

Addressing the risks of software development  
White paper  
May 2007



**Rational** software

## Software delivery in the face change: the IBM Rational advantage.

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**Introduction**

Change is inevitable. In a world where software runs today's businesses, a company's survival can be determined by its ability to deliver software successfully and predictably in the face of change. Change may come in the form of new marketplace demands, new technologies or growth in the business. To succeed, software development organizations must become more agile and responsive to change, while simultaneously satisfying ever higher standards of accountability and compliance. Granted, no crystal ball exists that can predict the exact makeup of your environment in five years – or even six months. However, good development governance processes and an enabling infrastructure can help you identify and mitigate high-likelihood and high-impact risks, resulting in improved predictability and responsiveness in the face of change.

Take the following as a common example. Today, your company may be committed to developing for a single environment like Microsoft® .NET. Creating a software delivery process and infrastructure that only supports development for the .NET platform creates unnecessary risk to your business. At any time, your customers may demand support for another platform, or you may choose to acquire another business that doesn't use .NET. At that point, you'd be faced with a series of poor alternatives – rip and replace your existing infrastructure investments, try to leverage your .NET infrastructure in ways it was not intended to be used, or run disconnected development efforts without common oversight and opportunity for reuse. This type of change is predictable, and the associated risks can be eliminated by building an infrastructure that supports heterogeneous development from the start.

Planning for change and mitigating risks are fundamental aspects of governing your software delivery process, and IBM® Rational® software empowers you in two unique ways: infrastructure and experience. First, the IBM Rational Software Delivery Platform enables you to govern the business process of software and systems development because it's designed to mitigate the impact of change on your software delivery infrastructure. Second, IBM Rational has spent years helping customers improve their software development capabilities. Leveraging this experience, Rational has identified the types of changes and associated risks that are likely to occur and cause a high impact to your business. This white paper will focus on how to mitigate these known risks.

**Risk 1: change in the maturity of the software development organization**

One aspect of change that *is* predictable, yet often takes organizations by surprise, is the need to mature the software development organization and the software delivery process over time. This may be driven by external regulations, competitive pressure, growth within the organization or the increasing scale and complexity of the systems under development.

As your company evolves, roles within the organization may become more specialized, processes more mature and technical challenges more complex, which creates new demands on your development infrastructure. The way to

### **The advantage of a complete and modular solution**

Consider a company that chooses to use development tools offered at little or no cost with their selected integrated development environment (IDE) without considering how their needs may evolve. After a few development cycles, challenges such as insufficient requirements management and testing capabilities, performance degradation and repository corruption start to affect the company's ability to deliver, resulting in higher-cost and lower-quality software. With IBM Rational, the company would have had the option to start simple and incrementally add capabilities as needed, saving the company's time, money—and reputation.

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mitigate this risk is to invest in a solution with deep but modular capabilities that are easy to learn and can grow in sophistication with your organization. The Rational Software Delivery Platform is the only solution that can support each role in the software development process—from requirements and testing to deployment.<sup>1</sup> The solution is designed to let you start simple, and incrementally grow by adding capabilities to support additional roles or to “turn on” more sophisticated features as your environment demands. No other vendor has the proven ability to scale in capability as you mature your application life-cycle management processes.<sup>2</sup>

### **Risk 2: change in supported environments**

Managing heterogeneous development environments is a fact of life for most organizations. Those organizations that are today committed to a single target environment cannot be certain of what the future will hold. Changes in the marketplace and technology—as well as mergers and acquisitions—can quickly force them into supporting environments they may not be prepared to support.

It is no surprise that .NET and Java™ Platform, Enterprise Edition (Java EE) environments dominate the marketplace today. However, the prevalence of other platforms may be surprising. According to Evans Data Corporation's “Enterprise Development Survey,” 39 percent of companies currently deploy applications to

### The advantage of proven scalability

Consider a rapidly growing software company. To compete, it needs to be able to reuse software components across multiple products and project teams, but the company has hit maximum capacity on the server storing its code base. Because of limitations in the company's current software configuration management system, the organization faces two unappealing options. One, the company can replace the existing server with a larger one, creating delays, waste and the risk of the same situation occurring in the future. Two, it can add a second server, which will not allow a common view across all projects—the company can only see the code on one server at a time, which prevents it from easily identifying and reusing common elements. In contrast, with Rational ClearCase, the company can add servers incrementally. Regardless of how physical servers are added, they appear as a single virtual repository.

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a mainframe environment or have plans to do so. And 77.5 percent currently deploy applications to a midrange environment or have plans to do so.<sup>3</sup> These statistics underscore that managing development in heterogeneous environments is more than just a debate about the merits of the .NET vs. the Java EE platform. To derive maximum value from investments, organizations need to be prepared to govern the software delivery process, regardless of the combination of environments that may potentially include .NET, Java EE, mainframe, midrange, packaged applications, etc.

Add to the mix that organizations are increasingly transitioning to service-oriented architectures (SOAs) as a way to make optimal use—and reuse—of their heterogeneous technologies, and the situation gets even more serious. SOAs give companies the flexibility to choose the most cost-effective development strategy for their needs—whether it's evolving an existing application, building custom code or integrating a packaged solution. But to reap these benefits, a common infrastructure must be in place to enable and facilitate reuse across projects and technologies.

IBM Rational is committed to enabling customers to govern the software delivery process, regardless of platform. The Rational Software Delivery Platform provides the flexibility to support a common infrastructure that facilitates reuse across the complex heterogeneous environments of today, as well as the simple homogeneous environments that need to plan for growth tomorrow.

No other vendor can match the depth and breath of support that IBM Rational provides for heterogeneous computing environments, which include COBOL, C, C++, .NET, Java, Linux®, UNIX®, IBM System i™, IBM System z™, Microsoft Windows®, packaged application and embedded platforms.<sup>4</sup>

**Risk 3: change due to increases in people, projects and locations**

The world is in an era of sustained global economic growth that's expected to continue in 2007 and 2008, driven by growth in the United States, China and India.<sup>5</sup> According to *CIO* magazine, outsourcing is also on the rise among IT departments. Of those companies pursuing outsourcing, 73 percent outsource their application development, maintenance or support.<sup>6</sup>

Whether your company's business strategy is to pursue growth, operational efficiency or both, these economic trends will impact your business decisions, which in turn will place new demands on your development environment. Acquisitions, new product introductions, entry into new geographic marketplaces or right-sourcing development can all lead to an increase in your IT staff, an increase in your number of development projects and an increase in your number of development sites. To accommodate these new demands, your software delivery infrastructure should be able to scale seamlessly in terms of people, projects and locations.

### The advantage of a committed partner

Consider a company with multiple development locations around the world implementing a new product from a vendor whose objective is to sell to the mass marketplace. With no other option, the company hires a separate services firm to help with the initial deployment. Something goes wrong, but no one seems to know whether it's a product limitation, defect, an unsupported environment or an incorrect configuration. Fingers start pointing, but no one seems to be responsible for resolving the issue. In contrast, with IBM Rational, sales, services, Business Partners and support teams work together with customers to help ensure customer success.

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Regardless of the number of users, number of projects or physical location of your development infrastructure, the backbone of the Rational Software Delivery Platform – the software configuration management system – is proven in its ability to scale. Together, IBM Rational ClearCase® and IBM Rational ClearQuest® software have proved exceptional by customers and industry analysts in the products' ability scale in all of these dimensions. An independent research firm found that, "The IBM solution has the best proven scalability. 9,270 users on a single instance of the solution, 95 linked development sites, and 1.7TB managed by a single repository."<sup>7</sup>

#### **Risk 4: change due to innovation**

IBM is committed to delivering innovation that matters to our customers. However, the initial spark of innovation is not limited to companies like IBM or Microsoft – especially in a marketplace as dynamic as software development. New innovation is often driven through cooperative, open source, community-based efforts.

This reality leads to another business conundrum: How do you maximize your opportunity to leverage new innovations, while building a relationship with a vendor that can deliver the capabilities you need today, such as 24x7 support, implementation services, supported integrations, heterogeneous environment support and scalability? The answer is to select a vendor that is committed to supporting community-based innovation, driving the definition of open standards and bringing commercial offerings to market that extend and expand community-based, open innovation.

IBM has a demonstrated a long-standing commitment to open computing, open standards and open source. In fact, IBM has more than 1,000 developers working on open source projects, and the company leads over 80 open source projects. Two examples of how IBM Rational delivers business value to customers based on open computing are the Eclipse project and the Unified Modeling Language (UML).

IBM led the community-based effort to launch and develop Eclipse and the Eclipse Foundation. Eclipse is an open source community whose projects are focused on providing a vendor-neutral open development platform and application frameworks for building software. Many Rational offerings extend the Eclipse platform, allowing those products to take advantage of community innovation and interoperate with the specialized capabilities of numerous vendors. Today, there are more than 2.3 million developers using Eclipse and over 800 available plug-ins. The net benefit to your business is that you get the proven capabilities of IBM while also being able to leverage the latest innovations in the marketplace. You also avoid being locked in to a single vendor's platform, the pace of the vendor's innovation and its whim to allow partners the opportunity to extend its environment.

The IBM commitment to open standards like UML also provides business benefit. IBM Rational architecture management tools are based on UML, the industry standard specification language for creating conceptual representations of solution architectures. For complex applications, UML models provide



a way for all team members to understand relationships between component parts and services without being tied to a specific platform. By leveraging UML, instead of proprietary modeling languages, you can gain a common representation of heterogeneous systems, a common infrastructure across teams and a lower cost of learning new modeling languages.

**Risk 5: failure to plan for the organizational impact of change**

Improving your ability to govern the business process of software and systems delivery is not a trivial undertaking. It is not just about installing a piece of software. Even the best technologies can fail without proper planning, communication, support and organizational change considerations. Developing a roadmap and leveraging the experience of professionals who have successfully guided other companies through these organizational changes is critical to managing your risk.

IBM Rational is committed to the success of our customers. The IBM relationship starts with some of the most knowledgeable salespeople in the industry. An expert in both IBM products and your implementation, your sales representative is a consistent partner who will work with you to address the specific needs of your business. The partnership may extend to the Rational services

team, which brings excellent domain knowledge and experience helping customers improve their software delivery capabilities. The IBM Rational services and sales teams work directly with the product development organization to help ensure customer needs and concerns are met by the Rational products.

Depending on the situation, working with an IBM Business Partner may be preferred. In this case, IBM works closely with our vast network of knowledgeable Business Partners to support your needs through the award-winning IBM PartnerWorld® program.

#### **The advantage of IBM Rational products and services**

A fundamental part of effective governance is creating an environment that can adapt to change. With over 25 years of experience working with customers to improve their software and systems delivery capabilities, IBM Rational has helped customers both small and large plan for and adapt to change with minimal impact to the business – delivering higher value for the investment. These customers know the Rational Software Delivery Platform is uniquely capable of providing:

- *Comprehensive and modular application lifecycle management capabilities.*
- *Support of heterogeneous environments.*
- *Unrivaled scalability.*
- *A commitment to open standards, open architecture and open source.*
- *Proven expertise and customer success.*

But don't take our word for it. IBM Rational products are used by 9 of the Fortune Top 10 companies, 38 of the Fortune Top 50 companies and 71 of the Fortune Top 100 companies.<sup>8</sup> IBM Rational products have won numerous awards and have been identified as leaders in multiple segments by industry analysts such as Gartner and Forrester.<sup>9</sup> IBM Rational has also been publicly acknowledged as the top competitor by newer competitors in the application lifecycle management marketplace, such as Microsoft, Borland, Serena and Telelogic.<sup>10</sup>

However, the best proof of success is what our customers have to say. To learn more about the proven success of IBM Rational customers, please visit:

[ibm.com/software/success](http://ibm.com/software/success)

**For more information**

To learn more about the IBM Rational Software Delivery Platform, visit:

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



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## Endnotes

- 1 Based on research conducted in April 2007 when IBM Rational analyzed the offerings listed on the Microsoft, Borland, Telelogic, Serena and Hewlett-Packard public Web sites.
- 2 Ibid.
- 3 "Enterprise Development Survey," Evans Data Corp., Volume 1, 2006.
- 4 Based on research conducted in April 2007 when IBM Rational analyzed the offerings listed on the Microsoft, Borland, Telelogic, Serena and Hewlett-Packard public Web sites.
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