

Execute your business vision at the speed of changing competitive pressures



**Rational** software

## Optimize software quality with IBM.

### Introduction

Software quality management is more than defect repair. It is a proactive, closed-loop software fitness program supporting continual integration of role players and steps in the quality process. The IBM Rational® quality management solution provides a full set of software delivery process guidelines, best practices and integrated team tools to help your organization achieve CMMI-level improvements in cost efficiency, quality metrics and time to value for business-critical projects. Optimizing quality and performance must also be governed as an organizational concern, or business-critical applications will be at serious risk.

### IBM solution highlights

**Cost-effective.** Helps lower the cost of ownership while speeding problem resolution

- Low total cost of ownership (TCO) and value-based pricing
- Low cost of problem resolution via performance-driven development, test and production problem resolution log and trace capabilities

**Comprehensive.** Supports the entire software delivery process

- Continuous, iterative integration across all software delivery phases, roles and processes
- Enhancement/defect tracking, version control, build automation and release/provisioning automation

- Functional and performance testing solutions that support a broad range of applications including Siebel; SAP; Citrix; Oracle, Java™ Platform, Enterprise Edition (Java EE); Web and other thick client technology-based applications

**Collaborative.** Helps teams communicate and collaborate

- A single solution that supports both the Eclipse and Microsoft® Visual Studio environments, and uses standard scripting languages and common user interfaces to help designers, developers, testers and support teams seamlessly communicate and share resources
- Efficient team communication and collaboration for governing and managing the software delivery lifecycle, including requirements, development, testing, defects and project change in a single platform solution
- A standards-based extensible architecture that allows integration with third-party products to support the open source standard Eclipse Test and Performance Tools Platform

### Less risk, less stress

- IBM Rational offers one of the only quality management platforms based on a comprehensive set of industry-leading capabilities and best practices that enable customers to govern the business process of software and systems development rather than spending time integrating products from numerous different vendors.
- We offer years of experience deploying and migrating customers who understand the value of reliable software delivery. We are here to provide you with the tools, training and skilled consulting services to help you migrate with confidence.





## Experience, skills and resources

- IBM Rational, a leader in best practices and methodologies, built the IBM Rational Unified Process®, a de facto standard set of best practices and methods, to help clients achieve the highest-quality standards and work toward CMMI certifications.
- More than 6,800 IBM Global Business Services professionals, who are trained with Rational tools, add value to our clients' business growth.
- 33 IBM Innovation Centers in 22 countries support independent software vendor product testing with Rational tools.
- Global benchmarking centers host performance benchmarking, tuning and capacity planning programs for customer software applications.
- Access to an online community of 5.7 million registered users of forums, blogs, articles and information in the IBM developerWorks® community—winner of the 2007 Jolt Hall of Fame award.
- 24x7 customer support for severity 1 issues comes standard with every product license.
- Practitioners from key global systems integrators, such as Accenture, BearingPoint, Capgemini, CSC, Deloitte, Infosys, Sogeti, Tata Consulting Services and Wipro have developed expertise with Rational tools to improve our clients' business results.

## Customer results

- TTI Telecom improved its time to market by 50 percent, and its estimated cost savings are US\$2 million per year.
- Unisys improved its cycle time by 25 to 40 percent; enhanced productivity by 75 to 100 percent; and realized cost savings of 25 to 60 percent.
- Ericsson realized 80 percent fewer defects and a 100 percent increase in productivity.
- Acuity achieved 15 percent higher profitability and 46 percent higher employee productivity than insurance company national averages.
- Assurant Health delivered more projects on time and 30 percent under budget.
- Radio Caracas Television reduced its development cycles by 25 percent and met its compliance goals within 15 days of deployment.
- A network infrastructure services provider reduced its performance bottleneck diagnosis time from days to hours, and improved the ability of its testers and developers to collaborate to resolve defects.

- A system integrator found that test automation is easier and faster using Rational object mapping and pattern recognition. The company reduced its automation testing time by 40 percent.
- A credit card services company configured its GDD test solution to save 250 hours per testing cycle compared to the previous environment. The company also reduced the time required for remote test updates from 6–12 hours to 15 minutes.
- A state board service reduced its regression testing time from 13 hours to 25 minutes.

## Return on investment

A 2006 Software Engineering Institute report<sup>1</sup> on the performance results of CMMI-based process improvement states the following median improvements among organizations surveyed:

- |                              |     |
|------------------------------|-----|
| • Cost                       | 34% |
| • Schedule                   | 50% |
| • Productivity               | 61% |
| • Quality                    | 48% |
| • Return on investment (ROI) | 4:1 |

IBM software quality solutions can help you implement CMMI-based best practices and optimize process improvement results. Furthermore, IBM can provide a complementary business value analysis to estimate projected ROI from our quality management solutions based on IT spending, TCO and business performance metrics from a database of thousands of companies' and analysts' input.

## Leadership

Jason Bloomberg, senior analyst with ZapThink, LLC., agrees that IBM is on the right track and is now in a strong competitive lead.

In the article titled, "IBM unveils new Rational test tools for SOA quality,"<sup>2</sup> Bloomberg says, "IBM has really knocked this one out of the park." Bloomberg continues, "The full service lifecycle story is right on the mark, and the combination of Rational, Tivoli® and professional services offerings position them as a formidable competitor to HP."

IBM leads more than 80 open source projects, has over 1,000 developers working on open source projects and has contributed US\$40 million in software code to the Eclipse Foundation.

IBM has deep partnerships with more than 40 global and regional system integrators and solution provider organizations, including Accenture, BearingPoint, Capgemini/Sogeti, CSC, Deloitte & Touche, Logica, TCS and Wipro.

### Integrated quality management from IBM

Injecting quality at the end of the lifecycle is a losing proposition. Architecture flaws and missed requirements can result in a huge backlog of defects later on.

IBM Rational quality management provides a full set of software delivery process guidance, best practices and integrated tools, supporting a broad range of heterogeneous applications to help organizations achieve improvements in cost efficiency, quality metrics and time to value for business-critical projects.

- Provide actionable project governance.** The IBM Rational Team Unifying Platform™ solution helps you globally manage, trace, audit and provide version control over full functional requirements, tests, defects and project delivery. The configurable, enforceable process management provides customizable workflows to easily enable test management best practices and enforce compliance processes. Furthermore, it provides a project console for a consolidated, real-time view of the entire project delivery status. Actionable project governance is crucial to the on-time delivery of quality, business-critical applications. IBM's extensible test ecosystem simplifies the management of tools from multiple vendors, and enables developer-tester communication with common tools and a platform to shorten the test-repair cycle.

- Increase code quality.** Architecture, design and development tools include design pattern analysis, functionality testing for memory corruption and leak detection, performance profiling, and code coverage to ensure high-quality, faster, reliable code.
- Help ensure functionality, system performance and compliance.** Functional testing, system performance testing and automated best practices (such as test modularity and reusability) help you build tests and check for regression and functional errors—either manually or automatically—helping to shorten test cycles, address compliance mandates and provide reusable test assets. Performance testing and problem analysis help to ensure that application scalability and performance will meet service-level agreements and user expectations.

### Ensuring systems performance with IBM

Meeting expected end-user performance expectations requires a continuous, integrated and iterative approach. Best practices in requirements, design, coding, build and, finally, test help ensure that business-critical applications meet end-user requirements from day one, in less time.

According to a Forrester report, “By 2010, performance-driven development concepts will be more widespread, and one-third of the organizations that today do little more than load testing will have adopted performance-driven development practices.”<sup>3</sup> The ROI model from this report, coupled with a move to service-oriented architectures, emphasizes this point.

### Sample economics of a move to performance-driven development

Cost of problem resolution		Requirements	Design	Development	Testing	Production	Resolution cost for 100 defects at x=US\$100
		1x	2x	10x	50x	100x	
Firefighting	Percent	0%	0%	0%	0%	100%	<b>US\$1,000,000</b>
	Resolved cost	US\$0	US\$0	US\$0	US\$0	US\$1,000,000	
Performance verification	Percent	10%	0%	0%	60%	30%	<b>US\$601,000</b>
	Resolved cost	US\$1,000	US\$0	US\$0	US\$300,000	US\$300,000	
Performance-driven development	Percent	10%	40%	25%	20%	5%	<b>US\$184,000</b>
	Resolved cost	US\$1,000	US\$8,000	US\$25,000	US\$100,000	US\$50,000	

Source: Forrester Research, Inc.



IBM best practices for performance-driven software delivery are:

- Focus on performance early in the lifecycle.
- Architect, design and build for performance.
- Develop a performance testing center of excellence.
- Enable collaboration among development, testing and operations.
- Provide governance through business analytics.

The system performance solution from IBM includes best practices and integrated tooling for:

- High-performance architecture design.
- Automated code scanning for performance-related problems.
- Build-to-manage plug-ins for pre-instrumenting applications.
- Automated performance validation and testing of the solution.
- Real-time identification of poor performance trends, problems and resource bottlenecks during testing and production.
- Isolation and root-cause diagnosis of performance during testing.
- Integration of production performance analytics with development tools for rapid resolution of the problem, including jump to source code.

### IBM Software Services for Rational

IBM Software Services for Rational provides a worldwide team of 1,000 technical specialists with deep skills and broad experience in software delivery processes, methods and tools. The Software Services for Rational team helps thousands of companies each year govern the business process of software and systems development while helping to ensure quick adaptation, minimal startup risks and maximum technical results and ROI.

The Software Services for Rational team is an important part of a complete software and systems delivery solution with proven approaches and reusable assets to accelerate software delivery and improve organizational capabilities. The team's capabilities can enable companies to achieve in a few weeks what would typically take months.

To learn more about how to optimize the quality of your software using IBM Rational products, visit:

[ibm.com/software/rational/offerings/testing.html](http://ibm.com/software/rational/offerings/testing.html)

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1 "Performance Results of CMMI-Based Process Improvement," Diane L. Gibson, Dennis R. Goldenson, Keith Kost, Software Engineering Institute, Carnegie Mellon University, August 2006, [www.sei.cmu.edu/publications/documents/06.reports/06tr004.html](http://www.sei.cmu.edu/publications/documents/06.reports/06tr004.html).

2 "IBM unveils new Rational test tools for SOA quality," Jason Bloomberg, ZapThink, LLC., 2007.

3 Quote and figure taken from "Performance-Driven Software Development," Forrester Research, Inc., February 2006.