



IBM Software Group

IBM Rational Change, Configuration and Release Management

Accelerate change and delivery



Agenda

- Introductions
- The Challenges of Delivering Quality Software
- Technology Review - IBM Rational ClearQuest
- Technology Review - IBM Rational ClearCase
- Technology Review – IBM Rational Team Concert
- Technology Review - IBM Rational Build Forge



Agenda

- Introductions
- The Challenges of Delivering Quality Software
- Technology Review - IBM Rational ClearQuest
- Technology Review - IBM Rational ClearCase
- Technology Review – IBM Rational Team Concert
- Technology Review - IBM Rational Build Forge



Business realities

Software failure impacts the bottom line

- **Airbus**
Non-compatible software used at different Airbus factories
\$6.1 billion profit hit over the next four years, 2006
- **TJX**
Cost of data breach at TJX soars
\$256 million cost, 2007
- **Hewlett-Packard**
Problems with ERP system
\$160 million loss, 2004

Only 34% of software projects succeed

Only 37% of stakeholders are satisfied with the speed of internal application development, and just 42% are satisfied with the quality

Sources: Forrester Research, Standish CHAOS Report, Comparative Economic Normalization Technology Study, Business Week, CEO Magazine, Computerworld, InfoWeek, Fortune, The New York Times, Time, The Wall Street Journal, Boston Globe.



Why is it so difficult to quickly deliver quality software?

Difficult coordination and communication

Increasing development costs

Short deadlines/ need for faster time to market

Compliance mandates

Pressure from competition

Manual, error-prone tasks

Unpredictable and unreliable processes

Distributed and disconnected teams

Lack of visibility into project status

Reduced staff

Inconsistent quality

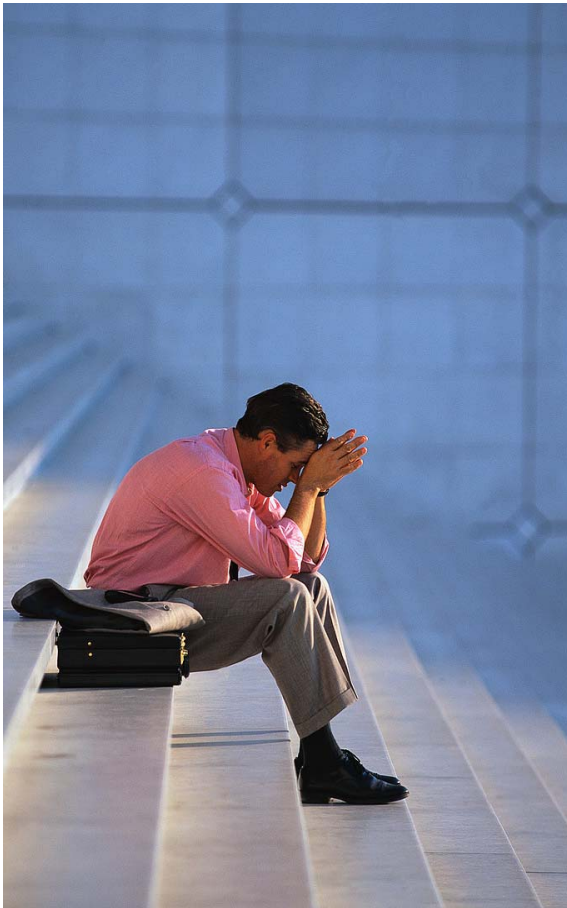
No control or insight into development activities

Complex environments

And more!



What is the business impact of these software delivery challenges?



- Delayed and missed releases
 - Effecting the ability to compete with competition
- Increased development costs
 - Effecting the overall company 'bottom line'
- Poor and unpredictable quality
 - Effecting the business reputation
- Customer dissatisfaction
 - Effecting future and current business



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- Introductions
- The Challenges of Delivering Quality Software
- IBM Rational Software – Our Unique Value
- IBM Rational CRM Solution Overview
- Technology Review - IBM Rational ClearQuest
- Technology Review - IBM Rational ClearCase
- Technology Review – IBM Rational Team Concert
- Technology Review - IBM Rational Build Forge



IBM Rational Software

Our unique value

IBM Rational software is a **pioneer in technology** and **partners** with its customers to address and **solve the challenges** of developing and delivering quality software and systems

- 
- 
- *Decades of proven technology leadership*
 - *Revenue strength with strong R&D investments*
 - *Large installed-base with thousands of customers*
 - *World-wide technical expertise and support*
 - *A complete end-to-end lifecycle solution*

Rational. software

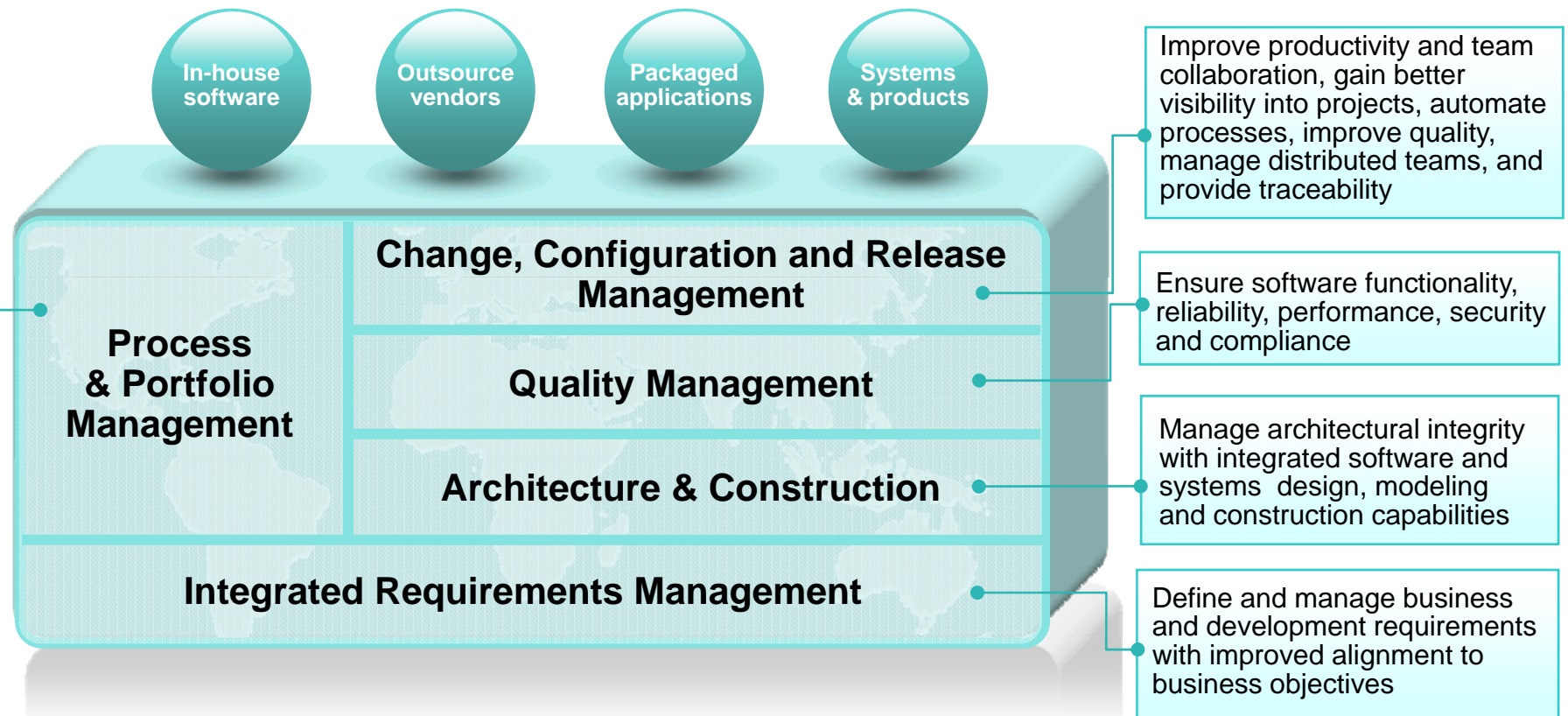


IBM Rational software

What we offer – IBM Rational Software Delivery Platform

Solutions to help customers achieve greater value and performance from their investments

Align business and software/systems delivery objectives by ensuring greater visibility, clarity and accountability across projects and processes



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- Technology Review - IBM Rational Build Forge
- Technology Review – IBM Rational Software Analyzer
- Next Steps



Change, Configuration and Release Management

Across all levels of business

“We need a solution that empowers my teams to cost effectively meet our business goals”



Chief Information Officer

“I need visibility and control over software projects to ensure fast delivery of high-quality software”



Managers

“I need to be able to easily and quickly complete my work with less defects”



**Developers, Testers,
Build Engineers**



Change, Configuration and Release Management

IBM Rational: Meeting the needs across all levels of business



Chief Information Officer (CIO)

Reduce costs with efficient teams and better quality

- ▶ Leveraging existing development technologies and hardware investments reduces costs and enables quick start-up
- ▶ Automation and tracking creates efficiency for on-time deliveries
- ▶ Centralized access effectively connects distributed teams
- ▶ Identifying defects earlier in the software development lifecycle saves time and money

Effectively govern development and reduce risk

- ▶ Secure and controlled access with repeatable processes ensures software governance
- ▶ Audit trails and a complete bill-of-materials tracks changes for compliance management
- ▶ Partnering with a pioneer in technology provides the **'best in class'** solutions to reduce risks and address and solve business challenges



Change, Configuration and Release Management

IBM Rational: Meeting the needs across all levels of business



Project Managers, Deployment Managers

Accelerate and facilitate faster delivery cycles

- ▶ More frequent, iterative development cycles enables immediate feedback
- ▶ Concurrent access to files, through parallel development, ensures efficient use of time
- ▶ A 'big picture view' to requirements thru deployment facilitates rapid response to change

Improve software quality

- ▶ Reliable, repeatable processes and code analysis provides rapid error detection and consistent results
- ▶ Unifying testing activities with development and delivery efforts, improves overall software quality
- ▶ Industry-proven best practices enhances individual productivity and ensures consistent quality

Provide better visibility and control over projects

- ▶ Real-time enterprise reporting identifies bottlenecks, and improves project visibility and control
- ▶ Access to critical information about your development and delivery lifecycle enables 'smart' management and decision support



Change, Configuration and Release Management

IBM Rational: Meeting the needs across all levels of business



Developers, Testers, Build Engineers

Improve productivity

- ▶ Automated notifications of assignments and priorities enables you to know what to work on and when
- ▶ Self-services access to software assembly processes allows you to build quickly, anytime
- ▶ Transparent real-time access to files and directories provides immediate access to assets virtually anywhere in your organization
- ▶ Automation of tedious tasks, defect detection, and best practices guidance improves efficiency, quality and ensures consistent techniques

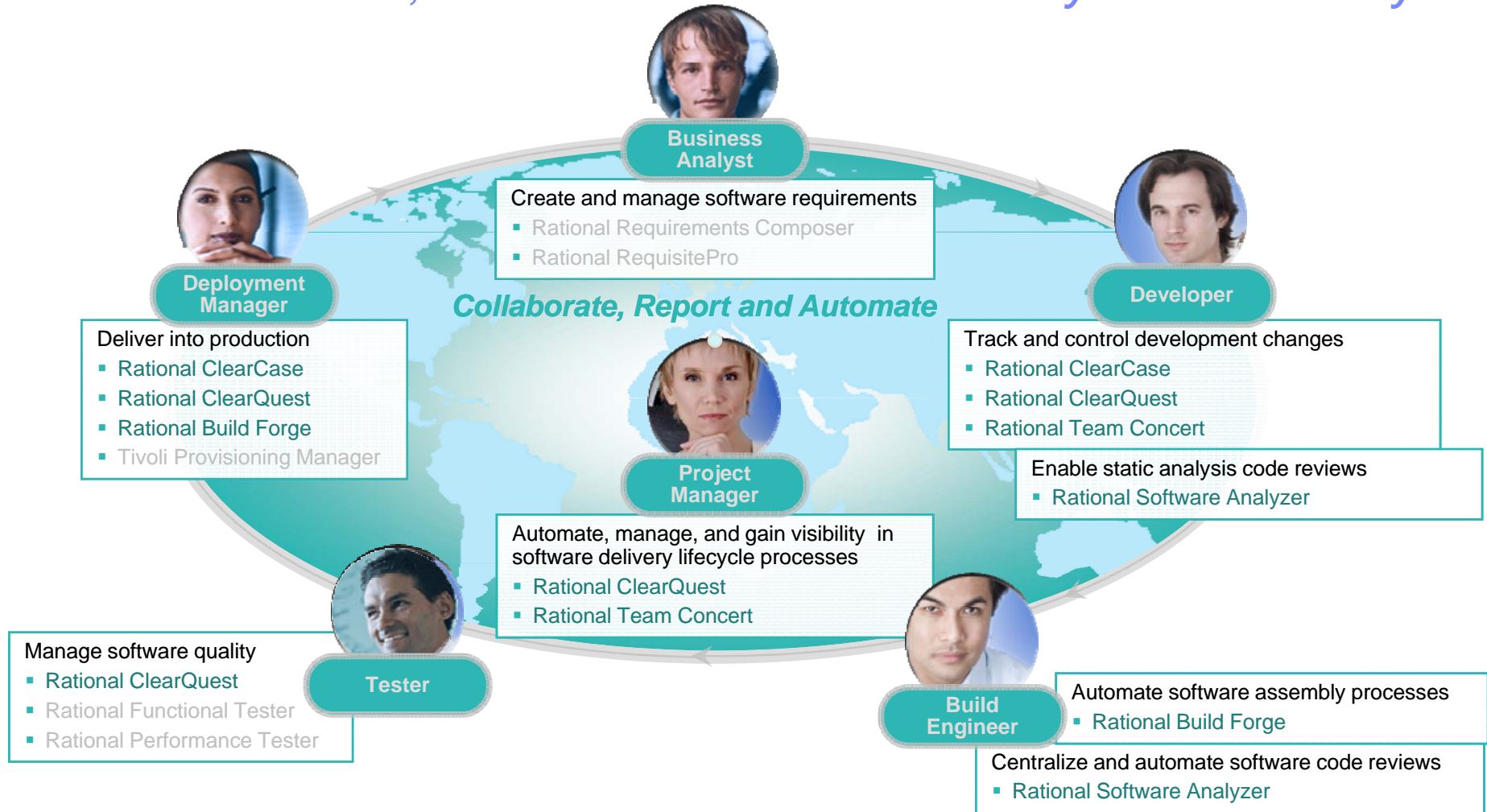
Support the way you work today – freedom of choice

- ▶ Supported integrations with leading IDEs allows you to work in your preferred environment
- ▶ Remote access and disconnected usage enables you to work from any location (office, home, during travel, etc.)
- ▶ Open source environments provides added workspace flexibility



Change, Configuration and Release Management

Improving effectiveness with code-level analysis, version control, process automation, team collaboration and lifecycle traceability



IBM Rational ClearQuest

Comprehensive Software Change Management

An industry-leading solution that provides flexible defect and change tracking, process automation, reporting and lifecycle traceability for better visibility and control of the software and systems development lifecycle

- ✓ Flexible, customizable and automated workflows provide repeatable, enforceable and predictable processes



An out-of-box Application Lifecycle Management (ALM) template provides a solid foundation for ALM best practices

- ✓ Real-time reporting and metrics improves project visibility and decision making
- ✓ Access control, electronic signatures, repeatable processes and audit trails simplify compliance management
- ✓ Scales to any size team from small workgroups to distributed enterprise teams to support evolving organizational needs
- ✓ Integration with requirements, development, build, test, deployment and portfolio management tools facilitates rapid response to change



IBM Rational ClearQuest

Potential time and cost savings

Rational ClearQuest ALM Schema

Analysis shows reductions of...

Schema requirements identification and review

25%

Schema design time

50%

Schema implementation time

66%

End-user training

50%

Built for fast implementation, the ALM schema includes frameworks that can **reduce deployment time by 50 percent** or more!



Source: Analysis of Rational ClearQuest ALM schema implementations
By: IBM – 2008



IBM Rational ClearQuest web

Potentially lower development and infrastructure costs

Projection: 50% of workforce will work “outside the walls” of a formal workplace*

Estimate: 65% of IT budgets are allocated to operations and maintenance**

Survey Results: Today’s top priorities include cutting costs and improving workforce productivity***

- ▶ Connects and unifies teams anywhere, anytime
- ▶ Light-weight, full featured web interface to help lower operational and maintenance costs
- ▶ Secure and controlled access with audit trails for reducing risk and aiding governance
- ▶ Repeatable and automated processes for improving productivity and reducing costs

Sources: *Rebuilding the Competitive Foundation, ID Number: AV-18-9497. By: Gartner Research - December 2002

** Proven Cost Cutting Strategies for IT. By: Info-Tech Research Group – August 2005

*** Top CIO Priorities for 2009: Technology Priorities. By: CIO Insight - 2009



IBM Rational ClearCase

Complete Software Configuration Management

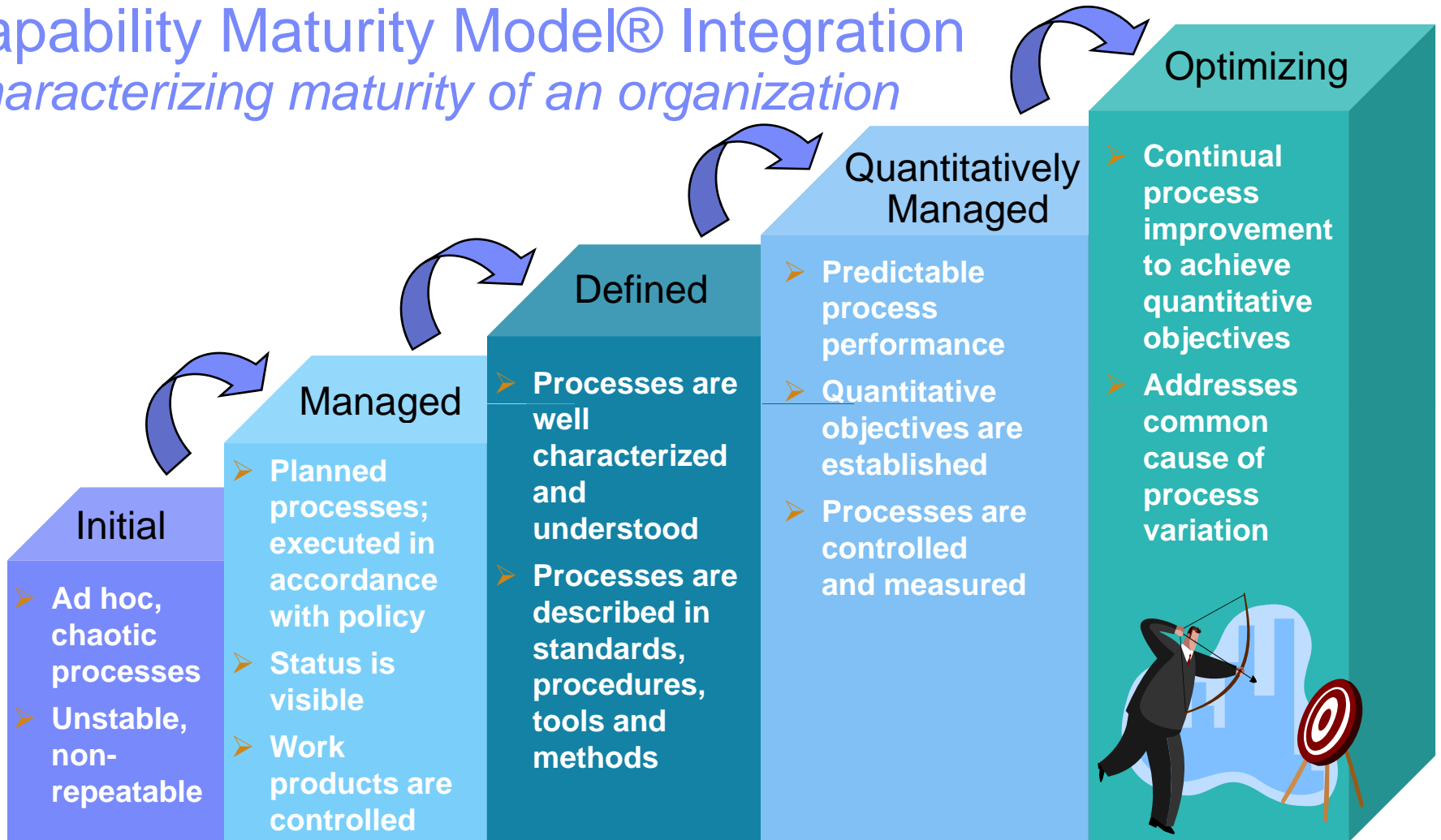
An industry-leading solution that provides sophisticated version control, workspace management and parallel development support to improve productivity

- ✓ Light-weight feature-rich clients allow you to work locally or remotely
- ✓ Flexible out-of-box usage model based on proven best practices increases team productivity and efficiency
- ✓ Wide-range of supported environments and cross-platform support connects diverse teams
- ✓ Transparent real-time access to files and directories virtually anywhere in your organization
- ✓ Scales to any size team from small workgroups to distributed enterprise teams to support evolving organizational needs
- ✓ Integration with leading IDEs allows you to work in your preferred environment
- ✓ Sophisticated branching and graphical merge tools enable concurrent access to files and efficient use of time



Capability Maturity Model® Integration

Characterizing maturity of an organization



CMMI® process maturity levels 1 through 5

Source: CMMI® for Development, Version 1.2 CMMI-DEV, *Improving processes for better products*
By: CMMI Product Team – August 2006



IBM Rational ClearCase

Potential quantifiable benefits

Studies show that adherence to CMMI® -based processes...

Rational ClearCase may help teams...

To possibly realize these quantifiable benefits...

Reduce costs an average of 34% and up to 87%

Mitigate costly rework, improve quality, facilitate effective teaming, and streamline software delivery

Reduce project costs through process improvements by up to 87%

Increase productivity an average of 61% and up to 329%

Automate best practices, and can provide real-time access to assets virtually anywhere in your organization

Improve individual and team productivity by an average of 61%

Improve quality an average of 48% and up to 132%

Promote consistent quality with industry proven best practices

Increase quality of software deliverables by up to 132%

Source: Performance Results of CMMI®-Based Process Improvement
By: CMMI Product Team – August 2006



IBM Rational Team Concert

Software innovation through collaboration

An innovative solution that provides integrated version control, automated workflows, and developer builds, in a single product for real-time visibility and complete project collaboration

- ✓ Think and work in unison across functional and organizational silos with integrated version control, change tracking and build capabilities
- ✓ Reporting and custom defined processes provide visibility and real-time project health information
- ✓ Built on IBM's newest innovative, collaborative platform – *Jazz*
- ✓ Unify teams that use a variety of clients – including the web, Eclipse and Rational development tools
- ✓ Leverage your existing investments – such as Rational ClearCase, Rational ClearQuest, Rational Build Forge and Subversion



IBM Rational Team Concert

Potential quantifiable benefits

Studies show that
Agile techniques...

Rational Team Concert
may help teams...

To possibly realize these
quantifiable benefits...

Boost efficiency of
software development
teams by up to 45%

Automate best
practices and Agile
processes

**Improve individual and
team productivity by
up to 45%**

Reduce scrap
and rework costs
by up to 20%

Automate shorter, more
frequent development
iterations

**Reduce scrap and
rework by up to 20%**

Reduce personnel
costs by up to 64%

Enable flexible and
cohesive team
collaboration for optimal
efficiency

**Reduce project
personnel costs by up
to 20%**

Source: SourceIQ, Inc.
By: Roger Dunn, CEO – May 2008



IBM Rational Team Concert

Sample Return on Investment (ROI) scenario

Goal: Improve individual and team efficiency by up to 45%

Goal: Reduce scrap and rework by up to 20%

Goal: Reduce personnel costs by up to 20%

Sample ROI on \$2.5 M project, 12 month intended duration

Goal	Issue	Intended Benefit	Benefit / (cost)
Improve team efficiency	Agile practices reduce costs 45% (\$1.25m)	Save 10% team costs	\$250,000
Reduce scrap and rework	Increase customer focus 20% (\$.5m)	Increase returns 5%	\$125,000
Reduce personnel costs	Enable flexible project sourcing (64% (\$1.6m))	Reduce TCO (Total Cost of Ownership) 5%	\$125,000
Savings			\$500,000
Cost			(\$200,000)
ROI on one \$2.5m project		250%	\$300,000


Source: SourceIQ, Inc.
By: Roger Dunn, CEO – May 2008



IBM Rational Build Forge

Automating software assembly

An adaptive execution framework that automates software assembly processes to help development teams reduce costs and improve time to market

- ✓ Automate and standardize software assembly processes for improved productivity, efficiency, repeatability, reliability and tracking
- ✓ A reliable and automated 'Bill of Records' facilitates faster problem resolution, better reproducibility and compliance management
-  Job process optimization runs jobs the smartest way possible and project configuration snapshots manages various project configurations
- ✓ Web console for user access and administration provides a consolidated, real-time view to the assembly and build processes anytime, anywhere
- ✓ Integration with leading IDEs provides controlled, self service access to software assembly processes and allows you to work in your preferred environments
- ✓ Integration with existing development technologies (languages, scripts, tools, platforms) leverages existing investments and enables quick startup



IBM Rational Build Forge

Potential benefits to customers

<u>Benefit</u>	<u>Average Improvement</u>	<u>Highest Improvement</u>
Reduction in Costs	25%	50-70%
Improved Quality	30-40%	70-80%
Return on Investment (ROI) <ul style="list-style-type: none"> Typically obtained in the first 3 to 6 months of use 	80%	Over 200%
Increased Productivity <ul style="list-style-type: none"> Speed of builds/releases Configuration Management Developer Productivity 	110% 42% 28%	500-2000% 90% or greater 81-90%



Source: The Evolution of Build and Release Management for Effective Software Delivery: A Customer Survey with Case Studies
 By: Hurwitz & Associates – October 2007



IBM Rational Software Analyzer

Identifying code-level issues through Static Analysis

An extensible static analysis product that can help development teams detect - and in many cases correct - coding issues to help improve overall code quality

- ✓ Identify code-level issues early in the software development lifecycle, saving both time and money
- ✓ Extensible framework allows development teams to create custom rules and reports for added flexibility, and provides the ability to plug in to other analysis products for central management of third-party products
- ✓ Implement best practices across development teams to help enforce coding standards and adherence to compliance mandates
- ✓ Includes a rich set of out-of-box rules which enables code reviews using development best practices
- ✓ Enhance project visibility and more effectively manage governance and compliance
- ✓ Automate and centralize code quality analysis as part of the build process



IBM Rational Software Analyzer

What is the cost of a defect?

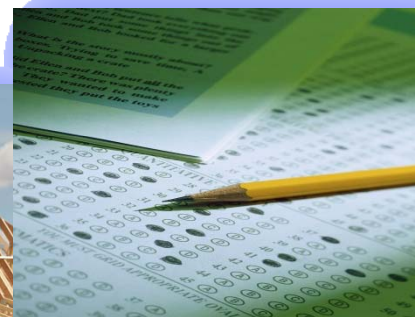
80% of development costs are spent identifying and correcting defects!



During the
coding phase
\$25/defect



During the build
phase
\$100/defect



During the
QA/Testing
phase
\$450/defect



Once released
as a product
\$16,000/defect

The increasing costs of fixing a defect....

Source: Applied Software Measurement
By: Caper Jones – 1996



IBM Rational Software Analyzer

Sample cost reductions



**Basic static analysis
may find/prevent up to
5-15% of all defects**

**Deeper analysis
can push this up to
15-20%**

**Find bugs early when
the cost is often
lower!**

Sample project with 500 defects, 12 month intended duration

Software development phase	Cost to identify/fix 500 defects	Savings finding/preventing 20% of defects
Coding phase (\$25/defect)	(\$12,500)	\$2500
Build phase (\$100/defect)	(\$50,000)	\$10,000
QA/Testing phase (\$450/defect)	(\$225,000)	\$45,000
Once released as a product (\$16,000/defect)	(\$8,000,000)	\$1,600,000

Source: Applied Software Measurement
By: Caper Jones – 1996



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IBM Rational ClearQuest

Single solution to manage change across all projects

- Consolidated, real-time view of entire project status
- Comprehensive quality metrics in project dashboards and reports
- Secure, central repository
- Traceable, auditable relationships between requirements, development, testing, project artifacts and deployment
- Easily customizable and configurable to meet your specific needs

**Visibility to changes anytime,
anywhere!**



IBM Rational ClearQuest

Easy access using the client of choice

- For team members:



- ▶ Web – rewritten with focus on increasing productivity, enhancing usability and providing easy access to information!

- ▶ Eclipse

- ▶ Windows

- ▶ UNIX/Linux



- ▶ Command Line Interface (CLI)

- For administrators:



- ▶ Designer – rewritten with new features to reduce time spent on schema design!



- ▶ Import tool – rewritten to provide multi-platform support!

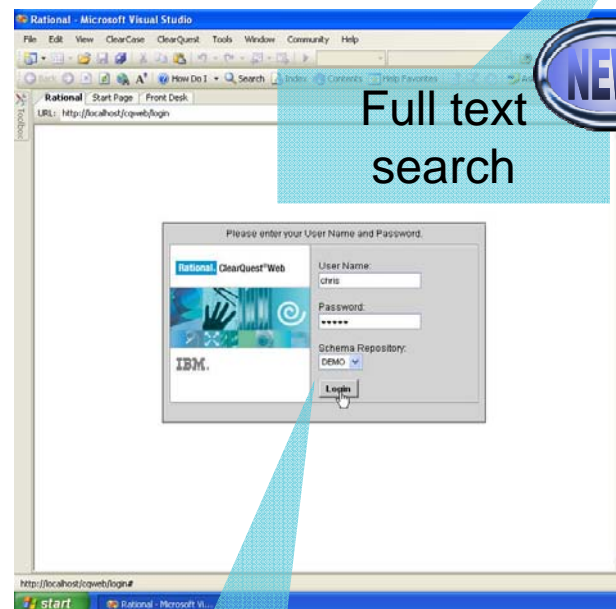


IBM Rational ClearQuest Web

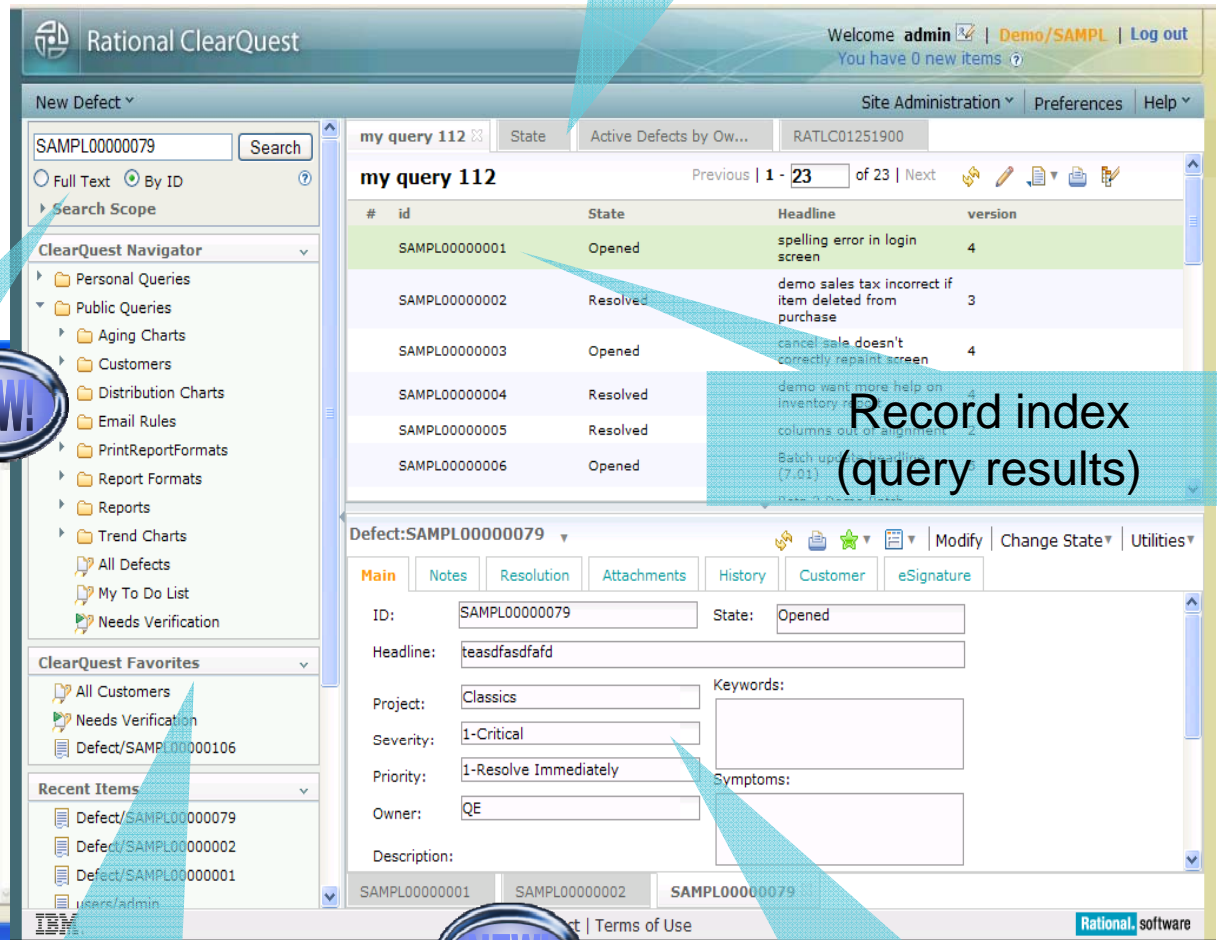
Easily connect your distributed teams

- Lightweight
- Full featured
- Centralized, real-time view

Multi-tasking
tabbed display



Full text
search



Record index
(query results)

Secure login

Short-cut to favorites





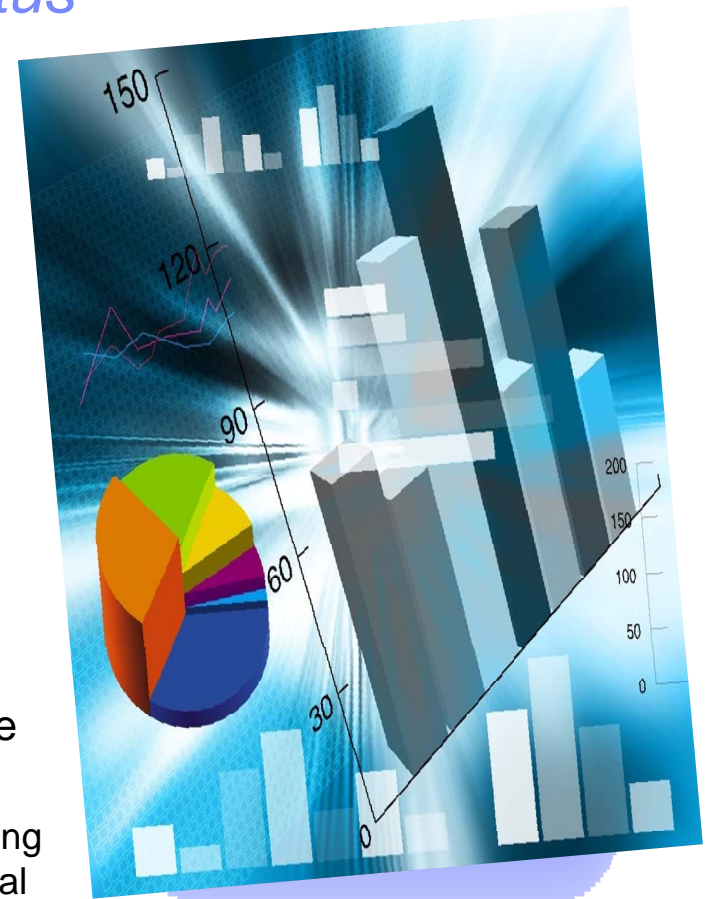
Record view



IBM Rational ClearQuest

Powerful metrics and real-time project status

- Full database search capabilities 
 - ▶ Secured, fast and powerful
- Queries & Charts
 - ▶ Easily create and modify with Wizards
 - ▶ Charts: Aging, Trend, Distribution
- E-mail notification rules
 - ▶ Automatic notification of events and state changes
 - ▶ Configurable through GUI interface
- Enhanced Reporting and Charting 
 - ▶ Provides development teams with flexible and enterprise level access to real-time reporting and metrics
 - Data can be 'pulled' to be used by a wide variety of reporting engines such as: SAP BusinessObjects XI including Crystal Reports, Eclipse BIRT (included) and Actuate's BIRT Reporting Products
 - New Report Server allows teams to manage and run reports from a web browser providing access anywhere, anytime



IBM Rational ClearQuest

Project metrics for Managers

**Get answers to common questions
anytime, anywhere...**

- Resource allocation
 - ▶ “Are change requests distributed evenly across the team?”
 - ▶ “Who is available to take on a mission-critical bug fix?”
- Project status
 - ▶ “How many Priority 1 defects are still outstanding?”
 - ▶ “How many defects have been submitted for this release?”
- Trends
 - ▶ “How long is it taking to fix the average bug?”
 - ▶ “How long is taking to implement enhancement requests?”
- Testing
 - ▶ “How many defects are in the verifying state?”



IBM Rational ClearQuest

Improve individual and team effectiveness

Know what to work on and when...

- To-do list
 - ▶ “What Change Requests have been assigned to me?”
 - ▶ “What should I work on first”



my query 112

#	id	State	Headline	version
	SAMPL00000001	Opened	spelling error in login screen	4
	SAMPL00000002	Resolved	demo sales tax incorrect if item deleted from purchase	3
	SAMPL00000003	Opened	cancel sale doesn't correctly repaint screen	4
	SAMPL00000004	Resolved	demo want more help on inventory report	4
	SAMPL00000005	Resolved	columns out of alignment	2
	SAMPL00000006	Opened	Batch update headline (7.01)	5

Defect: SAMPL00000079

ID: SAMPL00000079 State: Opened

Headline: teasdfsdfad

Project: Classics Keywords:

Severity: 1-Critical

Priority: 1-Resolve Immediately Symptoms:

Owner: QE

Description:

IBM Rational ClearQuest

Simplify security and compliance management

- Electronic Signature
 - ▶ Choose what records and states require Electronic Signature approval
- LDAP Authentication and User Authorization
 - ▶ Rational ClearCase and Rational ClearQuest secured login
- Audit Trail and Field Logging
- Secure Repository
 - ▶ Supports popular database vendors
- Enhanced Security
 - ▶ Disabled “Remember Password”
 - ▶ Federal Information Processing Standards (FIPS) 140-2 approved encryption
 - ▶ Internet Protocol version 6 (IPv6) support



**Repeatable, reliable
and enforceable
security**




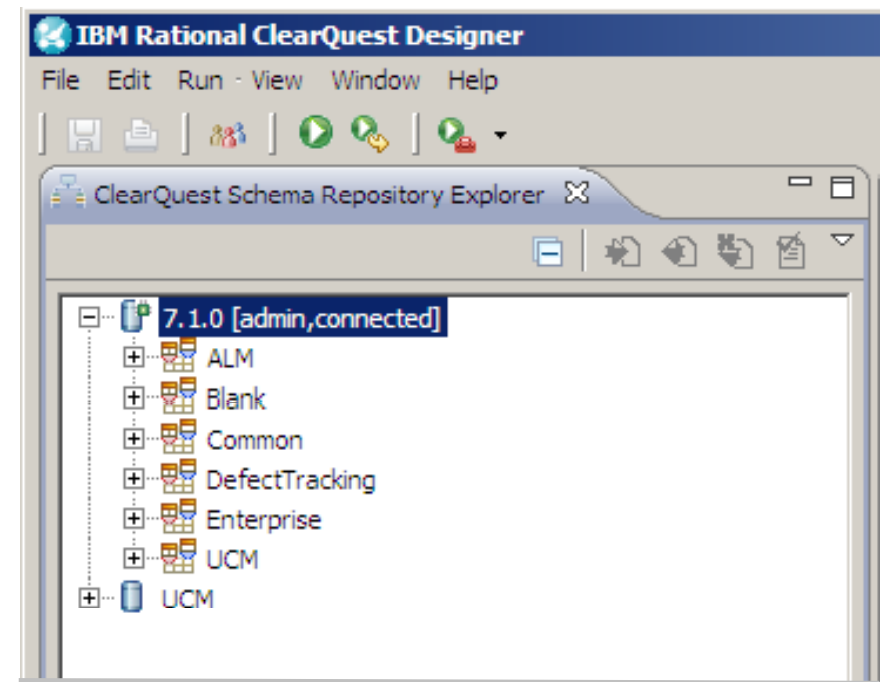
IBM Rational ClearQuest

Customize and configure to meet your needs

Quick start-up with “out of the box” schemas

Easily customized for any process or create your own schema from scratch

- ALM Schema 
 - ▶ Deployment ready out-of-the-box using ALM best practices
- DefectTracking
 - ▶ Standard out-of-the-box defect tracking
- Unified Change Management
 - ▶ Supports UCM-enabled projects, allowing true “Activity-based” development
- and more...



Rational ClearQuest allows you to develop and test your changes (in a test environment) BEFORE applying them to production!

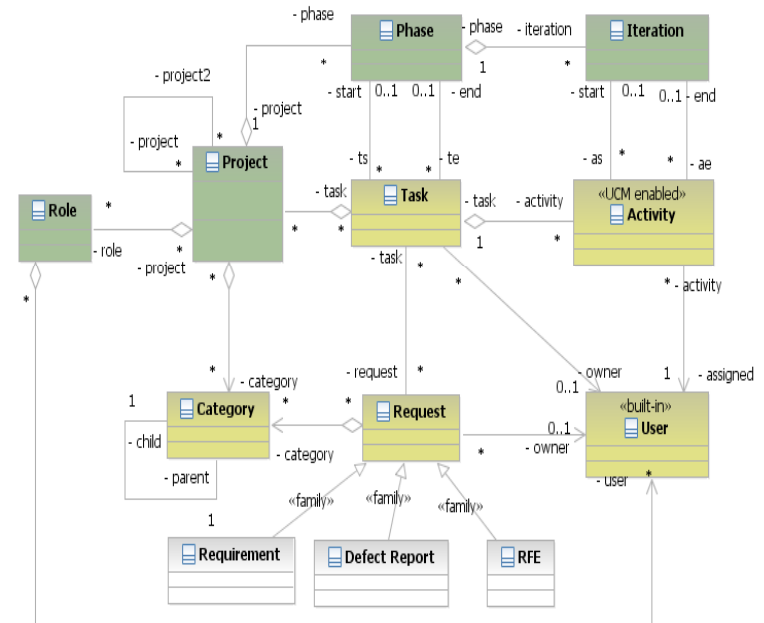


IBM Rational ClearQuest ALM Schema

Simplifying Application Lifecycle Management (ALM)



- Solid foundation for scalable ALM
 - ▶ Deployment ready out-of-the-box using ALM best practices
 - ▶ Bring new projects to ALM or enhance existing ClearQuest projects
 - ▶ Scalable from small teams to enterprise-wide organizations
- Boost team performance
 - ▶ Support for Agile techniques or high process needs – meeting every team's requirements
- Reduce implementation time, maintenance and administration
 - ▶ Streamline project creation: Copy any project or setup a project as a template
 - ▶ Empower Project Managers to configure work processes, team vocabularies and security settings
- Collaborate and coordinate (people, processes and information) among team members
 - ▶ Manage a single request in more than one project
 - ▶ Maintain relationships between requests, tasks and activities



**Streamline a team's
ability to deliver software
without extensive
schema development**

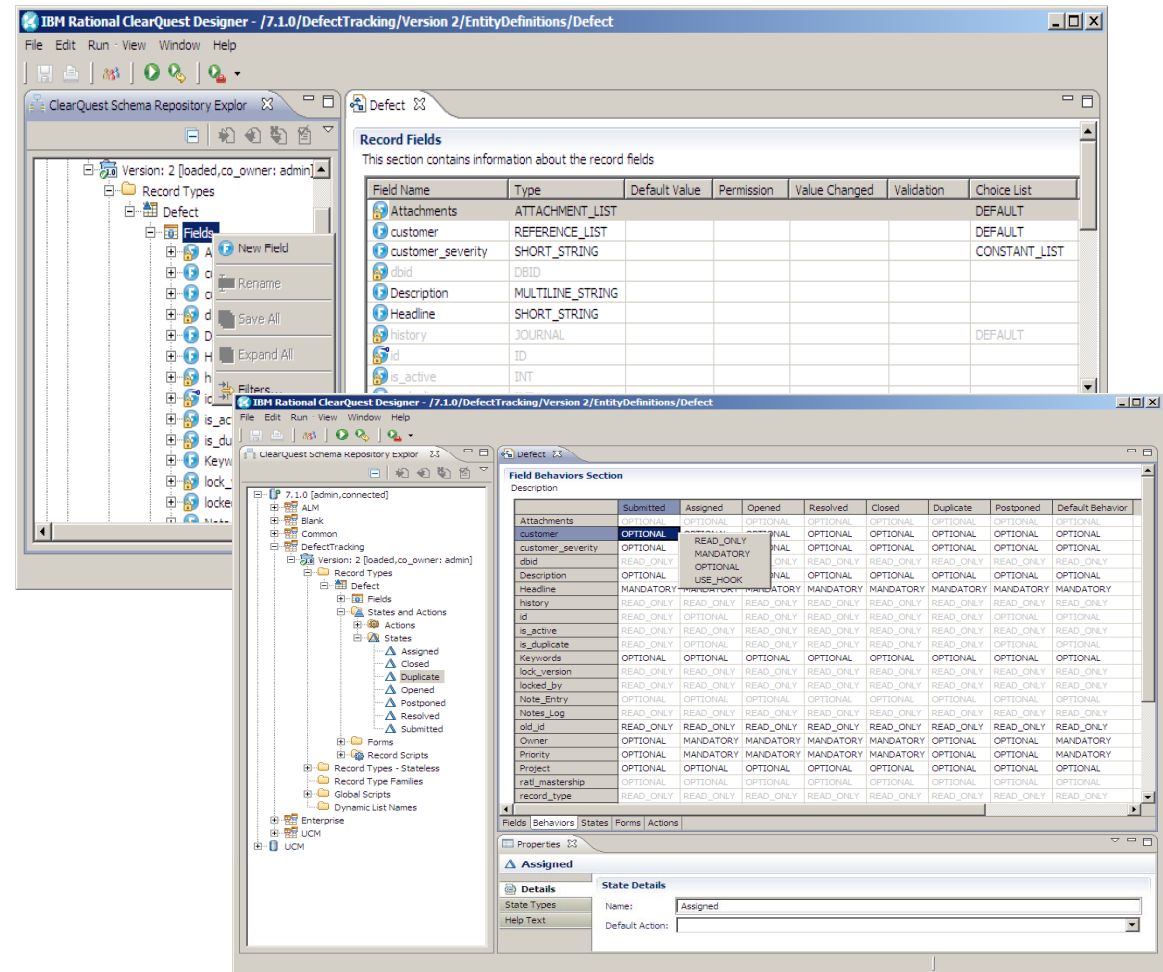


IBM Rational ClearQuest

Customize and configure to meet your needs

Add your own fields and modify behaviors

- Create new fields of any type
 - ▶ Integer
 - ▶ date/time
 - ▶ short string
 - ▶ multi-line string
 - ▶ attachment list
 - ▶ Reference
 - ▶ reference list
- Easily set a field's behavior
 - ▶ Read-only
 - ▶ Mandatory
 - ▶ Optional
 - ▶ Script (VBScript or Perl)

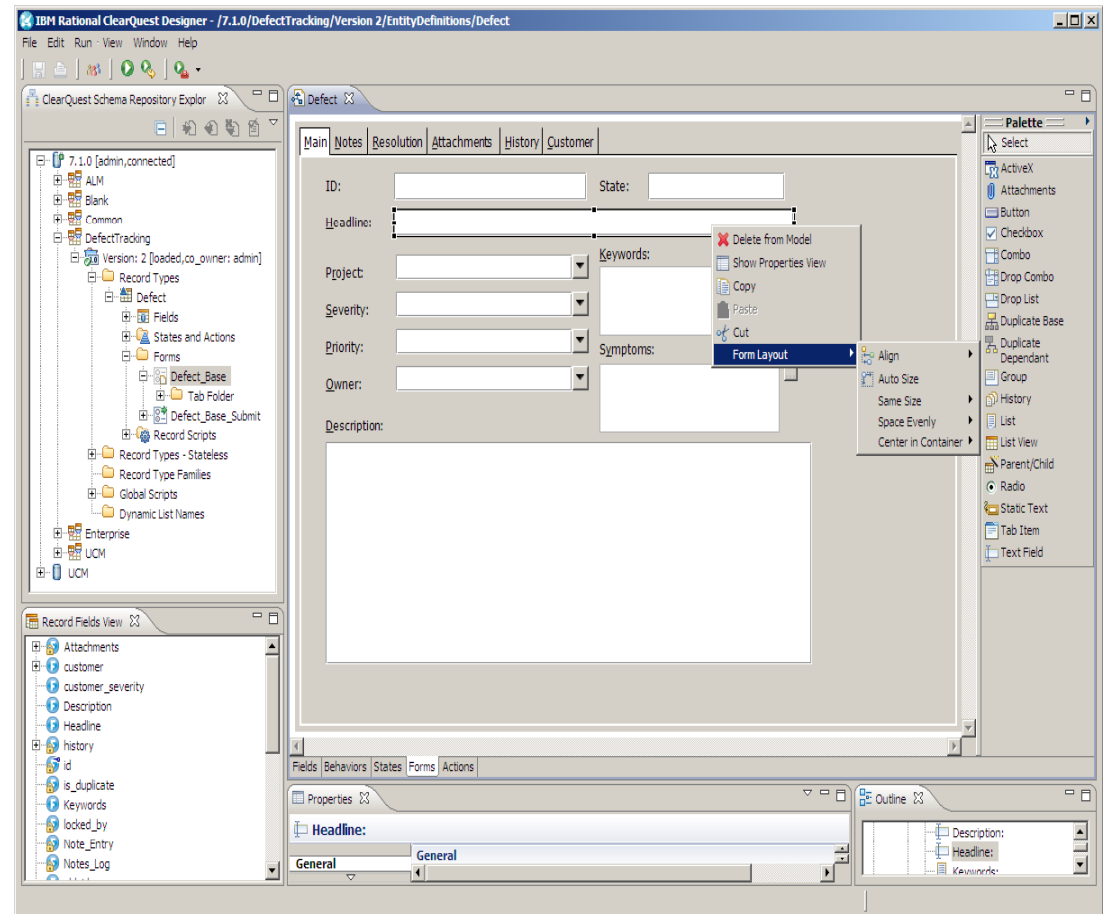


IBM Rational ClearQuest

Customize and configure to meet your needs

Modify the forms for your desired look

- Built-in visual form editor
 - ▶ Drag and drop into place
 - ▶ Add tabs to group fields
 - ▶ Choose the control type from the control palette
 - Check box
 - Drop-down list
 - Combo box
 - Option button
 - Text box, etc.

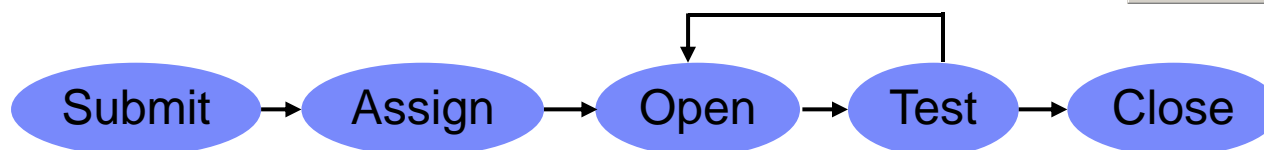
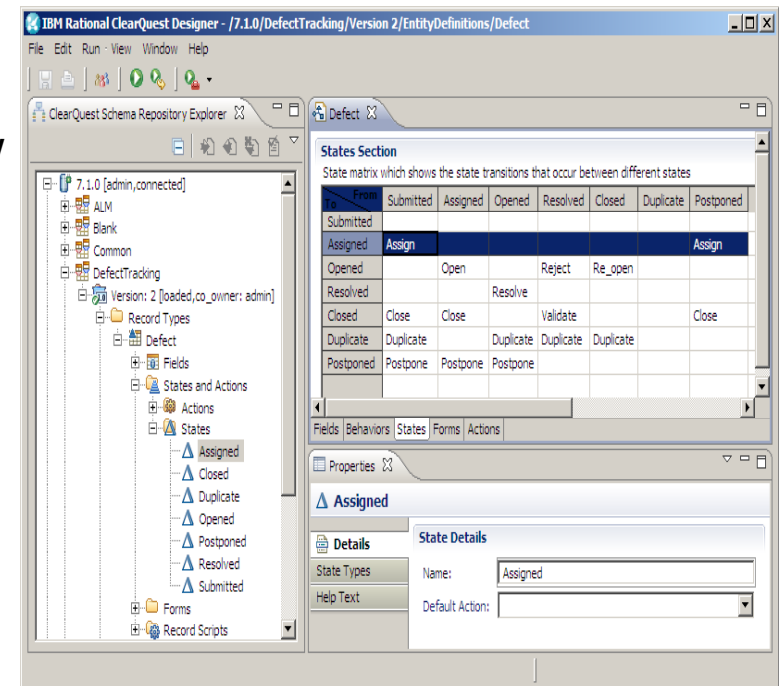


IBM Rational ClearQuest

Customize and configure to meet your needs

Configure your unique state transition matrix

- Automate and configure your process workflow
 - ▶ Automatic e-mail notifications
- Control access to/from states
- Easy to configure
 - ▶ Drop-down selections



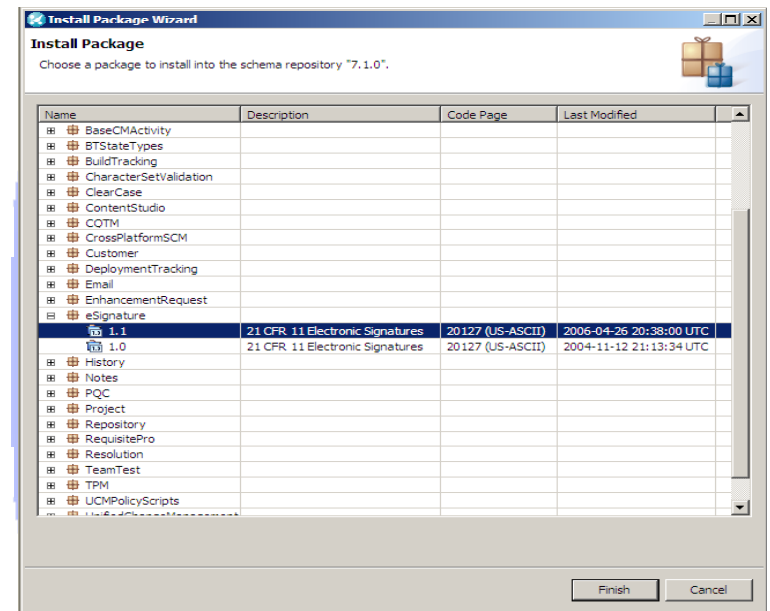
IBM Rational ClearQuest

Customize and configure to meet your needs

Easily add functionality with pre-defined packages

*Pre-defined “**Packages**” provide a variety of functional building blocks*

- An easy way to enhance your schema
 - ▶ No programming required!
 - ▶ Upgradeable functionality with new releases
- Packages include capabilities such as:
 - ▶ Tool integrations
 - ▶ Pre-defined record types including:
 - Customer data
 - Enhancement Request
 - ▶ Application Lifecycle Management (ALM) best practices
 - A set of packages (in addition to a schema)
 - Apply the packages to an existing Rational ClearQuest database and begin enjoying the benefits
 - ▶ and many more...



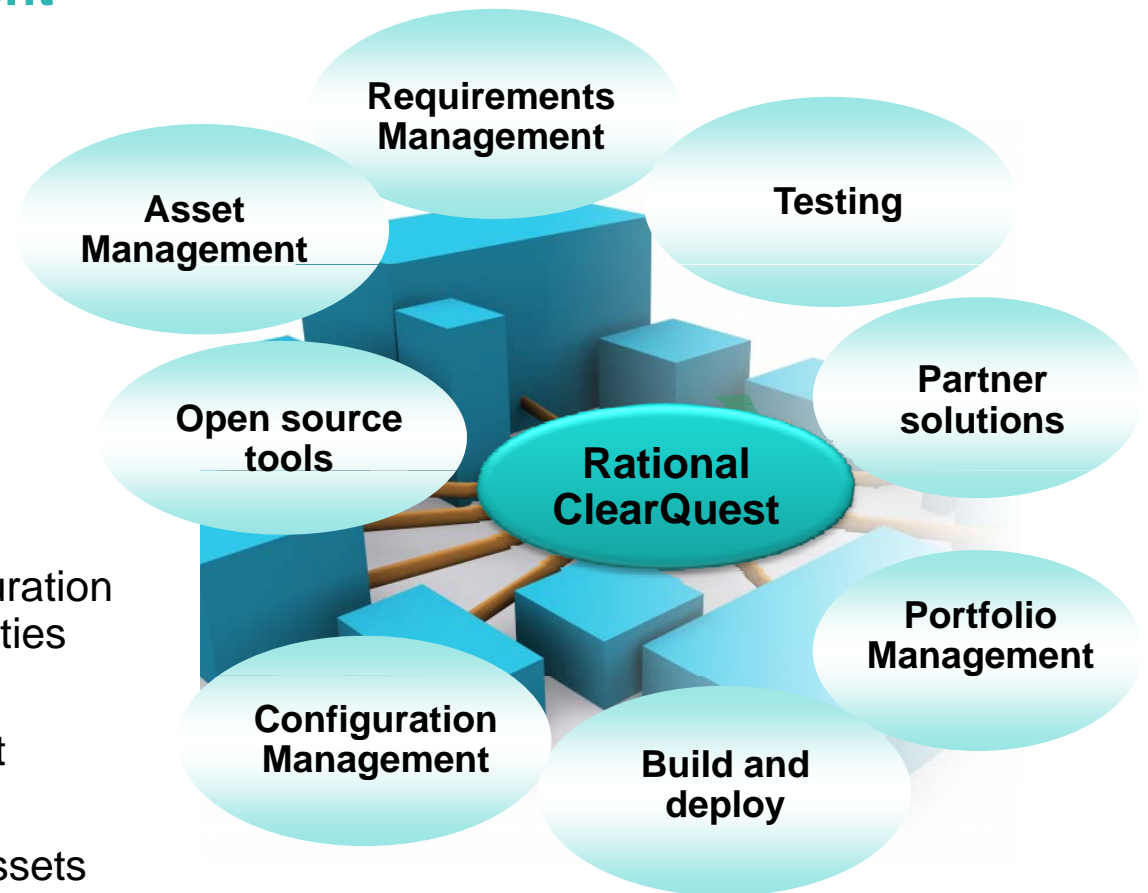
IBM Rational ClearQuest

Unify teams for improved coordination and collaboration

The 'hub' for development activities

Rational ClearQuest allows you to integrate the full development lifecycle for visibility and rapid response to change

- IBM Rational RequisitePro for requirements management and traceability
- IBM Rational ClearCase for configuration management of development activities
- IBM Rational Team Concert for collaborative software development
- IBM Rational Asset Manager to cooperatively develop and reuse assets
- And more...



IBM Rational ClearQuest 7.1

New features summary



- **New and Improved Rational ClearQuest Clients**
 - ▶ Web – Rewritten with new features focused productivity, usability and easy access to information
 - ▶ New Command Line Interface (CLI)
 - ▶ Designer - Rewritten with new features such as compare/merge -- reducing time spent on schema design
 - ▶ Import Tool – Rewritten to provide multi-platform support (Windows/Unix/Linux)
- **New Application Lifecycle Management (ALM) Schema**
 - ▶ Out-of-box template provides a solid foundation for ALM best practices
- **New Powerful Reporting**
 - ▶ Data can be ‘pulled’ and used by a wide variety of reporting engines
- **New CM Server**
 - ▶ Single server for both Rational ClearCase Remote Client and ClearQuest Web
- **New IBM Installation Manager**
 - ▶ IBM Installation Manager (IIM) provides users and administrators with a common install experience
- **Enhanced Security**
 - ▶ Includes FIPS 140-2 approved encryption, IPv6 support and disabled “Remember Password”
- **New Common Rational ClearQuest/ClearCase Help**
 - ▶ Allowing the user quick access to all help, regardless of the point of entry



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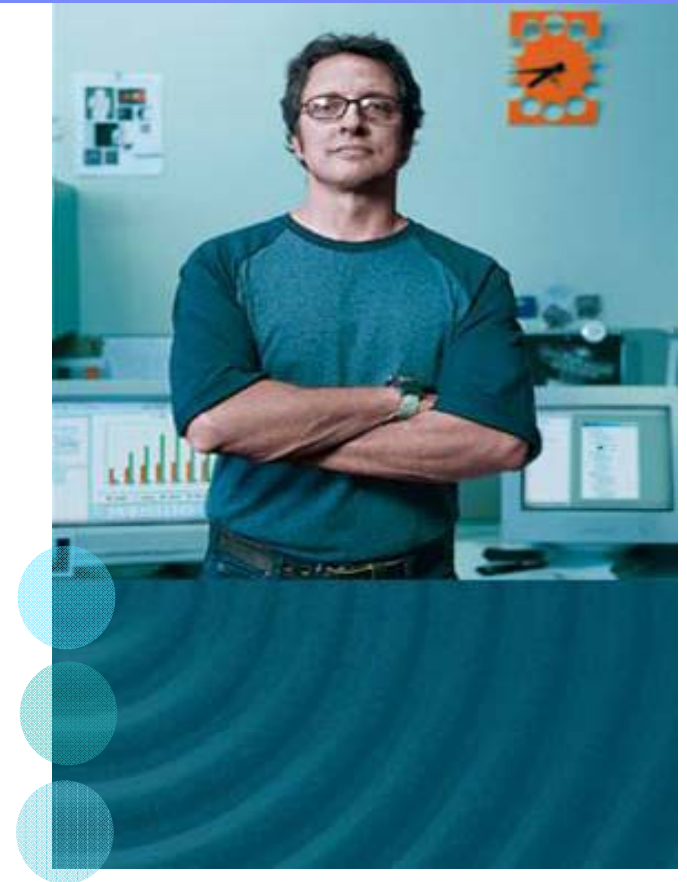
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IBM Rational ClearCase

Work in your preferred environment

- Integrations with leading IDEs
 - Eclipse framework
 - IBM Rational Application Developer (RAD)
 - Microsoft Visual Studio 2005
 - Rational Developer for System z
 - Rational Developer for System i
 - z/OS ISPF
 - and more...
 - Wide-range of supported environments
 - UNIX
 - Windows
 - Linux
 - zSeries connector
 - and more...
 - Work locally or remotely
- New Common Rational ClearCase and ClearQuest Help
 - Allowing quick access to all help, regardless of the point of entry



IBM Rational ClearCase Remote Client (CCRC)

Light-weight feature-rich client for remote access

- **Unify teams around the world**

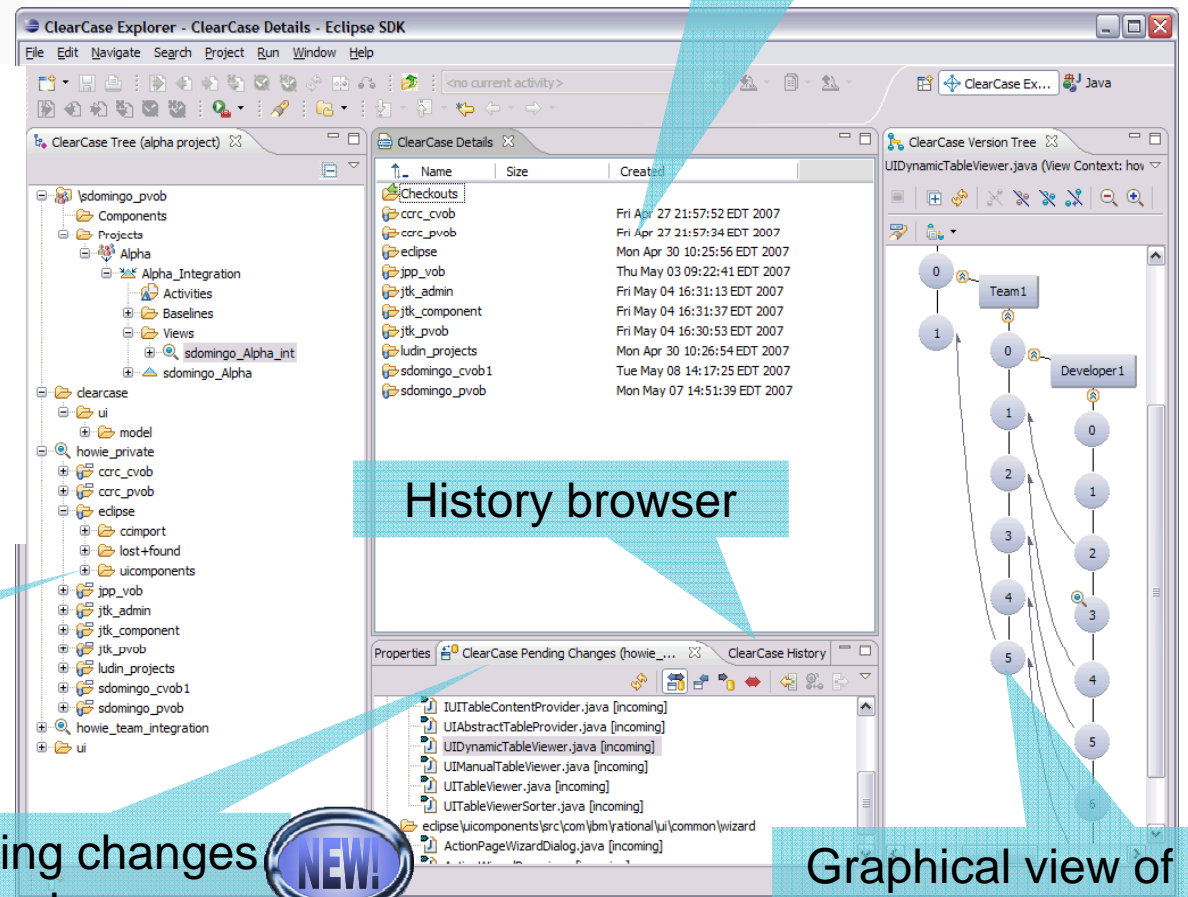
- ▶ Multi-platform support

- **Increases productivity**

- ▶ Single User Interface

- Integrated core Rational ClearQuest and ClearCase developer functions

- ▶ Agile process support



File tree view

Pending changes view

History browser

Graphical view of file/branching

IBM Rational ClearCase

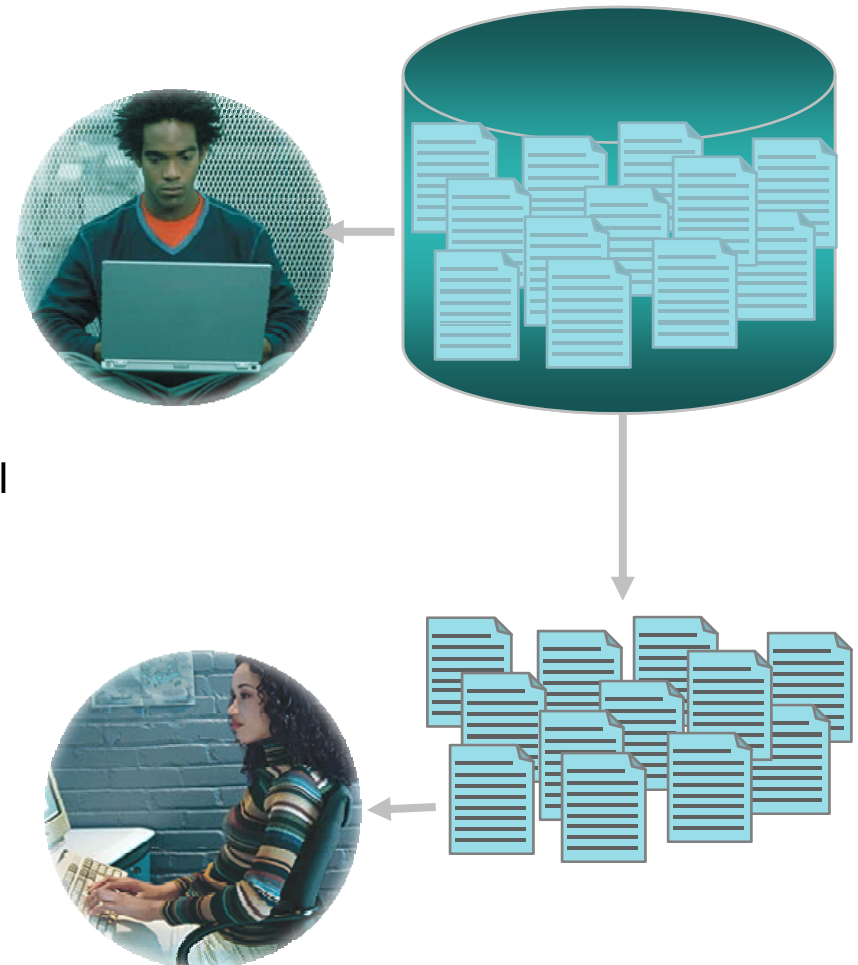
Transparent real-time access or copy-based access to files

■ Dynamic Views

- ▶ Immediate, real-time and transparent access directly to project assets
- ▶ Allows for fast iterations while having the needed visibility to file changes

■ Snapshot Views

- ▶ Provides a copy of project assets for local access
- ▶ Automatically detects and re-synchronizes all modified files
- ▶ Provides intelligent disconnected use



The only SCM solution to provide two workspace models



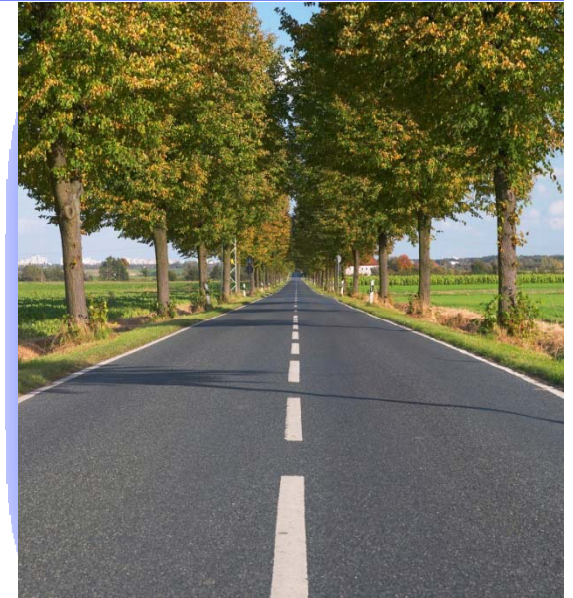
IBM Rational ClearCase

Implementation flexibility – you choose...

Rational ClearCase supports two implementation methods:

- Unified Change Management (UCM)
 - ▶ Out-of-the-box solution
 - ▶ Activity-based change management process
 - ▶ Customizable, configurable and automated workflow process
 - ▶ Proven best practices
 - ▶ Increased abstraction Level - UCM is layered on base Rational ClearCase

- Base Rational ClearCase
 - ▶ Flexibility to implement virtually any configuration management solution tailored to a particular development environment
 - Unlimited and automated branching
 - Customize to your needs



IBM Rational ClearCase

Activity-Based Change Management



Developers

- Never forget a file again

Unified Change Management (UCM)

- ✓ Customize and configure processes without scripting
- ✓ Organize and prioritize development activities
- ✓ Efficiently manage files and project artifacts

- Organize Projects
- Track Project Status
- Easy to Adopt



Integrator

- Assemble Systems Consistently
- Manage Baselines
- Maintain Build Audit Trail



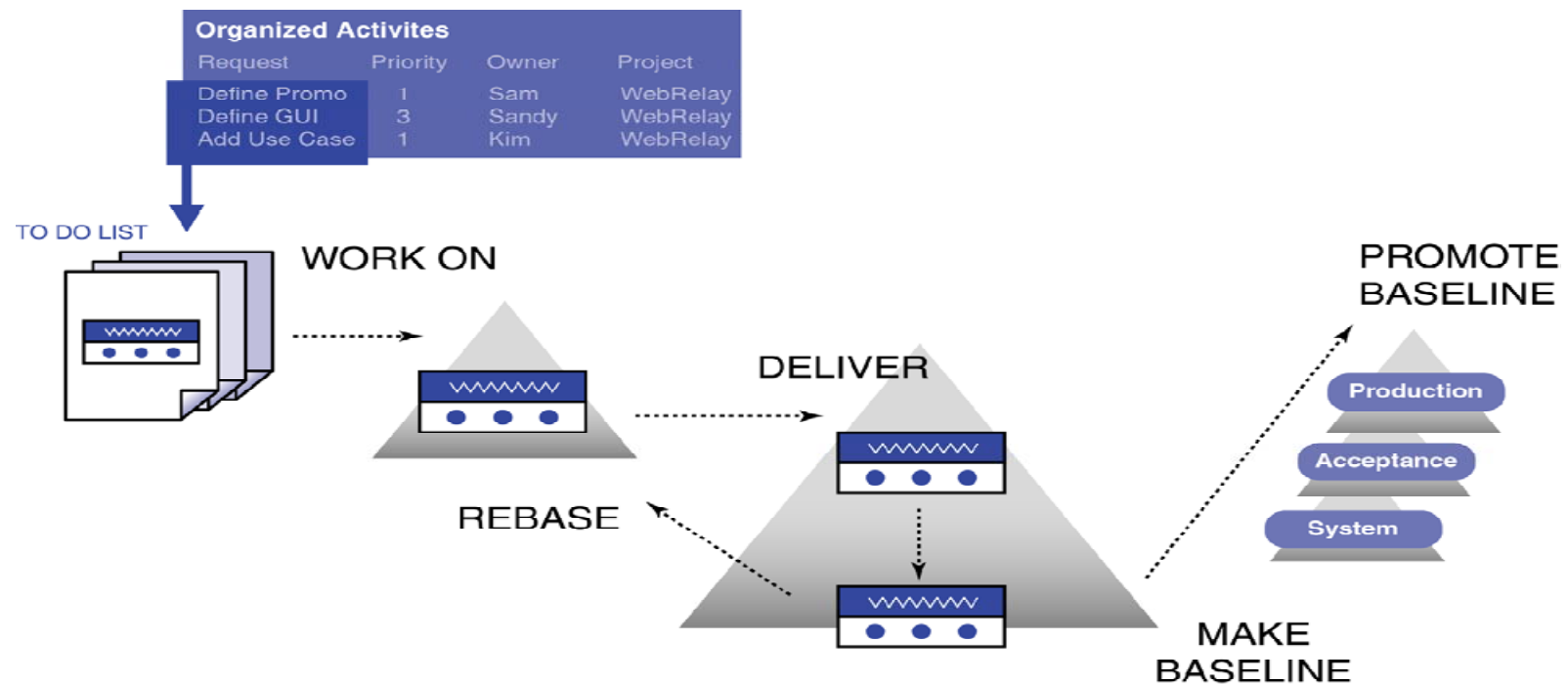
Project Manager



IBM Rational ClearCase

Unified Change Management (UCM)

- Choose between serial or cyclical development workflows
- Seamlessly unify activities with project artifacts to better coordinate project changes across the development lifecycle



IBM Rational ClearCase

Work simultaneously on multiple releases

**Accelerate your
productivity with
parallel development**



Customer
Special



Release 1
Bug fix



Release 1.5



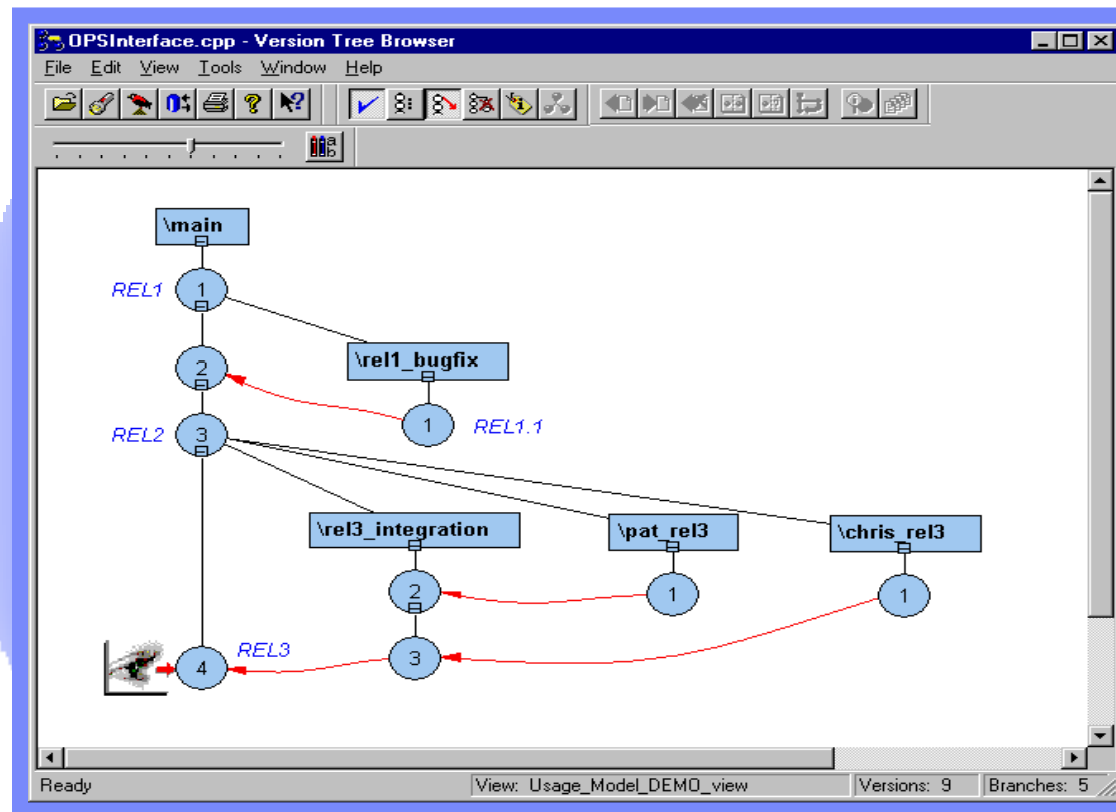
- Isolate unstable work and various activities with private developer workspaces
- Automate team coordination
 - ▶ Branch as needed
 - ▶ Easily integrate changes using graphical merge tools



IBM Rational ClearCase

Visually view your file versions

Using the Version Tree Browser, view your branching structure, performed merges, file versions, labels, etc...



IBM Rational ClearCase

Unify teams around the world

- Rational ClearCase Remote Client
 - ▶ Light-weight feature-rich client
 - ▶ Multi-platform support
 - ▶ Agile process support
- Rational ClearCase Multisite
 - ▶ Distributed access to project assets through repository replication and synchronization
 - ▶ Extends development scalability - scales to support thousands of users, working in dozens of sites
 - ▶ Supports disaster recovery, enabling file retrieval from replicated sites
 - ▶ Maintains data integrity in the event of network failure



**Access to current
information, anytime,
anywhere**

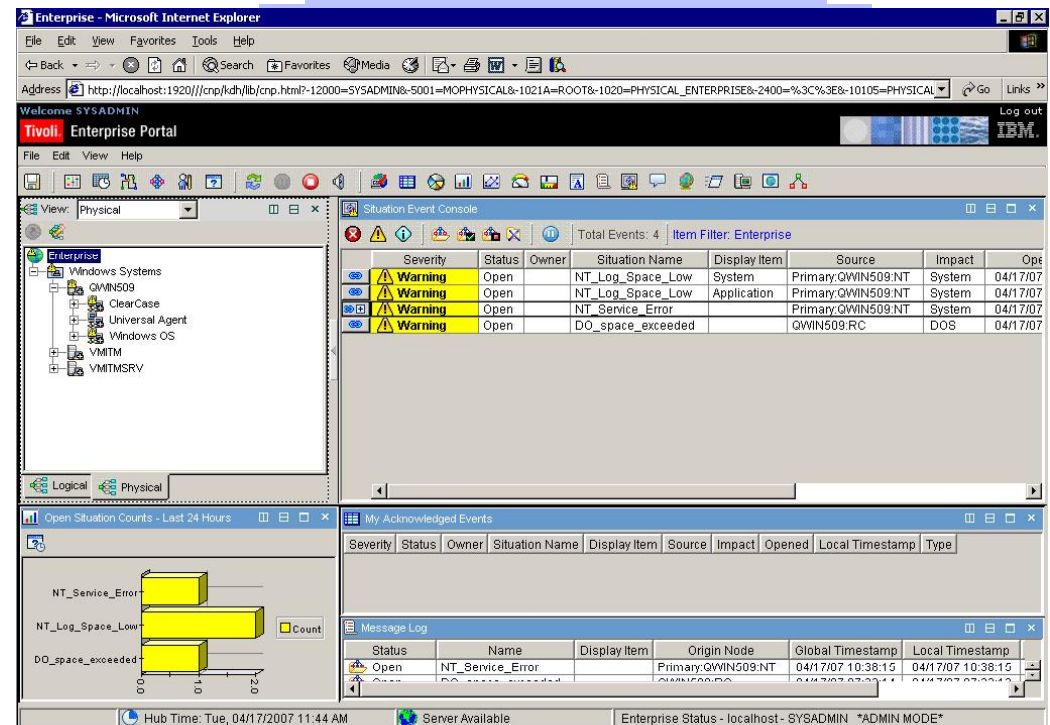
IBM Rational ClearCase MultiSite

Monitor your global operations



Monitors for Events

- Operating System agent
 - ▶ Memory usage, disk space, CPU
- Rational ClearCase agent
 - ▶ Shipping bay threshold issues
 - ▶ Multisite import/export failures
 - ▶ ALBD process failures
- Expert advice on events
- Customizable event settings
 - ▶ User specified thresholds and severity
- Historical collection of data
 - ▶ Reporting templates (Birt)



Reduces time to resolution for administrators!!



IBM Rational ClearCase

Reducing your cost of ownership

- Integrations for High Availability
 - ▶ Helping to provide operational continuity

NEW! Single CM Server for both Rational ClearCase Remote Client and ClearQuest Web

- ▶ Simplifies deployment for administrators and connections for teams

NEW! IBM Installation Manager (IIM)

- ▶ Provides users and administrators with a common install experience for Rational ClearCase and ClearQuest on all OS platforms

NEW! Rational ClearCase MultiSite monitoring

- ▶ Web interface to statistics on Rational ClearCase servers and OS messages
- ▶ Enables administrators to easily view status of world-wide deployments



IBM Rational ClearCase 7.1

New features summary



- Rational ClearCase Remote Client (CCRC)
 - ▶ Rewritten with new features focused on increasing Developer and Team Productivity
- New Unicode Type Manager
 - ▶ Identifies and allows for merging of files with embedded Unicode data
- New CM Server
 - ▶ Single server for both Rational ClearCase Remote Client and ClearQuest Web
 - ▶ Simplifies deployment for administrators and connections for teams
- Enhanced security with IPv6 support
- New IBM Installation Manager
 - ▶ IBM Installation Manager (IIM) provides users and administrators with a common install experience for Rational ClearCase and ClearQuest on all OS platforms
- New Common Rational ClearQuest/ClearCase Help
 - ▶ Allowing the user quick access to all help, regardless of the point of entry
- New Rational ClearCase MultiSite monitoring
 - ▶ Web interface to statistics on Rational ClearCase servers and OS messages
 - ▶ Enables administrators to easily view status of world-wide deployments



Agenda

- Introductions
- The Challenges of Delivering Quality Software
- Technology Review - IBM Rational ClearQuest
- Technology Review - IBM Rational ClearCase
- Technology Review – IBM Rational Team Concert
- Technology Review - IBM Rational Build Forge



IBM Rational Team Concert

Software innovation through collaboration

- **Real time, in-context team collaboration**
 - ▶ Make software development more automated, transparent and predictive
- **"Think and work in unison"**
 - ▶ Integrated source control, work item and build management
- **Assess real-time project health**
 - ▶ Capture data automatically and unobtrusively
- **Automate best practices**
 - ▶ Dynamic processes accelerate team workflow
 - ▶ Out-of-the-box or custom processes
- **Unify software teams**
 - ▶ Integrate a broad array of tools and clients
 - ▶ Extend the value of ClearQuest and ClearCase
 - ▶ Visual Studio Client (4Q08)
 - ▶ Support for System z and System i servers (2H08)

Open and extensible on

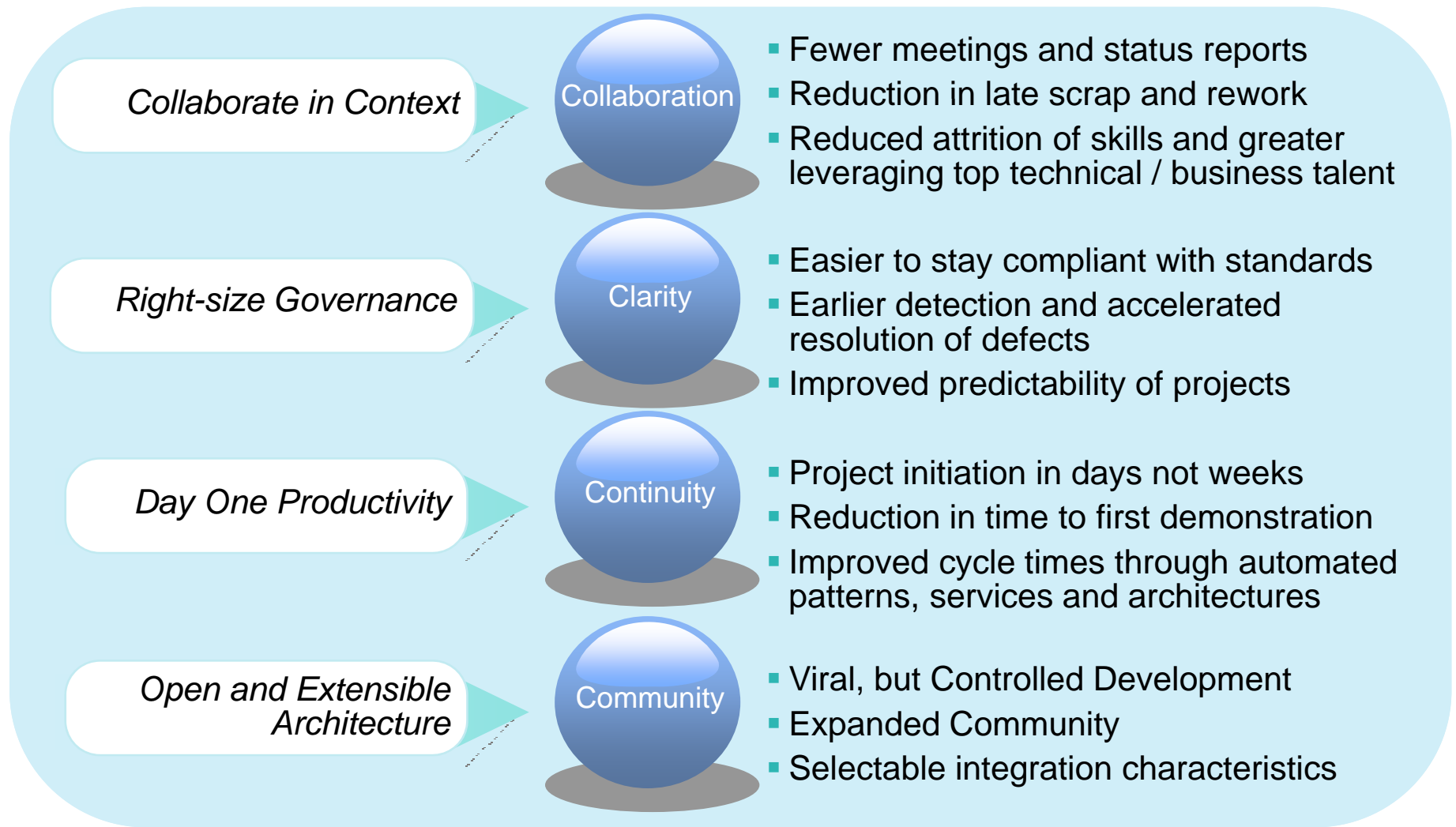
jazz

- ✓ Collaborate in context
- ✓ Right-size governance
- ✓ Day one productivity



IBM Rational Team Concert

Translating words to actions



IBM Rational Team Concert

Iteration Planning

- Integrated iteration planning and execution
- Task estimation linked to key milestones
- Out of the box agile process templates

Project Transparency

- Customizable web based dashboards
- Real time metrics and reports
- Project milestone tracking and status

SCM

- Integrated stream management with flow relationships
- Component level baselines
- Server-based sandboxes
- Identifies component in streams and available baselines
- ClearCase connector

Work Items

- Defects, enhancements and conversations
- Query results view and share queries with team or member
- Support for approvals and discussions
- ClearQuest connector
- Query editor interface

Build

- Work item and change set traceability
- Local or remote build servers
- Supports ant and command line tools
- Integration with build forge
- Build definitions for team and private builds

Jazz Team Server

- Single structure for project related artifacts
- World-class team on-boarding / offboarding including team membership, sub-teams and project inheritance
- Role-based operational control for flexible definition of process and capabilities
- Team advisor for defining / refining “rules” and enabling continuous improvement
- Process enactment and enforcement
- In-context collaboration shows team members and status of their work

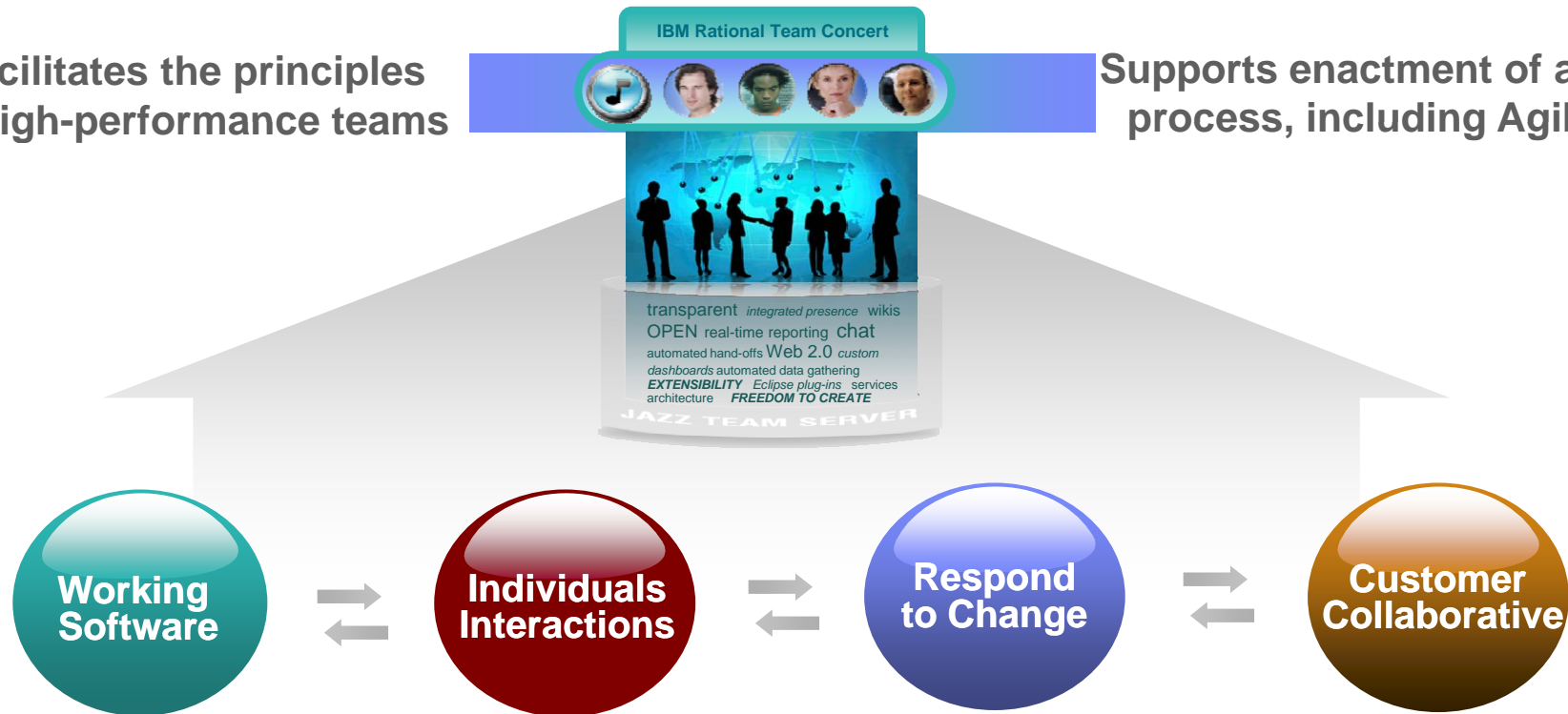


IBM Rational Team Concert

Improve business agility and project success rates

Facilitates the principles
of high-performance teams

Supports enactment of any
process, including Agile



- Continuous integration
- Manage team assets
- Change driven
- Integrated / traceable

- Starting ad-hoc teams
- Team awareness
- Process awareness
- Ad-hoc sharing

- Process flexibility
- Iterative plan-execution
- Multiple releases
- JIT code reviews

- Transparency
- Objective commonality
- Project health checks
- Context driven

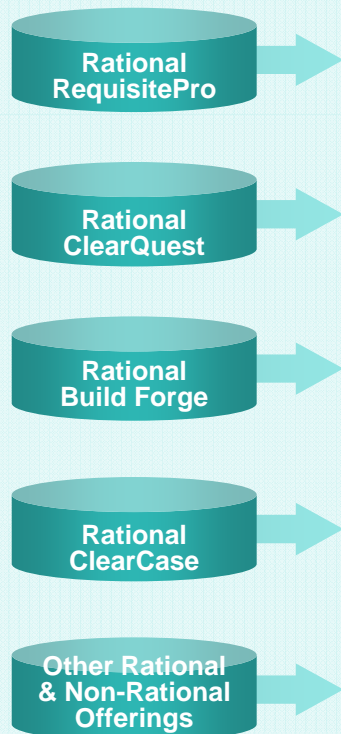


IBM Rational Team Concert

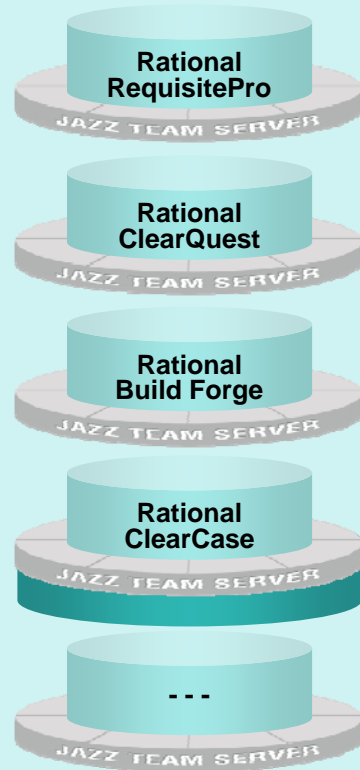
An evolution for new and existing customers

The Evolution of the IBM Rational Software Delivery Platform

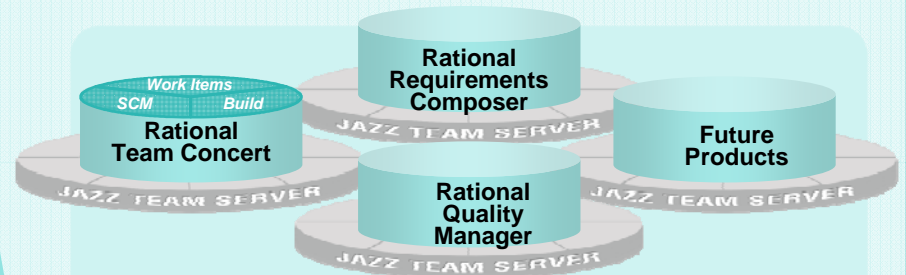
Existing Offerings



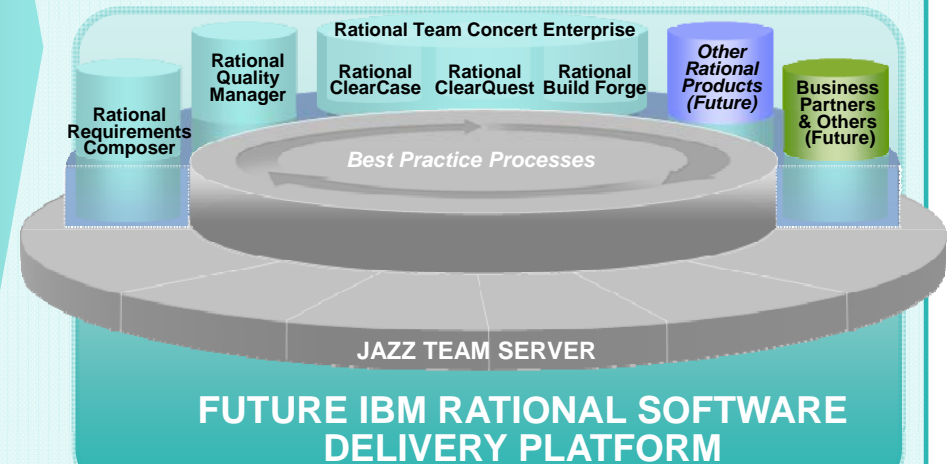
Evolution to Jazz Technology Platform



New Offerings



Built on the Jazz Technology Platform



Agenda

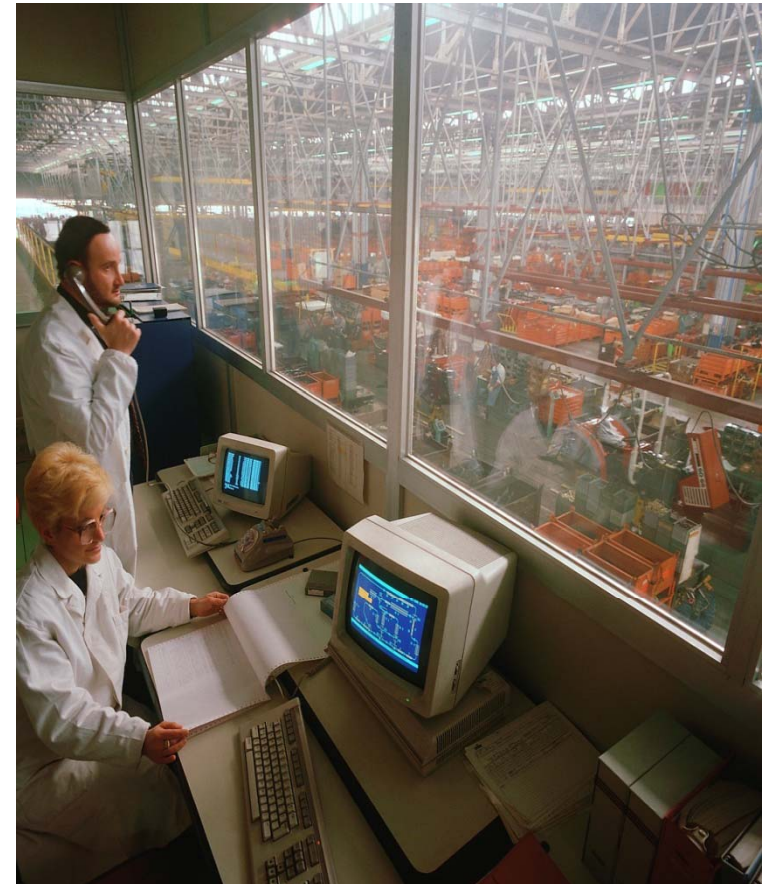
- Introductions
- The Challenges of Delivering Quality Software
- Technology Review - IBM Rational ClearQuest
- Technology Review - IBM Rational ClearCase
- Technology Review – IBM Rational Team Concert
- Technology Review - IBM Rational Build Forge



What is IBM Rational Build Forge?

**An adaptive execution framework
that automates software assembly
processes**

- Allowing you to *automate* software production
 - ▶ Eliminating manual, error prone tasks
 - ▶ Reducing maintenance of proprietary homegrown scripts
 - ▶ Utilizing existing tools, scripts and hardware
 - ▶ Providing repeatable and consistent processes for improved efficiency
 - ▶ Capturing self-documenting data/audit trail
 - ▶ Connecting team members with self-service access to pre-configured processes



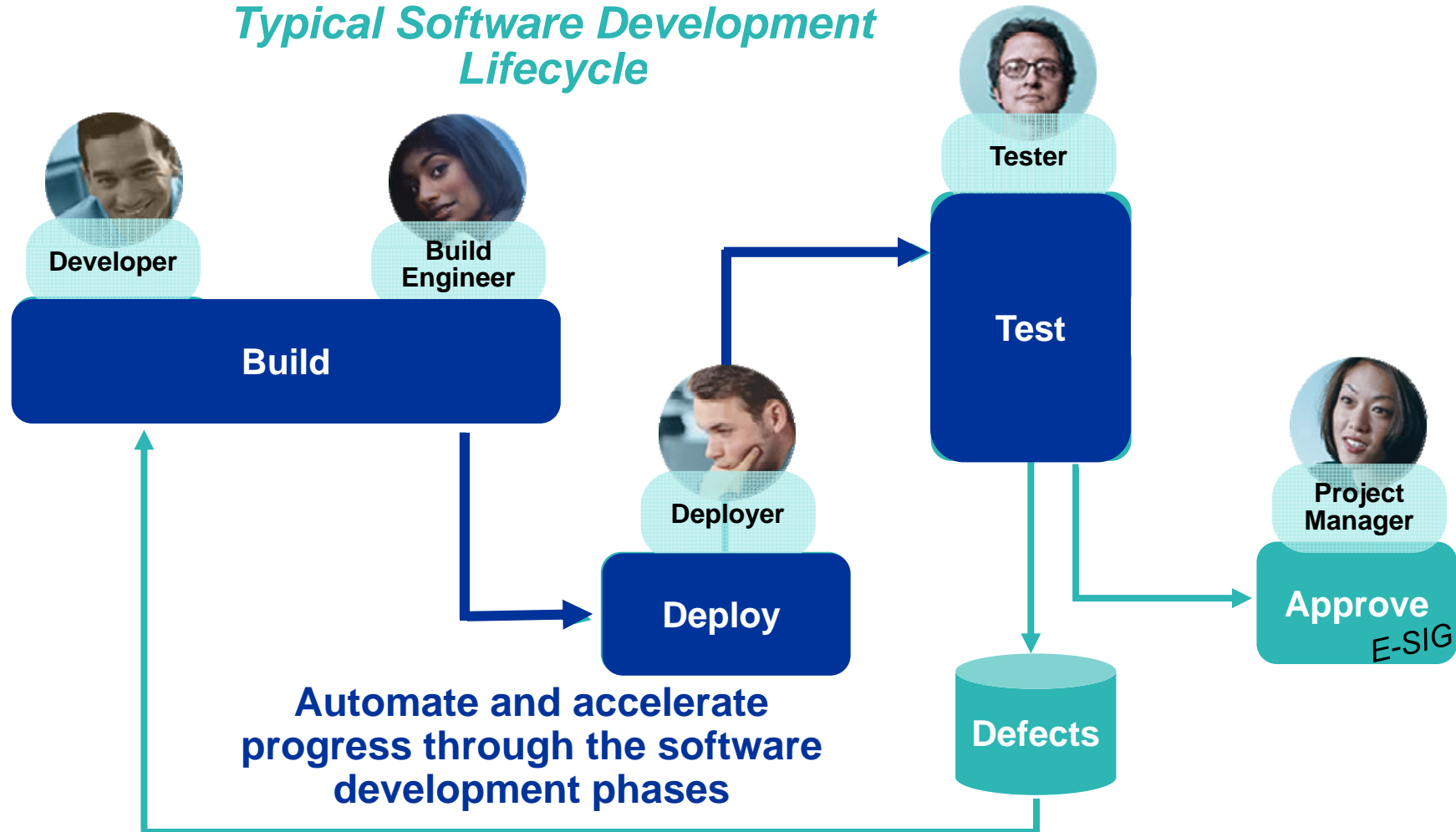
Helping development teams reduce costs and improve time to market



IBM Rational Build Forge

Automating software assembly processes to drive efficiency

Typical Software Development Lifecycle



IBM Rational Build Forge

Direct access to software assembly functions

Working in your preferred environment

- Integrations with leading IDEs and development tools



- IBM Rational Team Concert
- Eclipse framework
- IBM Rational Application Developer (RAD)
- and more...

- Wide-range of supported environments

- Windows
- AIX
- Solaris
- HP-UX
- Linux
- Mac OS
- z/OS
- i5/OS
- Linux on Z

**Support for more environments
than ANY other software
assembly tool!**



New platforms added!



IBM Rational Build Forge

Job process optimization – increase efficiency, save time



Taking automation to the next level with...

- Step avoidance
 - ▶ Dynamically determine when to skip a step or not
- Dynamic step order
 - ▶ Dynamically control the execution order of steps
- Change history
 - ▶ Report on history of order/execution changes over time for continued process improvement
- Step iterations
 - ▶ Loop through steps until a condition is met

Automatically run jobs in the most efficient manner possible!



IBM Rational Build Forge

Project configuration snapshots



- Preserve older, superseded project configurations
 - ▶ Allows older versions of products to be easily reproduced
 - ▶ Responds to audits/compliance mandates or legacy support requirements
- Create templates of project definitions for quick project startup
- Modify project configurations without disrupting production project configurations

Easily manage
various
project
configurations

Project	Snapshot	Tag	Class	Environment	Selector	Access
Calculator Builder	----	BUILD_\$B	Scratch		Build Server 1a	Build Engineer
HelloWorld CVS	----	HWC_\$Maj.\$Min.\$Patch.\$B	Scratch	HelloWorldC_Env	Win2k_Bld	Build Engineer
HelloWorldJava_ANT	----	HWJ_ANT_\$MAJ. ... \$PATCH.\$BUILD	Scratch	HelloWorldJava_CVS_Env	Win2k_Bld	Build Engineer

Project: Calculator Builder

Save Project

Save New Snapshot

Copy Project

Delete Project

Clobber

Project Details

Tags

Registers

Notes (0)

Snapshot

Name: Base Snapshot

User:

Created: 01/01/03 02:30PM

Comment:

Save

Clear

☐ Default Environments

☐ Follow Environment Includes

☐ Clone Project Templates

☐ Include chained projects

☐ Include Project Inlines

☐ Include Project Selectors

☐ Follow Selector Includes

☐ Include Project

IBM Rational Build Forge

Automated, documented data and audit trail

Better reproducibility and simplifying compliance management

- Comprehensive bill-of-materials (BOM)
 - files that were changed
 - any automated unit tests performed
 - environment used to create the build
 - thorough account of build processes
- Documented audit trail of release contents, process changes and user access to the systems




No need to manually gather information!



IBM Rational Build Forge

Improve visibility and decision support

Fast analysis and insight to valuable build information

- Intuitive out-of-the-box reporting
 - Uncover development bottlenecks
 - Determine trends for specific projects
 - Pinpoint areas for performance tuning
 - "Really Simple Syndication" (RSS) data feeds
 - Real-time notifications and monitoring
 - Works with any RSS-compliant reader/aggregator
 - Advanced reporting with Rational Build Forge Quick Report
 - Quickly create, modify and run ad-hoc custom or out-of-the-box reports
 - Zero footprint web client
 - Public and private access to reports
 - Save/export to different formats
-  Improved and easy to use - now includes the ability to report on "Bill of Materials" data



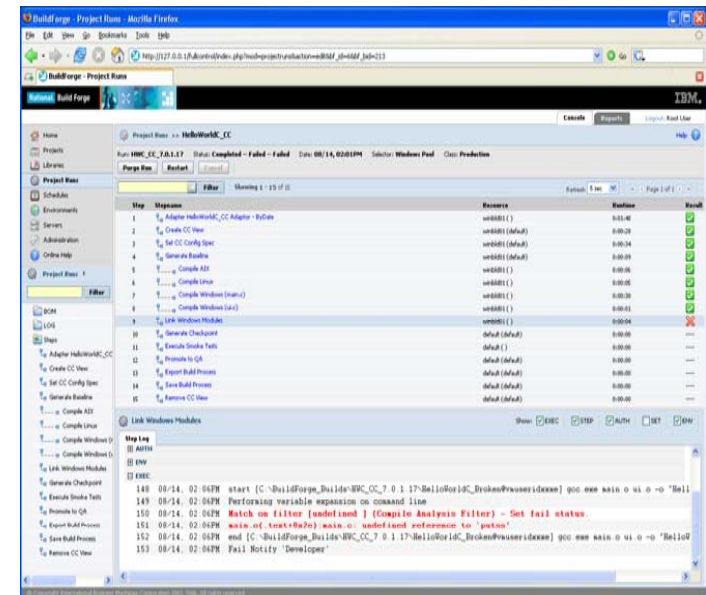
No Scripting!



IBM Rational Build Forge

Centralized management across geographically distributed teams

- Web-based management console
- Consolidated, real-time project view
- Safe, secure access
 - NEW!** Security enhancements to: Password Encryption, Secure Sockets Layer (SSL), Single Sign-On (SSO), LDAP
- Unicode support for international projects - translated and available in 10 different languages!




IBM Rational Build Forge

Adaptor Toolkit - Extend and utilize existing tools

Integrate third party software such as version control, defect tracking and test managers



- Allows you to correlate source code changes, defects and tests with specific builds for a detailed understanding of the software assembly components
- Out of the box adaptors available for:
 - ▶ CVS, Perforce® SCM, Borland® StarTeam®, Microsoft® Visual Source Safe® and Subversion
 - ▶ Adaptors for Rational ClearCase, Rational ClearQuest and Rational Team Concert 
- Modify available adaptors or create your own for homegrown or other third party software development tools
- Provides continuous monitoring of the third party source repository, and executes builds automatically when a change occurs



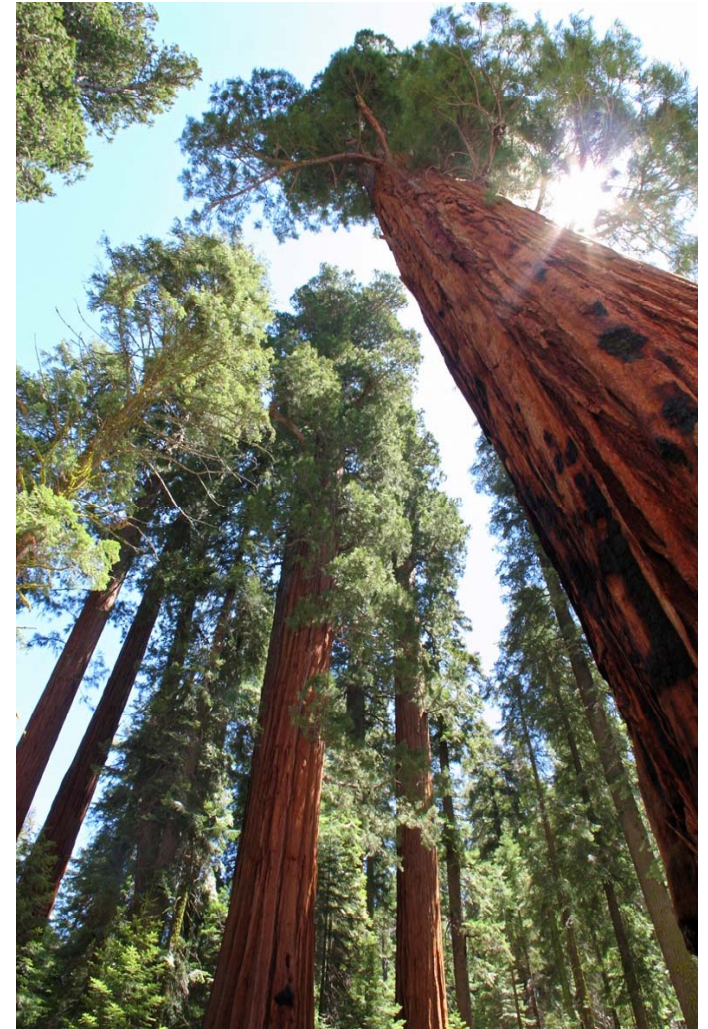
IBM Rational Build Forge Enterprise Plus Edition

For very large enterprise environments



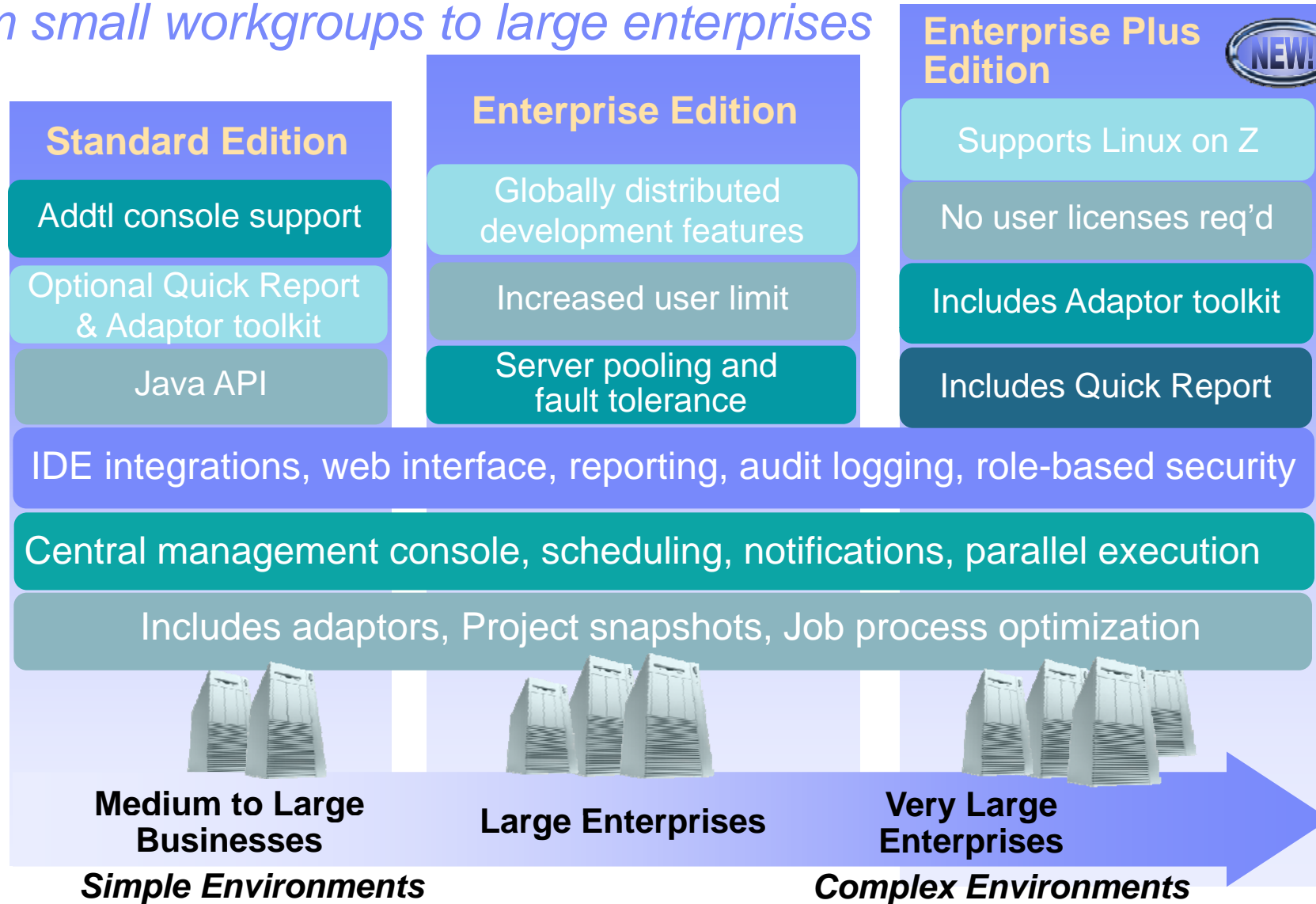
Specifically focused on helping large companies automate and standardize software assembly processes

- Wide-range of supported environments
 - ▶ Only Build Forge Edition that supports Linux on Z
- Up to 250 concurrent connections
- Includes all options
 - ▶ Adaptor Toolkit to extend and utilize existing tools
 - ▶ Rational Build Forge Quick Report for improved visibility
- No requirement for Rational License Server
 - ▶ No user licenses required
 - ▶ Improved availability



IBM Rational Build Forge

From small workgroups to large enterprises



IBM Rational Build Forge 7.1

New features summary



- Job process optimization
 - ▶ Automatically run jobs in the most efficient manner possible
- Project configuration snapshots
 - ▶ Easily manage various project configurations
- IBM Rational Team Concert integration
- Enhanced security
 - ▶ Password Encryption, Secure Sockets Layer (SSL), Single Sign-On (SSO), and LDAP
- Configurable User Interface (UI)
 - ▶ Configure custom tabs
- New Rational Build Forge Enterprise Plus Edition
 - ▶ Specifically focused on helping very large enterprises automate software assembly processes
- New IBM Installation Manager
 - ▶ Provides users and administrators with a common install experience on both Windows and UNIX
- New platform support
- Rational Quick Report ease of use enhancements



IBM Rational Build Forge

What are customers saying about V7.1?



“Rational Build Forge allows us to standardize our software development process across the organization and do more with fewer resources”

-- Airline industry customer

“The enhancements in the security and job process optimization areas are big steps forward that will help Build Forge maintain its leadership position in the build automation arena.”

-- Financial industry customer



Agenda

- Introductions
- The Challenges of Delivering Quality Software
- IBM Rational Software – Our Unique Value
- IBM Rational CRM Solution Overview
- Technology Review - IBM Rational ClearQuest
- Technology Review - IBM Rational ClearCase
- Technology Review – IBM Rational Team Concert
- Technology Review - IBM Rational Build Forge



IBM Rational Software Analyzer

What is Static Analysis?

A method of software code debugging that is done by examining the code without executing the program



What are the benefits?

- Improves code quality by identifying defects
- Reduces costs by locating defects earlier in the software development lifecycle
- Provides an understanding of the code structure
- Ensures adherence to corporate and industry coding guidelines
- Discovers problems relating to dependencies in code
- Examines complexity of code



IBM Rational Software Analyzer

Improving code quality using Static Analysis

There are many types of static analysis...

▶ **Code review**

- Generally concerned with coding style
- Identifies rudimentary bugs

▶ **Structural analysis**

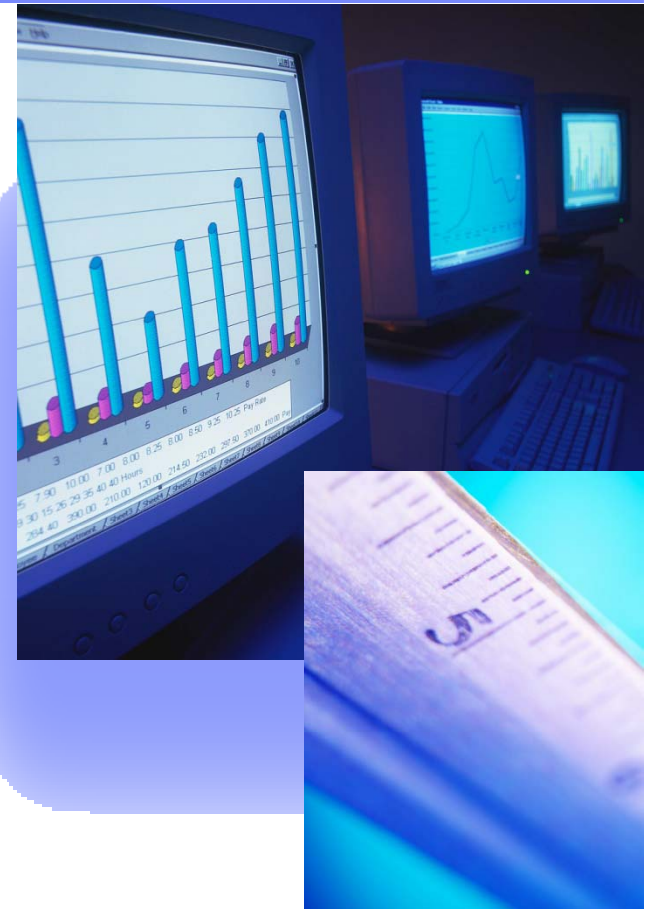
- Identifies inter-class dependencies
- Locates cyclical dependencies, hubs, etc.

▶ **Software metrics**

- Measures the complexity of software
- Uses standard metrics (line counting, McCabe, Halstead)

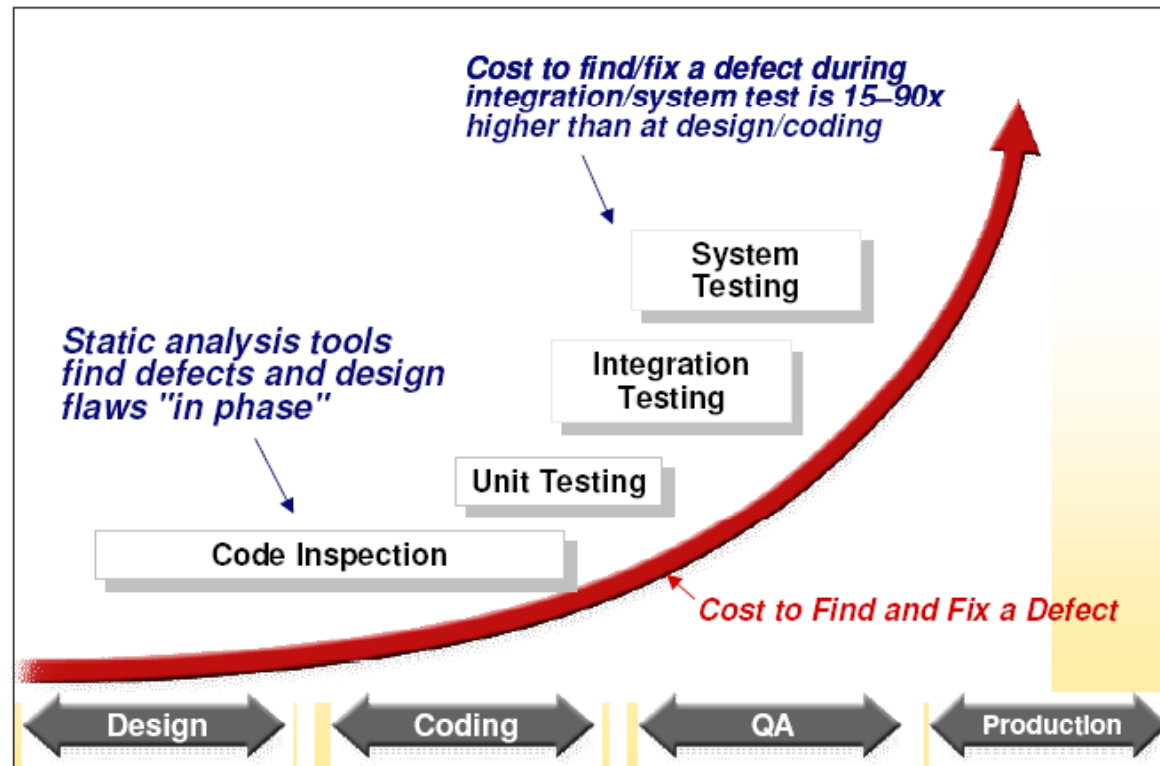
▶ **Data Flow Analysis**

- Symbolic Execution of code
- Aids in locating resource and memory leaks



IBM Rational Software Analyzer

Identify software defects early in the lifecycle



Source: IDC, 2005

The costs associated with bug fixes increase as a product matures through the software development lifecycle

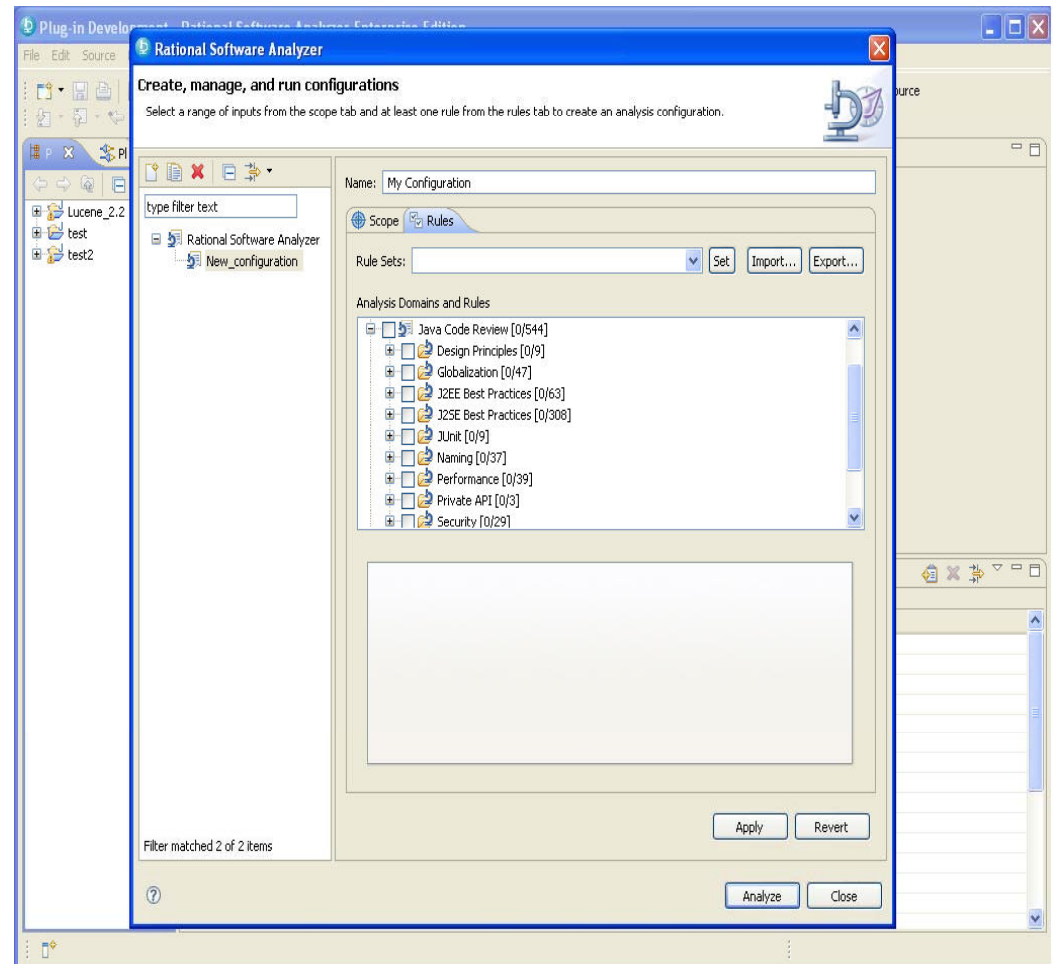


IBM Rational Software Analyzer

Tailor to your company's best practices

- Rich set of programming rules
 - ▶ More than 550 Java rules
 - Code review
 - Architectural discovery
 - Deep analysis
 - ▶ Over 130 C/C++ code review rules
 - ▶ More than 40 Java software metrics rules

- Modify existing rules or easily create new rules



IBM Rational Software Analyzer

Extensible framework

- Provides the ability to execute multiple scan rules and tools from a common framework
 - ▶ Central management of legacy and third-party technologies
- Enables a unified, customizable and consistent work-flow
- Provides selectable and customizable rules
 - ▶ Rules can be customized, imported or created from scratch
 - ▶ Enables inclusion of rules for security, compliance and intellectual property vulnerabilities increasing team responsiveness to business priorities



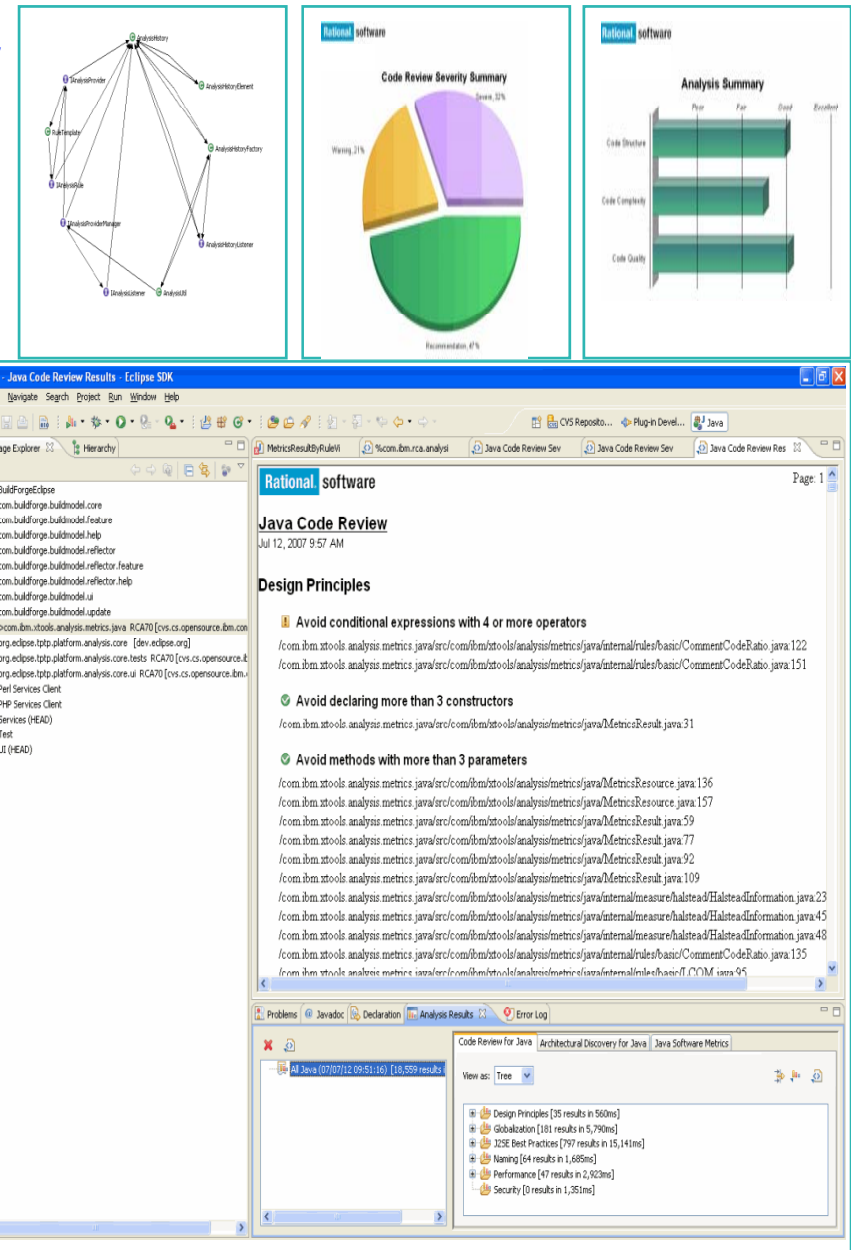
**Extensible foundation for
increasing productivity
and simplifying static
analysis**



IBM Rational Software Analyzer

Improve project visibility

- Easy to read analysis results
- Rich set of out-of-the box reports and metrics
 - ▶ View reports in HTML or PDF
 - ▶ Customizable data export formats
- Flexible reporting framework
- Centralized reporting for high-level view of software quality and compliance-related issues

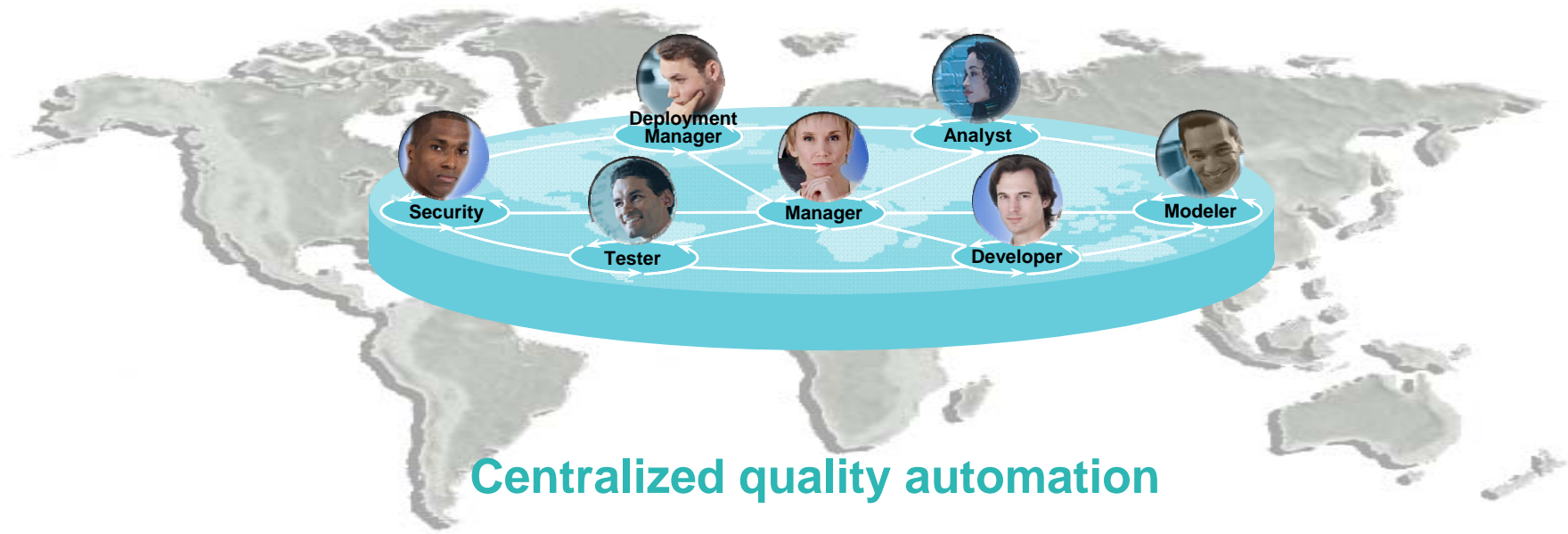


IBM Rational Software Analyzer

Automating and centralizing code scans

Using Rational Software Analyzer Enterprise Edition...

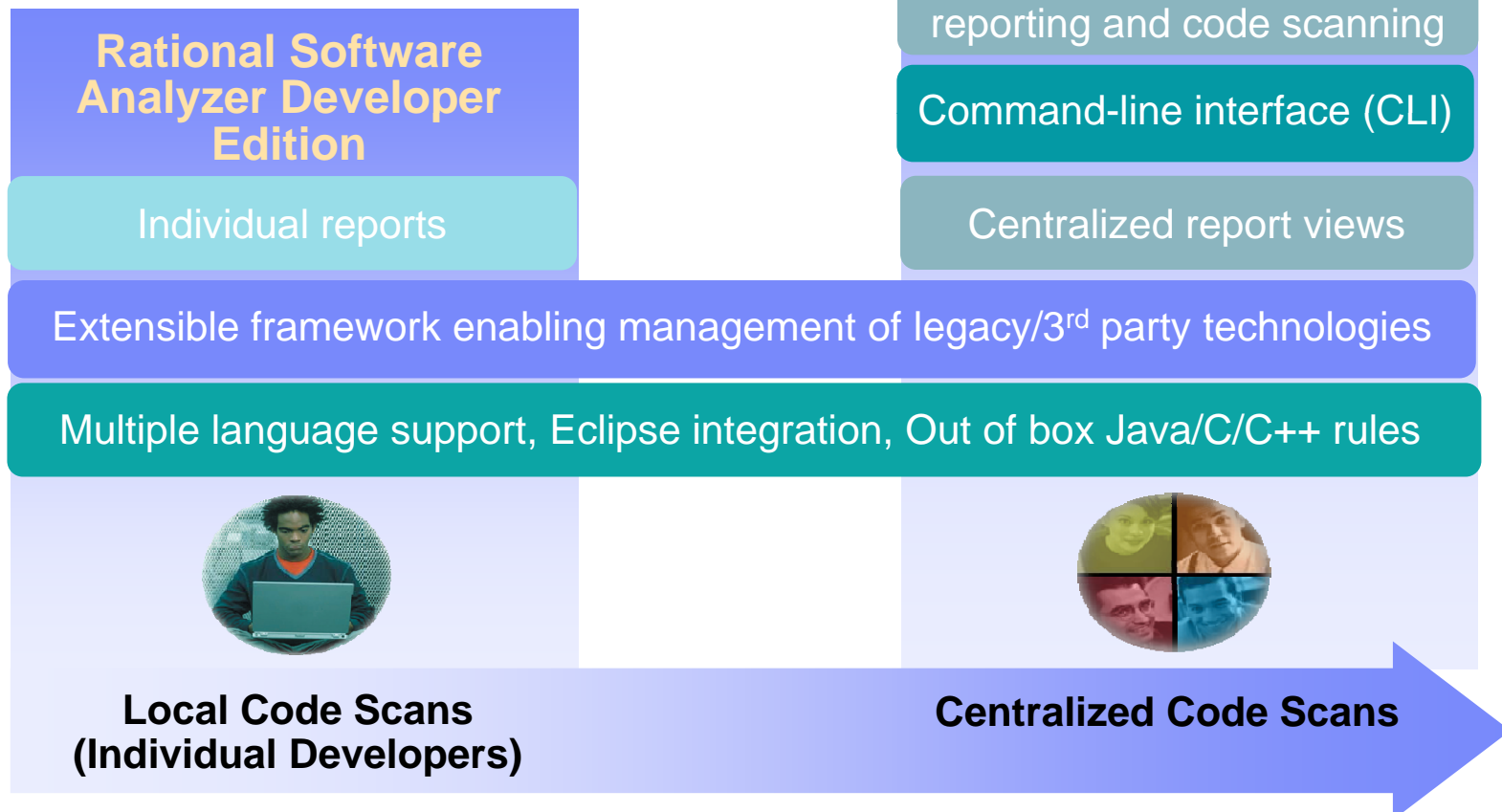
- Automates and centralizes code reviews
- Incorporates code quality analysis into existing software build processes
- Integration with Rational Build Forge via adaptor
- Additional layer of static analysis quality check



IBM Rational Software Analyzer

Sized to meet your team's needs

*For individual developers
or enterprise teams*



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- Technology Review - IBM Rational Build Forge
- Technology Review – IBM Rational Software Analyzer
- Next Steps



Change, Configuration and Release Management

Additional information

For additional information on the IBM Rational Change, Configuration and Release Management solutions please refer to the following websites:

IBM Rational Change, Configuration and Release Management:

<http://www-01.ibm.com/software/rational/offerings/crm/>

IBM Rational ClearQuest:

<http://www-01.ibm.com/software/rational/offerings/crm/change.html>

IBM Rational ClearCase:

<http://www-01.ibm.com/software/rational/offerings/crm/configuration.html>

IBM Rational Team Concert:

<http://www-01.ibm.com/software/awdtools/rtc/>

IBM Rational Build Forge:

<http://www-01.ibm.com/software/rational/offerings/crm/build.html>

IBM Rational Software Analyzer:

<http://www-01.ibm.com/software/awdtools/swanalyzer/>



Change, Configuration and Release Management

Additional resources

For additional resources related to the IBM Rational Change, Configuration and Release Management solutions please refer to the following websites:

IBM Rational Change, Configuration and Release Management Product Library:

<http://www.ibm.com/software/awdtools/resources/scm.html>

IBM developerWorks for hints, tools, tips and tricks:

<http://www.ibm.com/developerworks/rational>

IBM Rational demos, evaluations, upgrades, patches, hot fixes, add-ins, plug-ins, models, scripts, and documentation:

<http://www.ibm.com/developerworks/rational/downloads>

The Jazz community site:

<https://jazz.net/pub/index.jsp>

The Eclipse open development platform:

<http://www.eclipse.org>



Thank
you

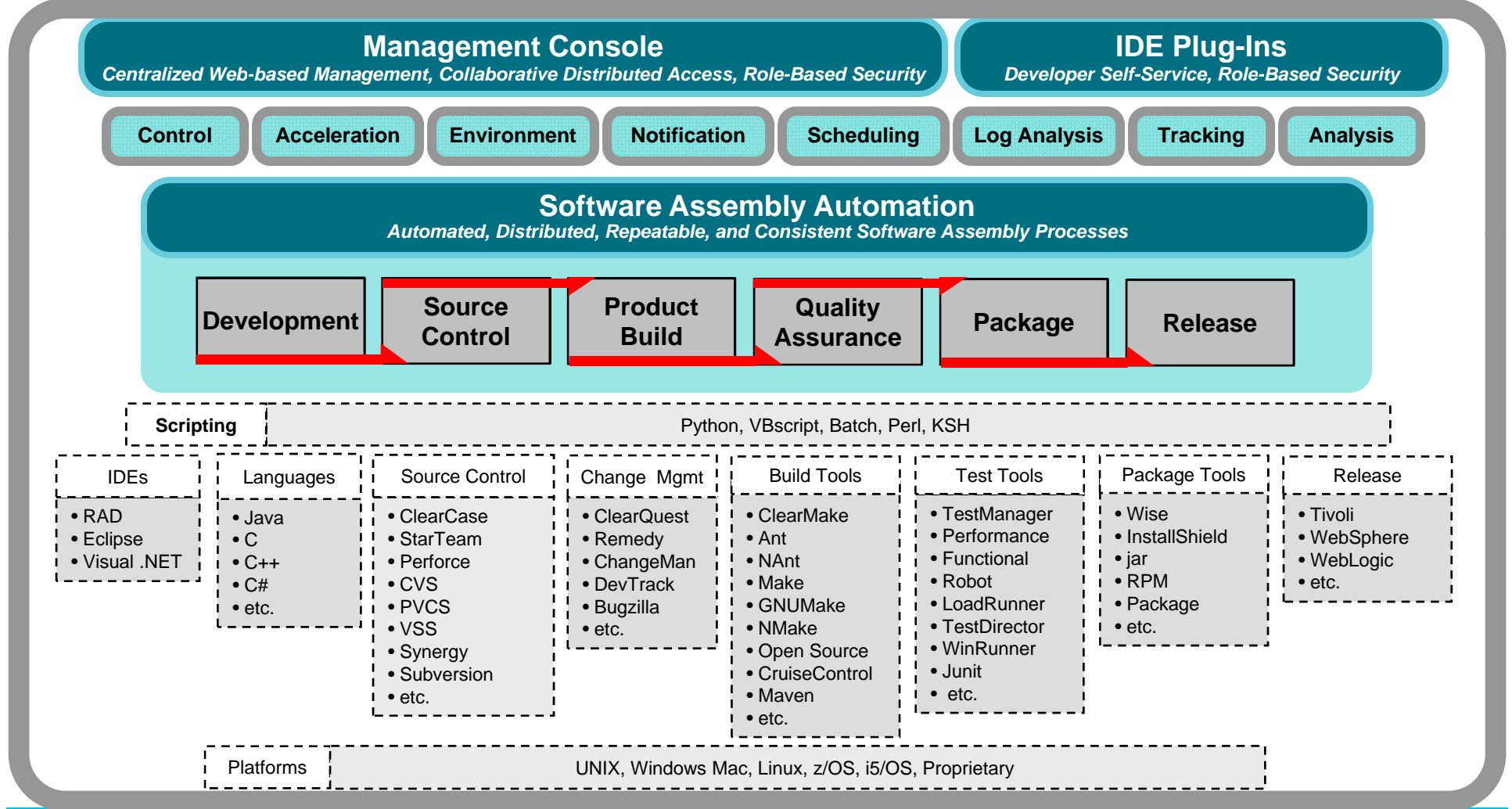
Optional Slides



IBM Rational Build Forge

An adaptive framework to standardize and automate repetitive tasks

SOFTWARE ASSEMBLY AUTOMATION FRAMEWORK

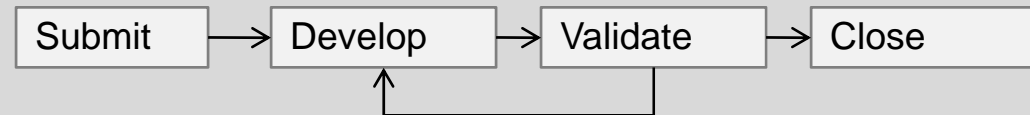


IBM Rational ClearQuest ALM Schema

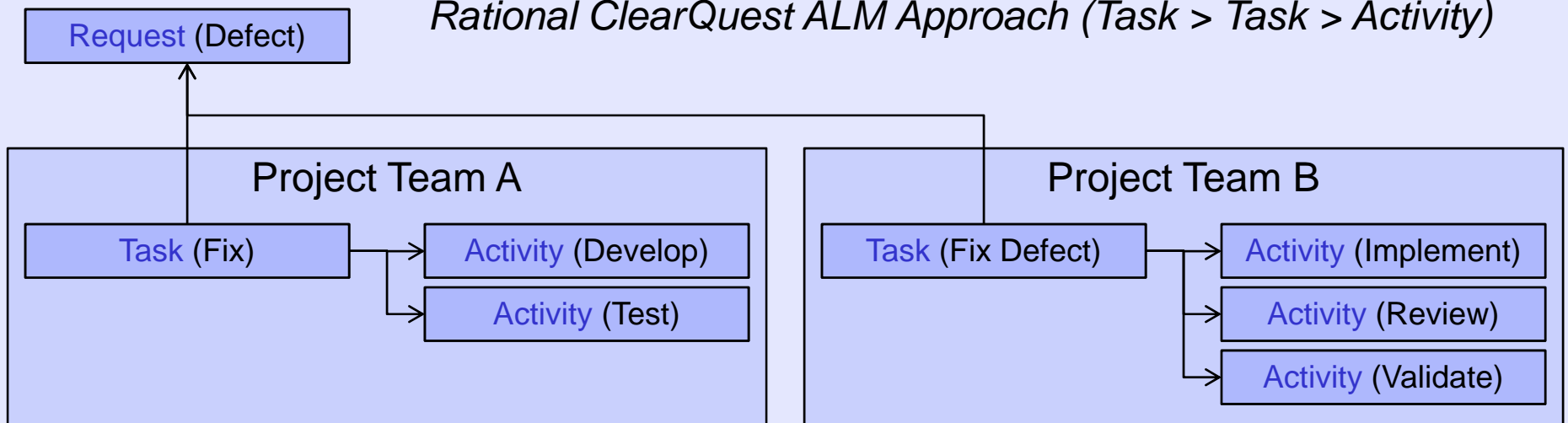
Project level process support



State Transition Approach (Single record)

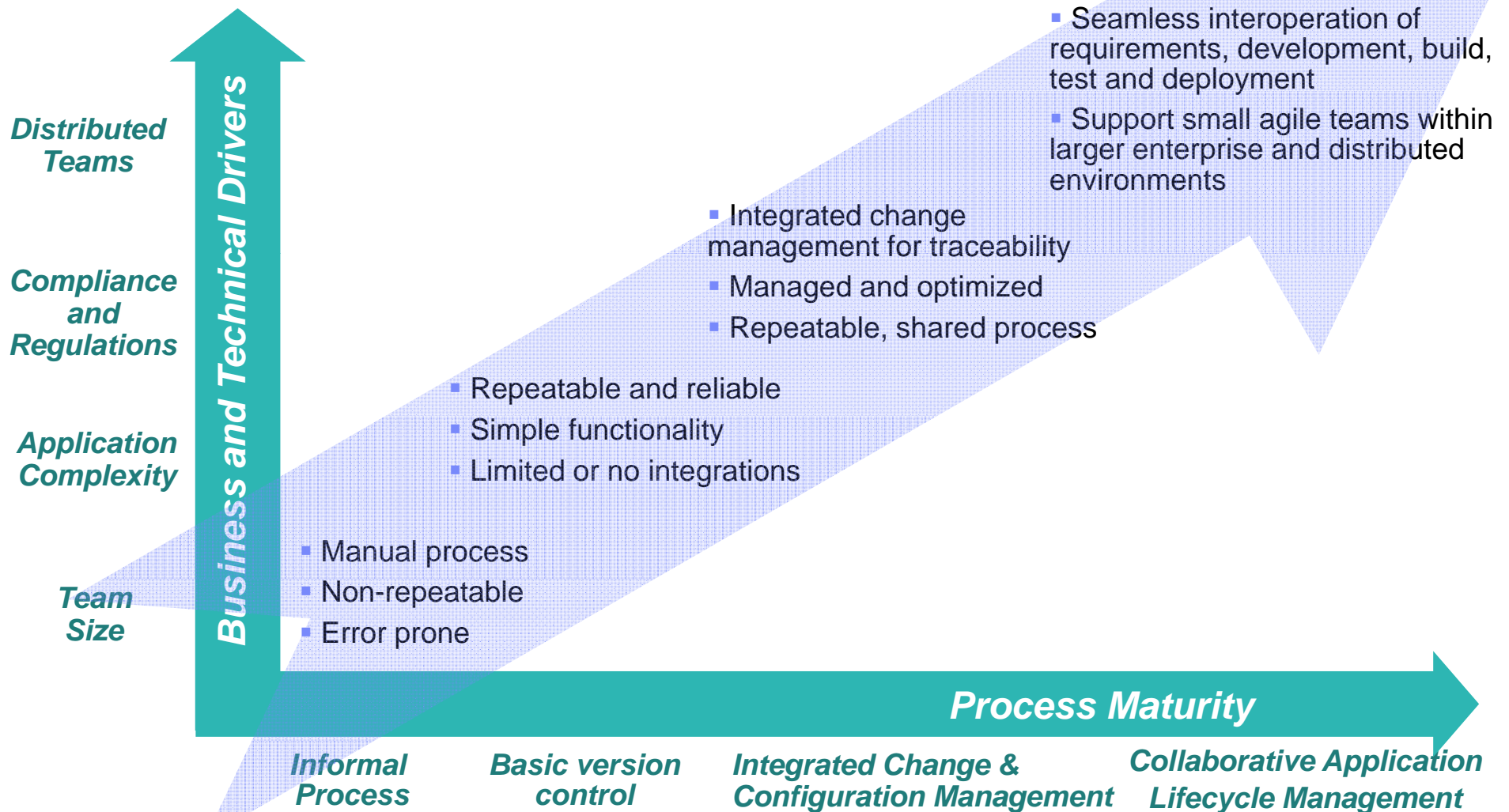


Rational ClearQuest ALM Approach (Task > Task > Activity)



Replace one-size fits-all state transitions with project defined activity sets

The evolution of Software Change and Configuration Management (SCCM)



Change, Configuration and Release Management

A comprehensive integrated solution

IBM Rational ClearCase

- ❑ Links source code changes with activities (defects, enhancements, etc.) for lifecycle traceability
- ❑ Connects source code changes with build and release efforts for faster problem resolution

Automated, Integrated, Modular, Open, Proven

IBM Rational ClearQuest

- ❑ Tracks and manages software lifecycle changes providing real-time status, visibility and enhanced team synchronization
- ❑ Tracks and updates defect records based on builds for a reliable view of release contents

IBM Rational Build Forge

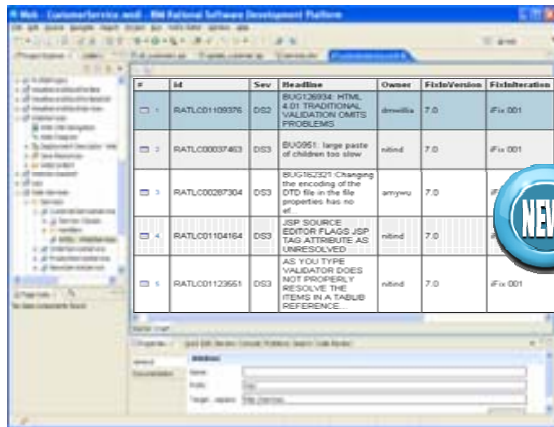
- ❑ Associates build efforts with specific defects for better tracking and reproducibility
- ❑ Automates and accelerates build efforts by providing more frequent build iterations and improved team efficiency



IBM Rational Asset Manager

A collaborative software development asset management solution

- ✓ Understand and leverage artifacts used to develop and build assets
 - ▶ Identify an asset's versioned artifacts quickly
- ✓ Submit change requests for an asset
 - ▶ Track and fix problems quickly - all in the same IDE!
- ✓ Increase productivity
 - ▶ Develop code in a team environment
 - ▶ Integrate with a customer's existing environment
 - ▶ Search, create, reuse and communicate created assets



Eclipse based Rational Software Delivery Platform

