

Systems and Software Delivery Platform



The IBM Rational software and systems development solutions can help you:

- React more flexibly and effectively to changing business needs
- Develop complex products faster
- Reduce costs and improve quality
- Govern the process of software and system delivery
- Improve the development and delivery process of complex systems



- Enterprise processes and governance to foster integration
- Managing risk more efficiently using a common platform
- Reducing cost of distributed software and systems development
- Best practices to increase productivity and reduce cost of compliance needs

With this solution, a telecommunications company was able to reduce its total cost and time to develop new products by 30%. IBM continues its leadership in high tech product development and is engaged in software and systems standardization organizations, such as the Object Management Group (OMG).

EXECUTIVE SUMMARY

Understanding where and how the pieces fit

Collaboration and integration are key to product development. Product complexity has increased dramatically. Companies must develop and integrate software, hardware and electronic components within products. At the same time, they must become more agile and efficient. Governing the software and systems development and delivery process can help companies become agile and more efficient. IBM has solutions to help address these needs.

Design, build and manage

Executives need visibility into the software and systems development and delivery processes to better manage resources, schedules and cost. Software engineers need collaboration tools and access to resources to ensure integrated software and systems development.

As a leader in high-tech software and hardware development, IBM offers comprehensive integration and support tools that manage the entire software and systems development lifecycle. Built on the open, extensible and modular Eclipse framework, IBM Rational® tools enable the rapid and effective coordination of distributed teams managing the creation of innovative products.

Adding IBM partners, Embedded Plus, WindRiver, PTC and Agile provides access to additional software and systems development capabilities that are tightly integrated with IBM Rational tools.

Improve time, cost and accountability

The IBM Rational solution for software systems development is designed to support:

BUSINESS VIEW

The goal

The secret to better system design-integration

Is your software and systems development team under pressure to react to changing business needs quickly? Do you need to develop products faster, and reduce production costs? To stay competitive, your software and systems development team needs access to the right level of information and an integrated process to ensure that each piece of your system - software and hardware - will work within the overall product specification. The IBM Rational software systems development solution can help meet these needs.

The advantage

Leverage IBM performance and expertise

The IBM Rational solution for software systems development is based on the IBM Rational® Software Systems Delivery Platform. We offer a breadth of experience and expertise to help your company stand out in developing complex products that contain software and electronic components.

- The business partner community focused on Rational software has seen a fourfold increase since IBM's acquisition of Rational in 2003.
- Embedded Plus, WindRiver, PTC and Agile are key partners of our solution.
- Rational has been identified by analysts as a leader in:

- Web services platform (Gartner Group July 12, 2005)
- IT project and portfolio management (Gartner Group June 22, 2006)
- Design and construction (Gartner Group May 30, 2006)
- Software configuration management (Forrester Research Nov 14, 2005)
- Application lifecycle management (Butler Research September 15, 2005)

The benefits

Four areas to boost your software systems development

Build, manage and govern large-scale complex systems using the IBM Rational software systems development solution. Our solution can help your software engineers:

- Improve collaboration and communication of multiple cross discipline teams and partners among manufacturers, suppliers, agencies and contractors.
- Increase productivity and system quality by establishing consistent process guidance and industry standards.
- Leverage open and extensible system platforms by promoting a rich partner ecosystem.

Our software and systems development solution comprises four focus areas:

- Enterprise program management is designed to help your software engineering team to:
 - Visualize system projects and asset integrity.
 - Optimize investments.
 - Manage project status.
- Model-driven systems development (MDS), a process framework for the co-development of hardware and software in complex systems in partnership with EmbeddedPlus.
- Automated software creation, test procedures and delivery handoffs to help businesses create detailed bill of materials with audit history of complete build contents.
- Integrated device and software of systems development leveraging our partnership with WindRiver, the industry-leading device development company.

The approach

Software and systems development innovation across the universe

The National Aeronautics and Space Administration (NASA) is using the IBM Rational solution to develop the James Webb Space Telescope. The telescope will succeed the Hubble Space Telescope. It will look much closer to the beginning of time and hunt for the unobserved formation of the first galaxies. As space agencies from several different countries around the world are developing software and system components that will operate the telescope, it is critical for NASA to avoid expensive and time consuming software and integration issues. To address this hurdle, NASA mandated that each agency develop their systems using open standards-based software from IBM.

The financial advantage

Accountability--the foundation of your software systems development

The IBM Rational solution for software systems development can have a positive impact on your bottom line.

- Define mission critical functions and their impact on fiscal goals.
- Enable cost accountability from systems design to systems built.

- Track spending effectiveness of client investments.
- Identify opportunities and risks of program collaboration and sharing.

TECHNICAL DETAILS

The issues

Govern the process of software and systems development

Like other processes, software and systems development must be governed to help manage risk, ensure compliance and enforce corporate policies also with your partners. The IBM Rational software systems development solution offers proven processes and end-to-end software lifecycle management to support the development process of an entire system.

The benchmark

Integrated software and systems development that make a difference

IBM is uniquely positioned to help improve your software and systems development environment by offering integrated technologies, IBM Rational® software, and decades of experience with processes and best practices. For example, we provide:

- Heterogeneous software and systems development support
- Leadership in:
 - Web services platform (Gartner Group July 12, 2005)
 - IT project and portfolio management (Gartner Group June 22, 2006)
 - Design and construction (Gartner Group May 30, 2006)
 - Software configuration management (Forrester Research Nov 14, 2005)
 - Application lifecycle management (Butler Research September 15, 2005)
 - IT Service Management solution that integrates a holistic view of service delivery and service management.

The components

Leverage traceability with your software and systems development

The IBM Rational solutions are based on an open architectural foundation called the Eclipse universal framework, which enables tool integration throughout the software and systems development lifecycle. The result is a single platform that allows unlimited sharing of information between the team members throughout the software and systems development process. Each solution area relies on various components of the IBM Rational portfolio and integrates with key IBM Business Partner software.

Model-driven systems development (MDS) can include:

- Rational Method Composer
- Rational Systems Developer
- Rational RequisitePro
- EmbeddedPlus SysML plugin
- Rational Rose Technical Developer

Enterprise program management can include:

- Rational Method Composer
- Rational Portfolio Manager

Automation of software build and test processes can include:

- Rational BuildForge
- Rational ClearQuest
- Rational ClearCase
- Rational MultiSite
- Rational Manual Tester
- Rational Functional Tester
- Rational Test RealTime
- Rational PurifyPlus

The integrated device development can include:

- Rational Systems Developer
- Rational ClearQuest
- Rational ClearCase
- Rational Rose Technical Developer
- Rational Test RealTime
- EmbeddedPlus SysML plugin
- WindRiver Workbench

The implementation

Integrating innovation for defense

A group that integrates a variety of technologies into a single system for the simulation and evaluation of defense measures was facing several challenges and asked IBM to help ensure the operation of protection systems without costly live tests with the objective to

- Reduce software and systems development time and cost.
- Address compliance with the overseeing government agency.
- Manage evolving and changing requirements.
- Ensure traceability of business needs to implementation requirements.

IBM helped implement a solution that uses a case flow down methodology, ReqPro and RoseRT with ClearCase and ClearQuest to track status and facilitate reuse of artifacts and models across the program.

The cost of ownership

Modular. Flexible. Integrated.

The IBM Rational solutions offer many opportunities to reduce the cost of ownership:

- Modular architectures to allow component reuse and an affordable interoperability.
- Flexible and robust systems to accommodate changing technology and requirements.
- Open, modular, integrated and extensible solutions to allow common work environments that promote strong partner communities.

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