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## Highlights

- Provides a comprehensive solution for managing the lifecycle of embedded software
  - Helps reduce costs while enabling companies to address aggressive multicore design goals
  - Delivers quality management capabilities that can help minimize software delivery risks
  - Fosters greater collaboration at each stage in the development lifecycle
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# Solutions for embedded software development

*IBM Rational software teams with Wind River*

Devices from handheld remote controls to remotely operated vehicles used in space rely on embedded software and advanced processors to intelligently interact with the world around them. Companies developing the products that contain this software need to make sure their offerings are reliable, fast and efficient and that they extract the greatest possible performance from the latest in processor technology. At the same time, companies must make sure that they're delivering products that meet their customers' requirements while delivering them on time and within budget.

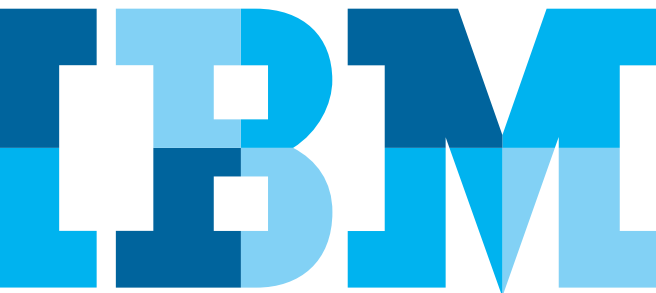
IBM Rational® software is teaming with Wind River® to help companies address the challenges of embedded software development and delivery—from initial product concept through to production.

Rational software provides systems engineering and software development products, services and best practices to help companies define and manage their product development processes. The IBM Rational Software Platform for Systems delivers collaborative tools for requirements definition and management, model-driven development, software configuration and change management, software build management and quality management—throughout the software development lifecycle.

Wind River provides operating systems, middleware, and development and test tools that leverage the latest processor technology to address the needs of a broad spectrum of companies. Wind River's offerings include the Wind River Workbench device development tool suite to improve developer productivity and the Wind River Test Management solution for development and quality teams to improve productivity and accelerate time to market.

Together, Rational software and Wind River provide a comprehensive solution for managing the lifecycle of the embedded software that drives innovation in new products, with focus on three key areas:

- Multicore software development
- Quality management
- Team collaboration



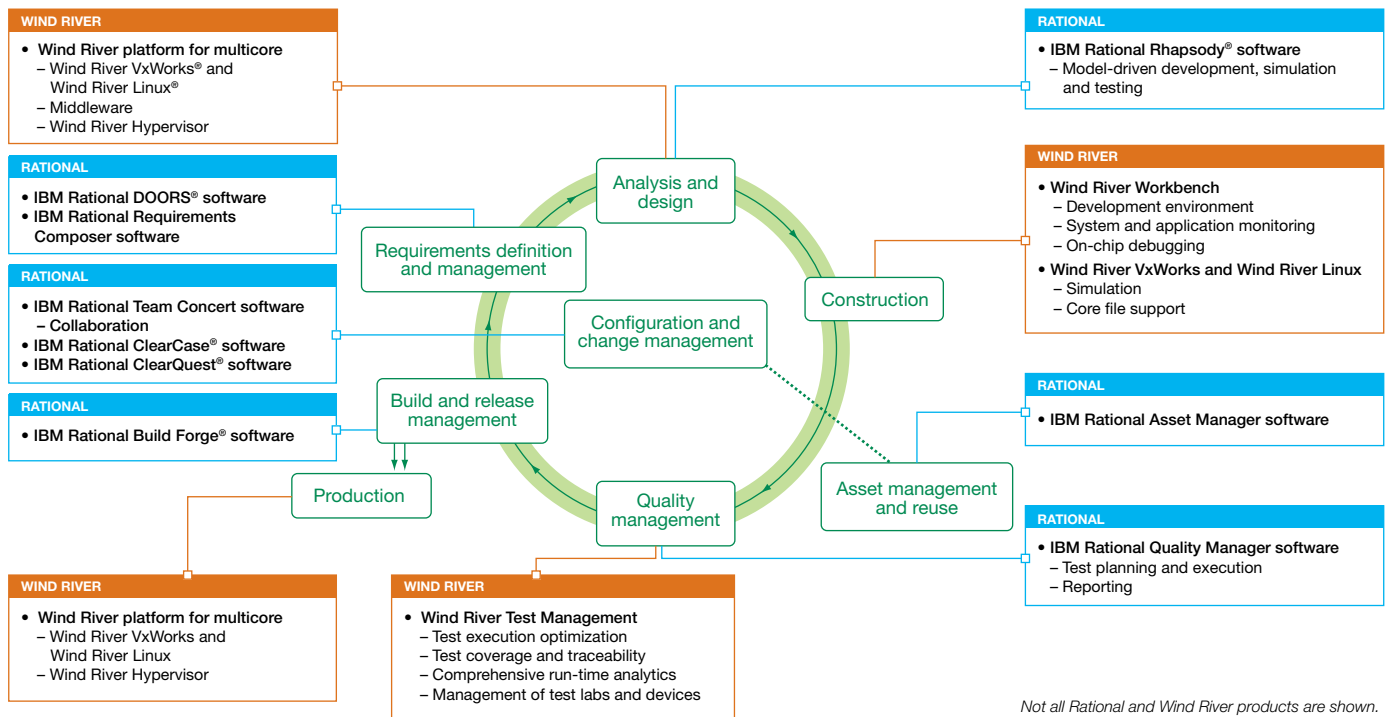


Figure 1: Rational software and Wind River provide solutions that can help you manage the entire embedded software development and delivery process.

### Cut costs and risk while addressing aggressive multicore design goals

Driven by marketplace demands, many companies are turning to multicore hardware to improve product performance while reducing power consumption and product development and manufacturing costs. Yet multicore development can introduce a host of challenges, potentially resulting in more complex software development processes. Product teams must provide more advanced functionality while meeting strict business and technical requirements. Time-to-market constraints, connectivity requirements, and safety and security considerations only add to these challenges.

The Rational software and Wind River solution provides companies with the hardware-optimized run-time environments, middleware, software development and test tools, and services they need to architect high-performance, maintainable and scalable multicore solutions. By optimizing the architecture of your applications, operating systems and hardware up front,

the solution helps you address aggressive product design goals for performance, cost and power utilization and increase your competitive edge. You can also reduce rework by building products right the first time, which helps cut development costs and speed time to market.

The multicore development solution can help you:

- Make software-driven hardware decisions, expressing customer needs in the capabilities of the software and determining the product architecture, including the multicore hardware, and the operating system environment.
- Use trade-off studies to make early and rapid assessments of alternative software and multicore environment configurations, driven by the needs of the software.
- Make optimal use of existing application software by refactoring it and integrating it into new multicore-aware product architectures.
- Take advantage of an operating environment supported by comprehensive development and test tools that deliver the performance, flexibility, reliability and security features you need to build today's complex products.

### **Mitigate software delivery risks through lifecycle quality management**

To survive in a highly competitive marketplace, companies today must deliver complex, high-quality products on increasingly tight deadlines. When development teams are distributed across the globe and device complexity is skyrocketing, this is even more difficult. Unfortunately, product and program managers are sometimes forced to make trade-offs between time to market and quality, particularly when they lack adequate project information.

Together, Rational software and Wind River can help product development teams manage business risks, improve return on investment (ROI) and foster greater collaboration by using a lifecycle approach to quality management. This approach can help reduce costs, boost quality and improve time to market by increasing automation and delivering better visibility into project status.

IBM Rational Quality Manager software provides a Web-based, centralized management environment that can serve as the backbone of a collaborative lifecycle quality management solution. Combined with IBM Rational Team Concert™ software, it delivers an integrated workflow between quality and development teams, giving stakeholders such as project managers, systems engineers and architects greater visibility into projects.

Wind River Test Management provides a test execution optimization solution specifically designed for embedded devices that provides run-time visibility into devices while under test. It helps device development and test teams focus their time and resources on what really needs testing so they can deliver higher-quality products to the marketplace on time and on budget, with greater confidence.

The combined quality management solution features include:

- Collaborative test planning capabilities, including tools and “design for testability” best practices that support collaboration between product managers, systems engineers, developers and quality teams.
- Change-driven test automation that helps teams identify changes and adequately test them using the latest test plans and software.
- Open, automated testing functionality using best-in-class test tools and virtual lab management.
- Comprehensive lifecycle traceability that provides traceability from requirements to software models, from test plans to test results, from tests to actual code, to delivery of the completed product.
- Smart defect management that leverages advanced run-time diagnostics and performance measurement with the ability to link test results and device data with defect management across the development team.

### **Greater collaboration at each stage in the development lifecycle**

No matter what new technologies your product teams are developing, it's critical that they collaborate at each stage in the development lifecycle. As development teams become more distributed, they need better and more integrated tools to improve collaboration.

Rational software and Wind River provide tools that can help improve collaboration among your team members, across the development lifecycle. The joint solution includes reporting and management tools that can help program and project managers keep their projects on track. These tools also enable team members to track the creation and resolution of changes and defects. Developers and testers can use the collaborative platform to quickly initiate chats, gather device analytics and resolve issues more quickly. And the entire team can use a common version management system to control changes to requirements, system models and software. Rational software and Wind River solutions integrate to allow companies to take a comprehensive, requirements-based approach to their embedded application software lifecycle.

### Rational software at a glance

The Rational software portfolio includes tools that can help you manage the development lifecycle—from defining and managing requirements; through modeling systems and software; to software configuration and change management, software build management, and quality management. You can benefit from the wide range of software and systems development capabilities available through the Rational software portfolio as well as from the support of the Rational software professional services team and the IBM Global Services organization.

### Wind River at a glance

Wind River, a wholly owned subsidiary of Intel®, is a world leader in embedded and mobile software. It enables companies to develop, run and test device software better, faster, at lower cost and more reliably. Wind River has been pioneering computing inside embedded devices since 1981, and its technology is found in more than 500 million products.

### For more information

To learn more about how IBM Rational software and Wind River can help you address the challenges of embedded software development and delivery, please visit:

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

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