROI timeframe considered. The most important consideration was the size of the development staff that played directly into the ROI calculation. Productivity gains applied against large development staffs can multiply the gains significantly. In contrast, companies with smaller staffs cannot achieve the same economies of scale. This was the single most distinguishing factor leading to the ROI differences. Together, these factors account for the range of ROI realized by the organizations that participated in this study.

Even though an ROI study focuses on those benefits and costs that are quantifiable, qualitative benefits associated with using ClearCase were significant to the organizations and included areas such as:

- Scalability for complex projects

- Standardized software distribution and version control infrastructure

- Reliable, error-free life-cycle process

Each of the organizations involved in this ROI study agreed that Rational ClearCase had a marked and positive effect on its operations. The most compelling aspect of ClearCase cited is the significant impact it has on productivity. All respondents noted this as the overriding quantifiable benefit derived from ClearCase. The productivity gains recognized relate primarily, but not exclusively, to the key features of ClearCase. It is not merely the existence of those features, but the details in how they were crafted, that allows the productivity gains noted.

Conversely, the rich set of features introduce complexity to the effective use of ClearCase. This is evidenced by the continued investment in training cited. However, this paled in comparison to the benefits received and was not seen as an issue by the respondents.

Another important aspect of Rational ClearCase is its strong ties to the remainder of the Rational suite of products. This was viewed as a valuable attribute by all of the respondents because they were using other Rational products and were particularly satisfied with the ClearCase and ClearQuest integration. The fact that all areas of the development team could be tied into these two products was found to increase the quality and efficiency of the development and deployment process. The Rational Unified Process (RUP) also was seen as a valuable aid to the development process.

In summary, this IDC study showed that robust SCM tools — in this instance, Rational ClearCase — can substantially improve an organization's software life-cycle management process efficiency.

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