



Delivering Successful Applications That Run Your Business

The Rational
Approach



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Delivering Successful Applications That Run Your Business

THE RATIONAL APPROACH

Organizations of every size, from small businesses to huge enterprises, rely on software to run their businesses. These business applications are used to manage complex processes, interact with customers and vendors, manage the organizational data and improve the bottom line. Increasingly, the success — or failure — of these business applications has direct impact on the success of the organizations that build and depend on them.

Yet, despite all the resources and time spent building and maintaining business applications, and despite the high profile and high priority of these IT projects, most of them are delivered late¹, run over budget, fail to meet stakeholder needs or are even canceled outright. Project failures are typically not due to a lack of effort — project managers and their teams frequently work long hours in an attempt to get their projects back on schedule.

The root causes behind most failed projects are familiar to anyone who has worked on one: *The inability to define or correctly communicate requirements and manage them as they evolve; difficulties integrating complex new technologies with existing legacy systems; poor team communication; a shortage of skilled development professionals; and perhaps most importantly, the lack of a proven, predictable development process supported by effective tools.*

Rational can help. Rational's unique solution combines an effective, repeatable process based on software development best practices with a tightly integrated suite

of development tools and Professional Services to help you build, integrate, maintain, and deploy successful business applications.

Put the Business Back in Enterprise IT Development

For years, software projects have been exempt from the expectations and standards of other business undertakings. On software projects, missed deadlines, cost overruns, and defects have been accepted, grudgingly, as standard operating procedure. Although business/IT applications are not packaged and sold as products, they are just as vital to the success of the organization as any product the business produces, because they *run* the business. With Rational's industry-leading solutions your team can clearly define what they need to build; leverage the tools and know-how to build it properly; and access professional expertise and training to get it done fast. At the same time, Rational tools and the Rational Unified Process® help you put the business back in business application development by:

- > Improving your ability to accurately predict results
- > Promoting reusability throughout development and across projects
- > Managing the impact of changing technology, requirements, and constraints so your development team can become more dynamic and adaptable

¹Chaos 2002 Standish Group

Bridging the Gap Between Business and Technical Managers

Business Managers

Business managers recognize that software development is not easy. They also realize that many IT departments, including perhaps their own, do not have good track records when it comes to completing projects on schedule and within budget. Still they must make decisions based on time, cost and return on investment (ROI). They need to be able to realistically predict the ROI and completion date of each project based on accurate information and reliable metrics. Rational solutions increase predictability, minimize risk and enable business managers to make informed decisions on investing or reallocating valuable development resources. They also provide insights and objective data to continuously assess project progress and status, set realistic schedules for future projects and predict the outcome of projects going on today.

Technical Managers

Realizing how important business applications are to the entire organization, techni-

cal managers want and need to know exactly what to build. Without clearly defined requirements and the tools to manage them, technical managers cannot provide realistic time and cost estimates; and they run the risk of building incomplete and off-target systems. Successful projects start with defining the system requirements clearly. Then, as requirements change, Rational tools can help the technical manager accurately assess the impact of that change on the budget and the schedule.

Development Team

Rational tools liberate your development team — including project managers, analysts, developers, and testers — from tedious and repetitive tasks, so they can focus on building high-quality solutions that fully meet business requirements. The Rational approach to business application development unifies all stakeholders on the project, and brings business managers, technical managers and the development team together by helping them communicate and collaborate more effectively.

"The Rational® ClearQuest® tool and the standardization of those processes has allowed three levels of our system organization to better manage their workload. The individual development teams can communicate better within their project as well as across projects. Project managers, who may be dedicated to a single or multiple projects, have a standardized way of logging and keeping track of issues and scope changes. It enables our project managers to better manage their projects, address risks, scope changes, and issues much faster than they ever could before. At the leadership level, we're able to give management a better view into what's happening on individual projects and understand what the impact is across the enterprise."

*Bob Moser
Senior Manager, Corporate Project Management Office
Southwest Airlines*

Complete Lifecycle Solution For Integrating Legacy, Packaged and New Applications

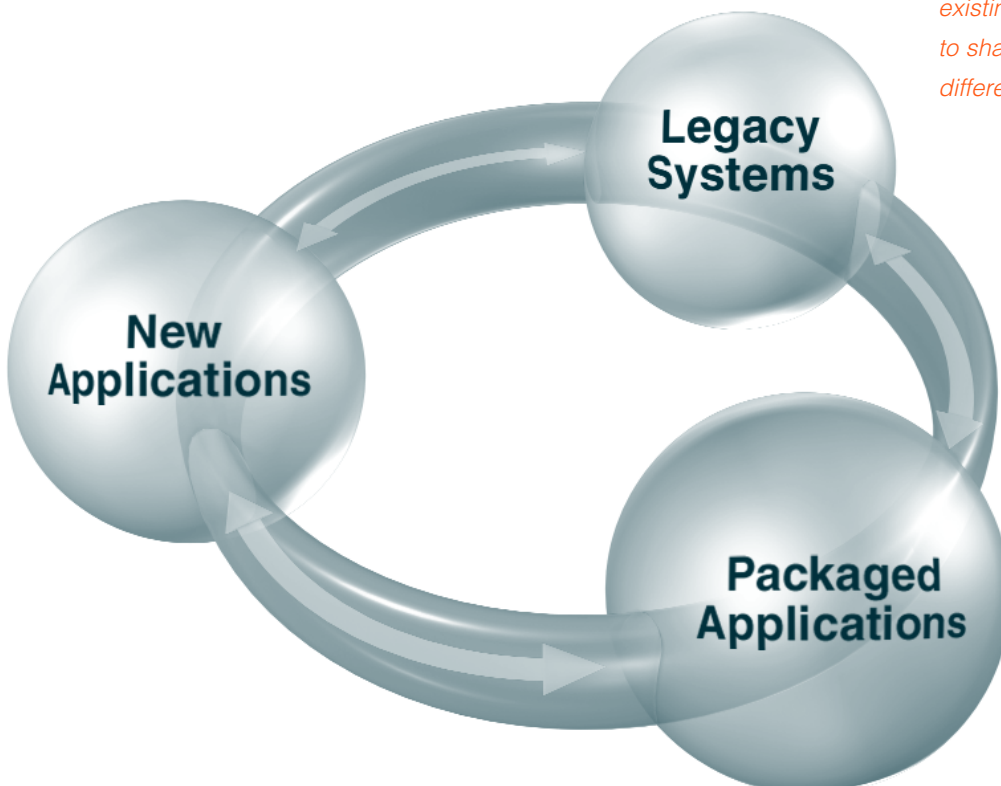
Business applications, more than any other type of software, rely on integrations of all kinds. Developers of business applications typically must integrate new applications, legacy systems, packaged and commercial off the shelf software — using commercial APIs, custom coded interfaces, Web services or some combination of all of them. It is an enormously complex problem requiring coordination of business requirements, system requirements, business rules, and customization of software assets to ensure they work with existing ones.

Legacy systems may be based on technologies, platforms, and business rules that are unfamiliar to the current development team. Moreover, team members may lack

the technical skills to address both issues internal to the legacy systems and issues related to integrating those systems with the new application. These challenges magnify intrinsic project risks such as shifting deadlines, cost over-runs, and requirements changes. To reduce those risks, the project team needs a sound environment for managing change and complexity.

Rational's comprehensive, integrated lifecycle development solutions include all the tools, best practices, and services teams need to successfully manage complex integration projects by reducing risk and potential problems early in the process. Rational tools guide team members through the entire development process, unify the team, and help ensure that they complete all critical milestones.

Whether you are building new applications, buying packaged software or working with existing systems, you need to tie them together to share data and business logic across the different systems.



Managing Change

The ability to manage and understand the impact of change from requirements to release is a key success factor in software development projects. Without an automated process to capture changes to artifacts such as requirements, models, code, and test cases, chaos reigns. Rational® ClearCase®, Rational's award-winning tool for software artifact management integrated with Rational ClearQuest, a flexible defect and change tracking tool, provides an effective way to manage that change. The Rational ClearCase family scales from small project workgroups to the distributed global enterprise, enabling teams to:

- > Accelerate release cycles by supporting unlimited parallel development
- > Unify your change process across the software development lifecycle
- > Maintain consistent tools and processes regardless of team size

Using Rational ClearCase, your team can baseline all software artifacts together in one place, including packaged application artifacts — simplifying the process of implementing and managing packaged applications.

Monitoring Progress

Without a clear picture of where you are, it is difficult to predict when you'll reach your destination. Rational® ProjectConsole automates this process of researching and reporting project status. Rational ProjectConsole simplifies project management on business applications by dynamically creating a project Web site with a progress metrics dashboard based on data automatically collected from the Rational development platform. In an instant, you can get an objective view of where your project stands, drill down to get details, assess trends and head off problems — like resource shortages — before they occur.

Building Business Applications Right From The Start

When a project fails, it's a good bet that something went wrong very early on. At the start and throughout the project, knowing what to build is crucial to building the right solution. It sounds simple, yet the symptoms of a project with ill-defined requirements are all too familiar to many IT departments:

- > Fail to meet stakeholder needs, contractual obligations or comply with technology standards

“We're a [Rational] Suite® [Enterprise] customer focusing on the 6 best practices (develop iteratively, manage requirements, model visually (UML), use component architectures, continuously verify quality, manage change) in our development and consultancy areas. Our purchase decision wasn't based on any one tool; it was the notion that this is a holistic strategy on how to build a solution. Quite candidly, there may be situations in our consulting engagements where we don't really write a line of source of code but we will visually model the system. We will capture requirements, we will test the system aggressively and we'll actually deploy that. Even though we may not be writing any code because it's a packaged implementation, we will be practicing all of the 6 best practices as a way to validate those requirements and deliver that functionality to our client.”

Ed Ferrara
Senior Architect
Unisys Corporation

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- > System architectures are inefficient and difficult to maintain or enhance
 - > Scope creep – the budget-busting and schedule-shredding expansion of requirements and functional enhancements
 - > Unpredictable results and missed deadlines
 - > Carry significant amount of project risk throughout the project

Managing Requirements

Getting a clear understanding of what your business application must do is the first step in successful development. Then, once you have that understanding you need to capture it in requirements and use cases so it can be communicated unambiguously to the rest of the development team. Rational® RequisitePro®, a key component of Rational Suite® AnalystStudio®, manages and tracks requirements as they evolve throughout the project lifecycle. With Rational RequisitePro, each stakeholder can access requirements in a form that is most effective for them. Through a tight integration with Microsoft Word, business managers and customers can create, review, and update requirements in a natural language document. This document is linked directly to a requirements database, which enables the development team to efficiently sort, prioritize, and trace requirements throughout development. Use cases

in Rational RequisitePro define how the system will work from the user's perspective, so you can be sure that the solution you build will meet all stakeholder needs. And project managers can reign in scope creep by providing concrete estimates using Rational RequisitePro to perform impact analysis and trace requirements dependencies.

Developing a Sound Architecture

Well-defined requirements and use cases make developing a flexible, maintainable architecture possible. The tight integration between Rational RequisitePro and Rational Rose® makes it easy. The industry-leading tool for model-driven development, Rational Rose helps business application development teams communicate clearly, manage complexity, define higher quality software architectures, increase component reuse, and capture vital business processes. Integrated Use Case Management (IUCM) links requirements with model elements by providing developers and designers with instant access to current requirements and traceability. Rational Rose uses a common process and a common language — the Unified Modeling Language or UML — assuring a shared understanding between the development team and business stakeholders.

"As we're coming up with our Web services, Rational® XDE™ is allowing us to understand our requirements before we design, and allowing us to design and understand our solution before we start to build things. At EDS we get involved in a lot of projects, and that's an essential key to success. Without XDE, often those steps will be skipped because they're so difficult or time consuming."

Jack Stephenson
System Architect
EDS Canada

Evolve Requirements and System Architecture with an Iterative Development Process

It's a fact of life: Requirements change. Although changing requirements are often cited as a reason for project failure, the changes themselves are not at fault — in fact adapting and enhancing requirements is a key to success. It is actually the inability to manage the change that is the liability. In an iterative development process, requirements, system architecture, code and other software artifacts are developed, refined and improved throughout the lifecycle. The iterative process, and other time-tested best practices of software development are embodied by the Rational Unified Process, or RUP® — a web-enabled knowledge base of software engineering processes that provides your team with guidance to streamline development activities.

RUP and the iterative development process minimize project risk and increase predictability, because the riskiest aspects of each project are addressed as early as possible in the development lifecycle. And RUP can be tailored to the needs of your organization so you can adapt and adopt a proven process that is right for your team. The Rational Unified Process offers guidance throughout the entire lifecycle, help-

ing your team with the transition from knowing what to build to knowing how to build it with online mentors for Rational tools and context-sensitive RUP guidance from within Rational products.

You're Not Alone

It doesn't matter how large your organization is or how experienced your team is — no IT organization has experts on staff with knowledge of every field relevant to the business. You may know your industry inside and out, but what about CRM or ERP software? How about the specific implementation that you are about to bring in? Or you may have developers who are wizards with Java and J2EE, but are just beginners when it comes to .NET and C#. What about deployment? Does your team know enough about WebSphere, IPlanet, and WebLogic to allow you choose the option best for you?

New technologies and standards continue to emerge, such as government enforced standards like HIPPA, Section 508 and others. And there's the alphabet soup of Web Services: XML, WSDL, SOAP, and UDDI. While key technologies are advancing and expanding, many organizations are forced to try to keep up with shrinking teams and fewer experienced team members.

"One of the things I do like about RUP is that I think it really helps communication among the team members particularly by having a lot of short iterative goals really helps everyone get their arms around what they are trying to do. Sometimes if you lay out a project that's a year long and if you haven't gotten it broken down in iterations, something that's going to happen a year from now can be sort of hard to keep a focus on. If you have a tight deliverable that you are going to produce in 2 months, that's a very unifying force to keep everybody focused."

Nanette Brown
Director of Applied Architecture and Quality Assurance
Internet and PC Group
Pitney Bowes

Rational is committed to providing the assistance you need — when and how you need it — to get your business applications built fast and built right. With over 22 years of industry experience, thought leadership, and a host of key partnerships with system integrators and platform vendors, Rational stands ready to help accelerate your development projects and improve your organization's software development capability.

Rational Partnerships

Rational's partnerships with other industry leaders and system integrators extend your development and deployment options. Your relationship with Rational is a gateway to nearly 600 outsourcing, technology development, and consulting partners.

Rational's strong and longstanding relationships with IBM, Microsoft®, and Sun ensure that no matter what platform your business applications live on, Rational has integrated, technology specific solutions and support for your team.

Rational's industry leadership and partnerships with leading system integrators like Accenture, Cap Gemini Ernst and Young, and IBM Global Services means that virtually anyone you choose to help with your system integration will have valuable experience with Rational's tools, process and services.

Rational Services

Rational has over one thousand experienced technical professionals worldwide to help you get your business application projects started, keep them on track, and complete them successfully.

The Rational Developer NetworkSM, an online resource exclusively for the Rational user community, offers instant access to a wide range of targeted content for every member of the development team — including white papers, documentation, technical notes, Web-based training courses, how-to articles, and project artifacts.

Rational University offers over 60 courses to provide professional education and product training for you and your team — including courses on metrics and reporting, requirements management, and the Rational Unified Process to name a few. Rational University courses are available on-site, at a Rational University campus, or online through self-paced training via the Rational Developer Network.

"In Corporate Real Estate Technology at Bank of America we have tried to make reporting easier for senior level management. One of those types of things is that managers like to see the data. With Rational ProjectConsole they see a graphical representation of how a project is coming along whether it is a traffic light status or a dashboard status. Instead of a three, four page paper and explanation in words as to how it's going — a picture is worth a thousand words."

Bryan Massingale
Senior Analyst
Bank of America

Rational's Professional Services provide on-site consulting and mentoring, as well as customized services and packaged service products. Packaged services include:

- > QuickStarts to provide your team with a clearly-defined road map for the implementation of commercial software engineering best practices using Rational tools.
- > Deployment Services that deliver detailed implementation frameworks for planning and executing the deployment of Rational tools and processes.
- > Assessments which offer independent evaluations of your software development capability.

Software Engineering Leadership

For more than two decades, Rational's software engineering leadership has been recognized internationally for innovations in software architecture, modeling, process

guidance, and software project management. Rational helped pioneer the Unified Modeling Language and continues to advance technologies, initiatives and methodologies such as Unified Change Management and the Rational Unified Process. In addition, Rational thought leaders sit on several prominent standards boards and have published more than 50 books — No matter what kind of business application you're building, Rational has the expertise and experience to help you build it faster.

From market-leading tools and time-tested best practices in the Rational Unified Process, to professional services and industry leadership, Rational is committed to helping its customers develop, integrate, maintain, and truly profit from successful business applications.

"One of the things that we've placed a lot of emphasis on is mentoring. One thing you can't just do is put someone through a training course and then walk away. By having mentors that can work with the people on a project, they can feel comfortable asking questions when they need it. There is a lot of good support that you can get from Rational so you really get the feeling that you are not alone in this, that there's a lot of resources you can draw on both within Rational and from the partners."

Nanette Brown
Director of Applied Architecture and Quality Assurance
Internet and PC Group
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