Business Driven Development

Governing the business process
of software and systems development

Rational. software

Marco Balzarotti
IBM Rational Technical Sales Specialist

ON DEMAND BUSINESS

Agenda

- **Business trends that impact software and systems delivery**
  - ▶ **Challenges and opportunities**

- Evolving software and systems delivery
  - ▶ Business driven development
  - ▶ The IBM Rational Software Development Platform
  - ▶ Business Driven Development Solutions

- Business Driven Development in action
  - ▶ Live Demo

Trends that impact software and systems development

TRADITIONAL	BUSINESS TRENDS	CURRENT REALITY
Co-located teams **Technology led** **Vendor lock-in** **Application silos**	*Right-sourcing* *Standards*	**Geographically distributed** **Compliance** **Open computing** **Modular systems (SOA)**

Geographic distribution of business
The new norm

- **Work aligned to markets and customers**
  - ▸ For domestic growth and global reach

- **Evolution of right-sourcing:**
  - ▸ From outsourcing of non-critical IT
  - ▸ To better sourcing of integral processes (e.g., call centers, hosting)
  - ▸ With cost-effective access to talent (near-shore, off-shore)

- **Leveraging distributed development:**
  - ▸ Distributed components
  - ▸ New models for modernizing applications and architectures (software factories, industry-specific componentization, open source)

Accommodating compliance
The new necessity

- **Impacts every level of business process**
  - Organizational, functional, asset

- **Organizational level**
  - Management reporting, audit support
  - Sarbanes Oxley, HIPAA, 21CFR11
  - Basel II, EASHW

- **IT, systems and product level**
  - Project and portfolio accountability
  - ITIL, COBIT, COSO
  - ISO 900x, Six Sigma

- **Development compliance level**
  - Change management of assets, traceability
  - CMM/CMMII, RUP, DODAF

Open computing
A new route to collaboration and innovation

- **Open standards**
  - ▶ Improve data sharing by simplifying integration of disparate technologies

- **Open architecture**
  - ▶ Increase collaboration by easily extending business processes

- **Open source**
  - ▶ Promote innovation by leveraging community development

Open architecture

Open computing

Open standards

Open source
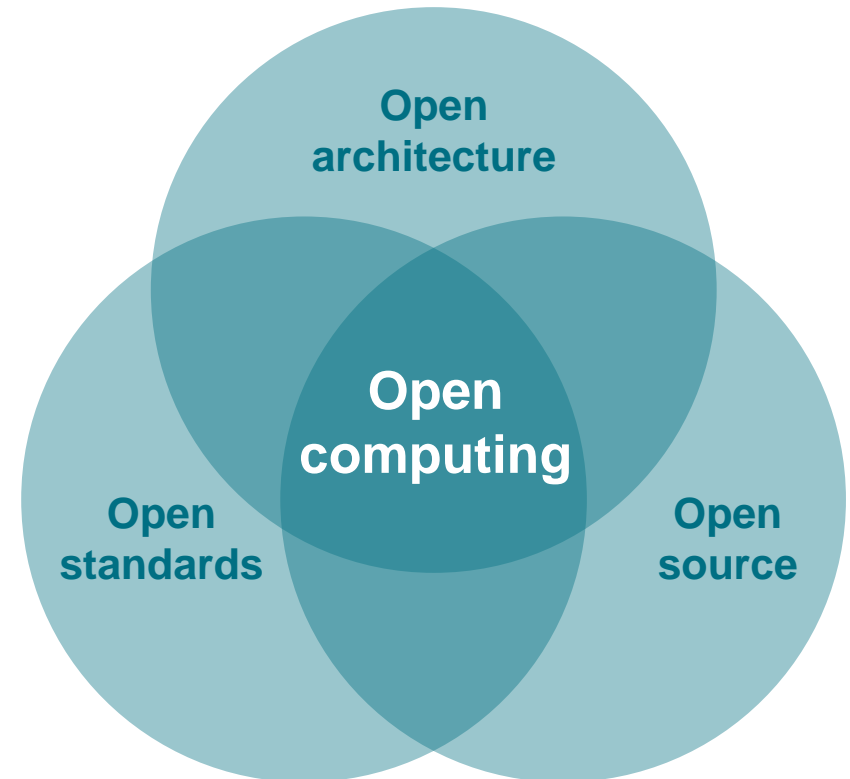
Modular systems
Greater flexibility

- **Maximize investments: *Reuse components***
  - Leverage existing assets and investments
  - Avoid rip and replace

- **Increase flexibility: *Interoperable systems***
  - Connect and share business components
  - Easily distribute business processes

- **Accelerate initiatives: *Scalable and agile***
  - Add capacity or functionality quickly
  - Scale technology based on business demands
  - Increase business process efficiency—globally

Today, service-oriented architecture (SOA)
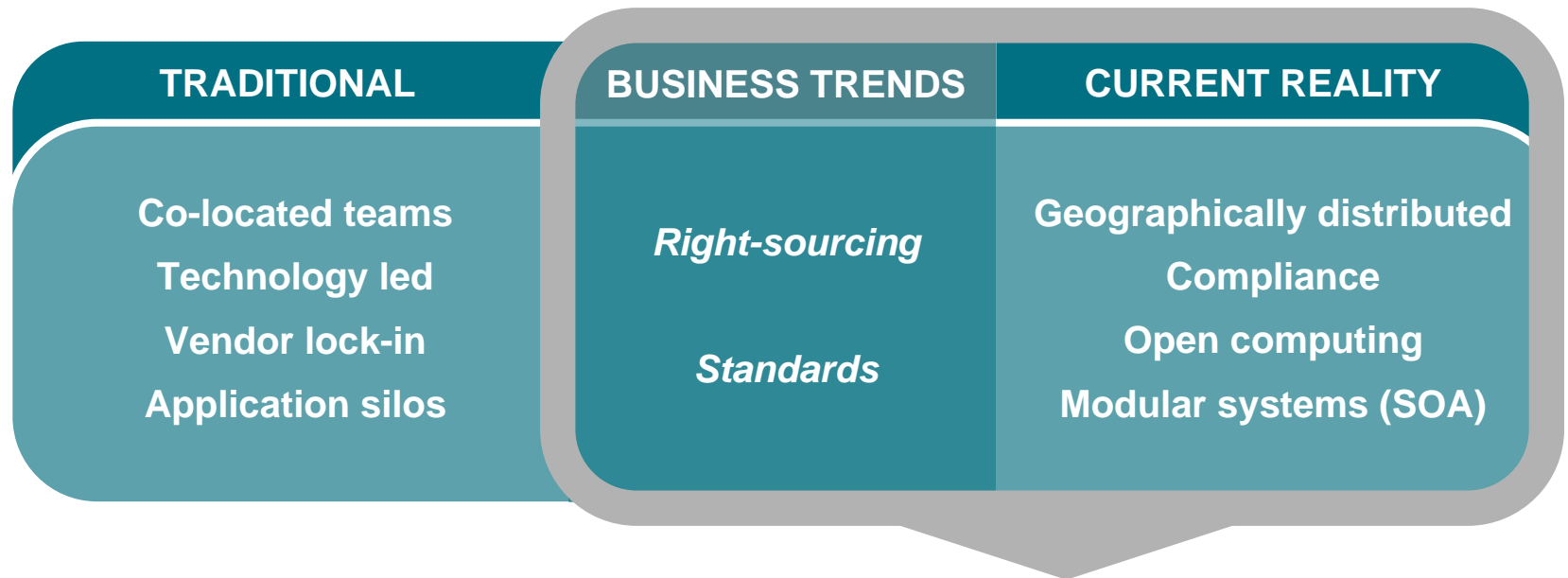*takes business process automation to the next level*

Agenda

- Business trends that impact software and systems delivery
  - ▶ Challenges and opportunities

- Evolving software and systems delivery
  - ▶ **Business driven development**
  - ▶ The IBM Rational Software Development Platform
  - ▶ Business Driven Development Solutions

- Business Driven Development in action
  - ▶ Live Demo

Evolving software and systems delivery

TRADITIONAL	BUSINESS TRENDS	CURRENT REALITY
Co-located teams	*Right-sourcing*	Geographically distributed
Technology led		Compliance
Vendor lock-in	*Standards*	Open computing
Application silos		Modular systems (SOA)

Business Driven Development

Enabling organizations to *govern* the business process of software and systems development

A way to transform and simplify development

Business-driven development

An integrated approach to software development that aligns line-of-business, development and operations teams to improve business performance
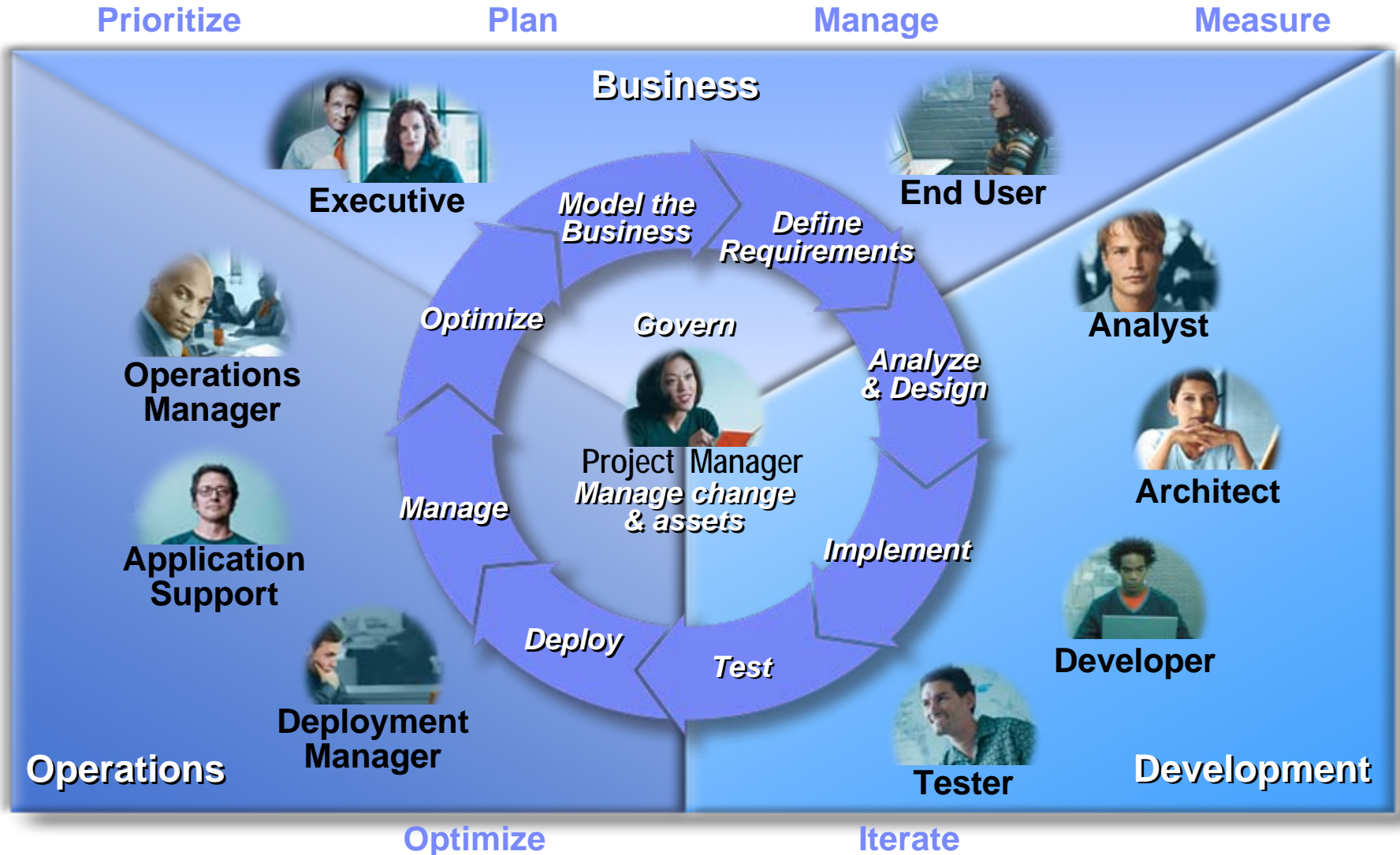
Development as a business process

- Align Technology and Business priorities
- Improve efficiency and responsiveness
- Create innovative products

**Software development
becomes a driver
of competitive advantage**

Business Driven Development

Prioritize   **Plan**   **Manage**   **Measure**

Business

Executive

End User

Model the Business

Define Requirements

Optimize

Govern

Analyst

Analyze & Design

Operations Manager

Project Manager

Manage change & assets

Architect

Manage

Implement

Application Support

Developer

Deploy

Test

Deployment Manager

Tester

Operations   **Development**

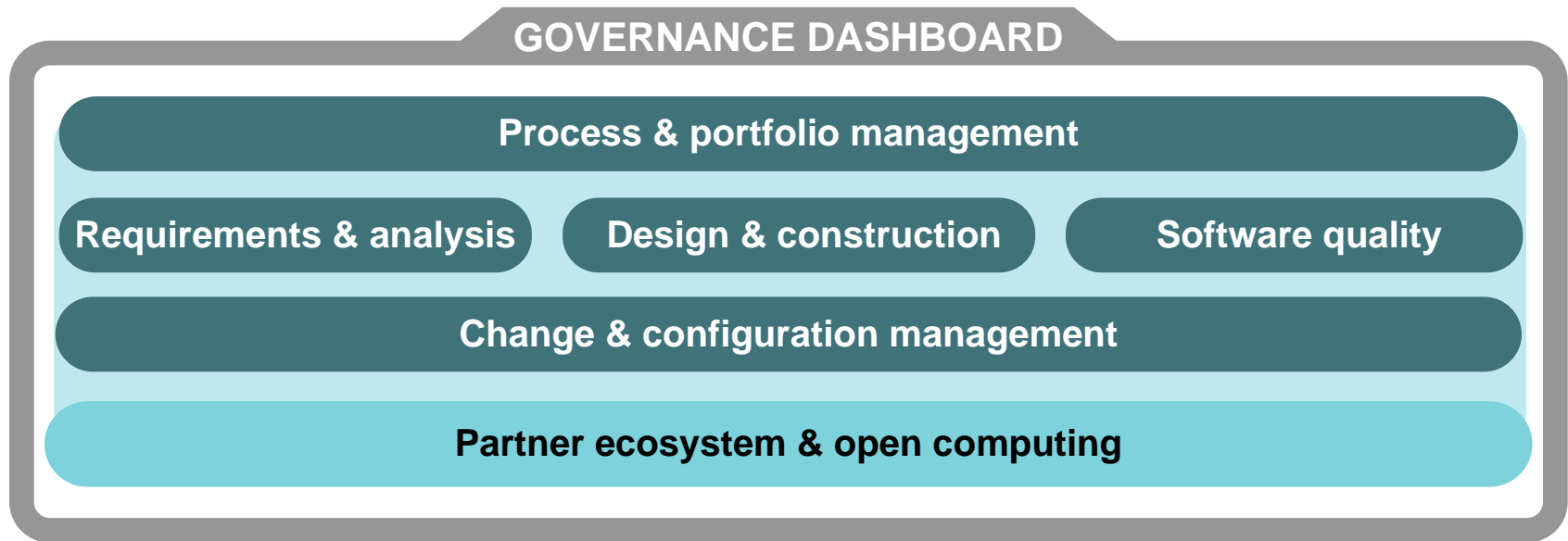**Optimize**   **Iterate**

Agenda

- Business trends that impact software and systems delivery
  - ▸ Challenges and opportunities

- Evolving software and systems delivery
  - ▸ Business driven development
  - ▸ **The IBM Rational Software Development Platform**
  - ▸ Business Driven Development Solutions

- Business Driven Development in action
  - ▸ Live Demo

The IBM Rational Software Development Platform
Governing the business process of software and systems development

GOVERNANCE DASHBOARD

Process & portfolio management

Requirements & analysis   **Design & construction**   **Software quality**

Change & configuration management

Partner ecosystem & open computing

IBM Rational Software Development Platform

GOVERNANCE DASHBOARD

Solutions for geographically distributed development, compliance, SOA

Process & portfolio management

- IBM Rational® Portfolio Manager
- IBM Rational Method Composer
- Best practices content (IBM Rational Unified Process® IBM Tivoli Unified Process®, Portfolio Management)

Requirements & analysis

- IBM WebSphere® Business Integration Modeler
- IBM Rational RequisitePro®
- IBM Rational Software Architect
- IBM Rational Software Modeler
- IBM Rational Data Architect

Design & construction

- IBM Rational Software Architect
- IBM Rational Software Modeler
- IBM Rational Application Developer
- IBM Rational Systems Developer
- IBM WebSphere Integration Developer

Software quality

- IBM Rational Performance Tester
- IBM Rational Functional Tester
- IBM Rational Manual Tester
- IBM Rational PurifyPlus

Change & configuration management

- IBM Rational ClearCase®
- IBM Rational ClearQuest®
- IBM Rational Team Unifying Platform™
- IBM Tivoli Provisioning Manager
- IBM Tivoli Configuration Manager
- IBM Tivoli Intelligent Orchestrator

Partner ecosystem & open computing
Eclipse™, Linux®, Microsoft® Windows®, UNIX®, IBM z/OS®

Business Driven Development Offerings
Requirements and Analysis

GOVERNANCE DASHBOARD

Process & portfolio management	**Requirements & analysis**	Design & construction

Business driven process

Change & configuration management	Software quality

Benefits

- Drive business needs throughout projects

- Ensure regulatory compliance

- Leverage existing assets and SOA architectures

Capabilities

- Analyze business workflows & activities

- Capture business requirements

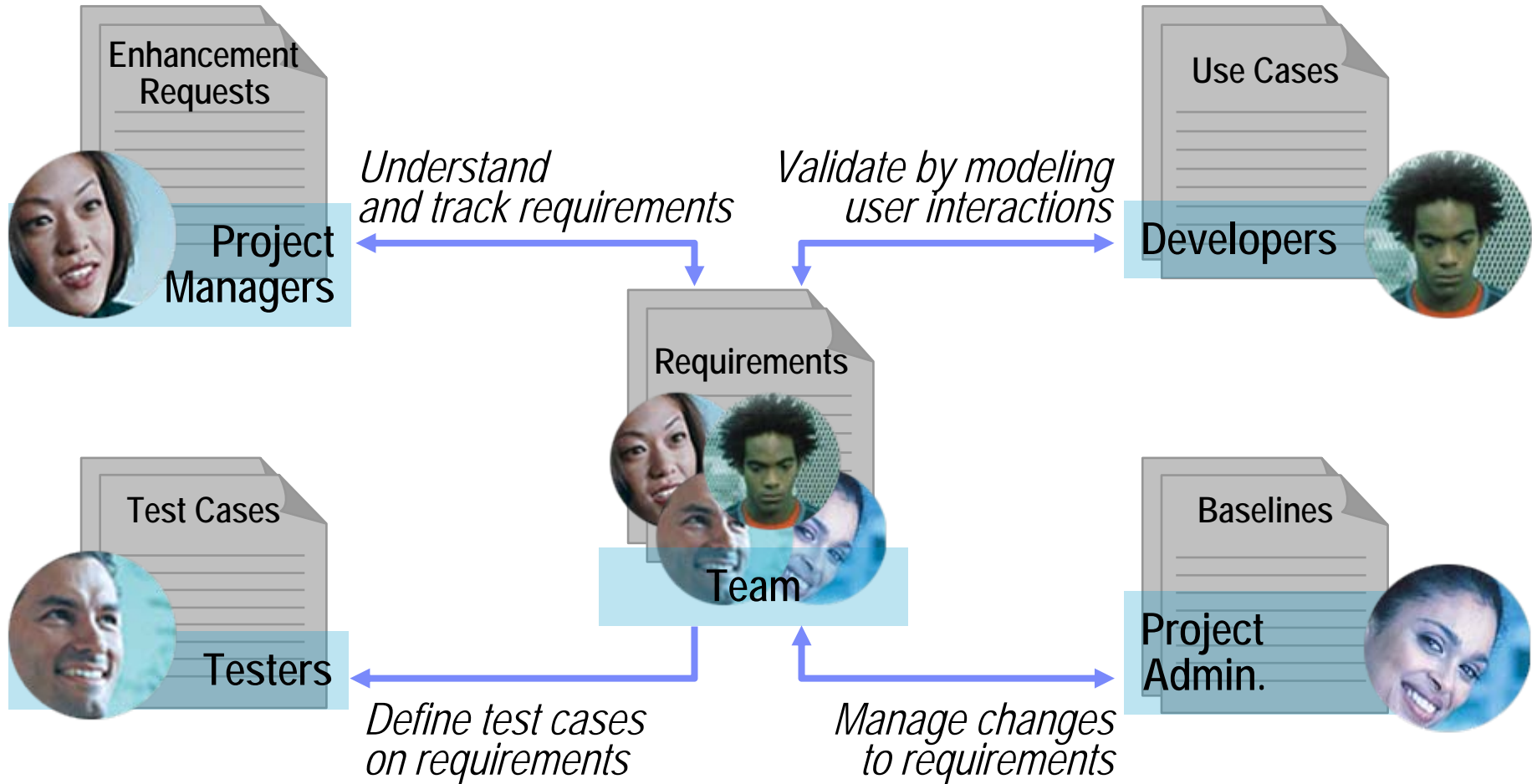- Model enterprise and data architectures

Key Products

- IBM Rational RequisitePro

- IBM Rational Software Modeler

- IBM Rational Data Architect

- IBM WebSphere Business Integration Modeler

- IBM WebSphere Studio Asset Analyzer

Manage requirements

Enhancement Requests

Understand and track requirements

Project Managers

Validate by modeling user interactions

Use Cases

Developers

Requirements

Team

Test Cases

Testers

Define test cases on requirements

Manage changes to requirements
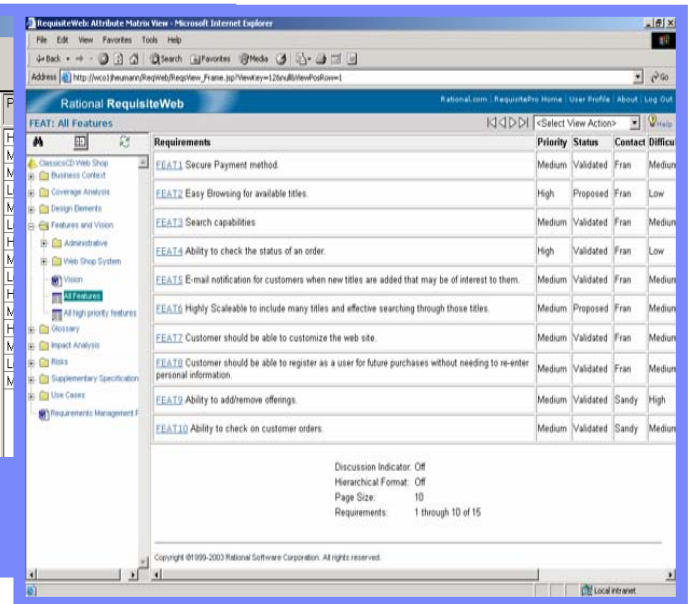
Baselines

Project Admin.

IBM Rational RequisitePro

IBM Rational RequisitePro

- Central repository, easy secure access
- Project and document templates
- Organize requirements with packages
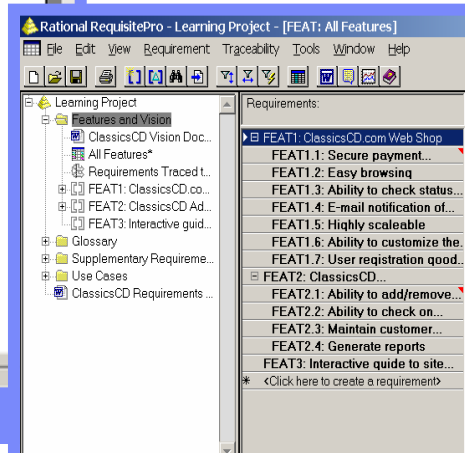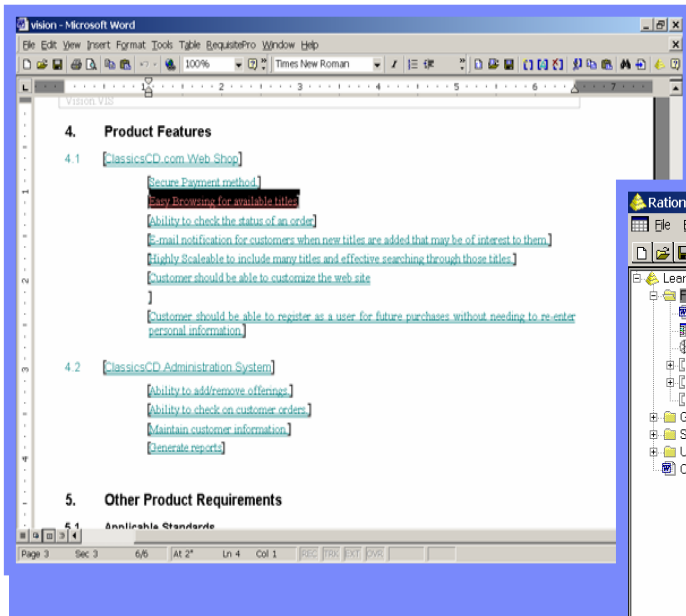
Database

- Familiar interface
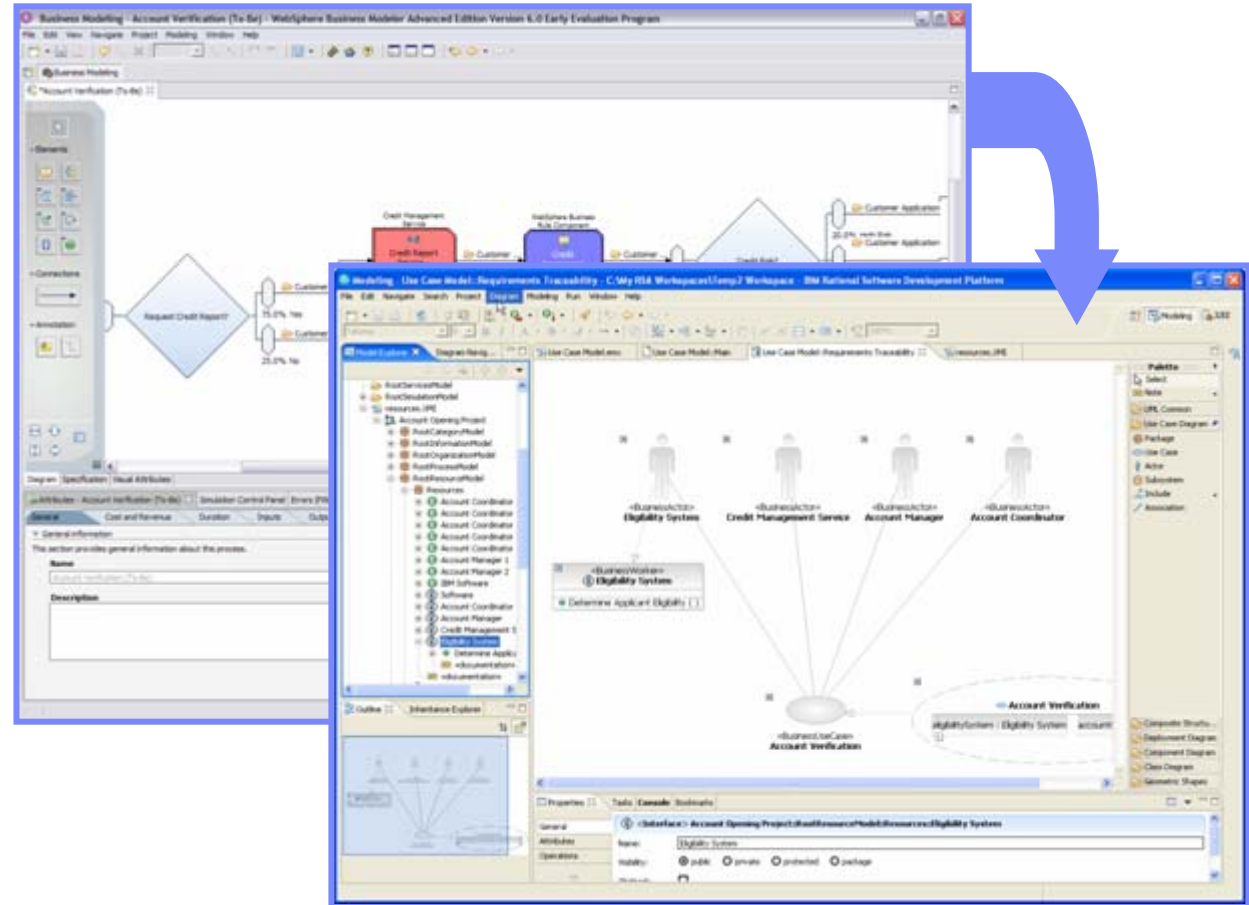- Provides requirements context
- Highly effective for reviews

Web

- Remote/distributed access
- No desktop installation

Model the business and system architecture

- Document business processes

- Capture enterprise assets

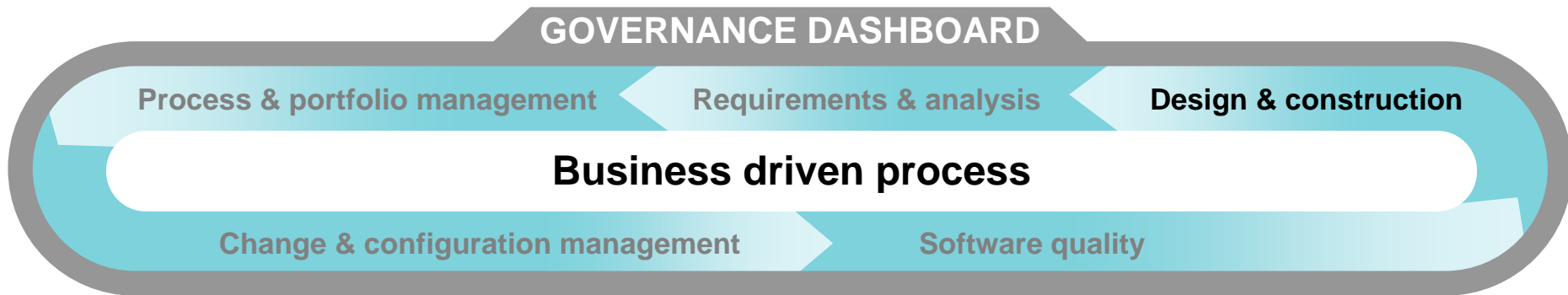- Design software and system architectures

IBM WebSphere Business Integration Modeler
IBM Rational Software Modeler

Business Driven Development offerings
Design and construction

GOVERNANCE DASHBOARD

| Process & portfolio management | Requirements & analysis | **Design & construction** |

Business driven process

Change & configuration management | Software quality

Benefits

- Improve productivity and time to value
- Maximize quality, robustness, reusability
- Maximize value of code and models
- Choice of development styles

Capabilities

- Coding, unit testing and deployment
- Code visualization/editing
- Modeling, round-trip engineering, model execution
- Legacy Integration
- Rapid application development

Key Products

- IBM Rational Web Developer for WebSphere Software
- IBM Rational Application Developer for WebSphere Software
- IBM Rational Software Architect
- IBM Rational Systems Developer
- IBM Rational Technical Developer

A spectrum of design and construction styles
Adopt the right paradigm for your needs

Level of abstraction

Business modeling & model execution

Rapid Application Development

Legacy integration

Modeling & round-trip engineering

Code visualization & visual editing

Traditional coding
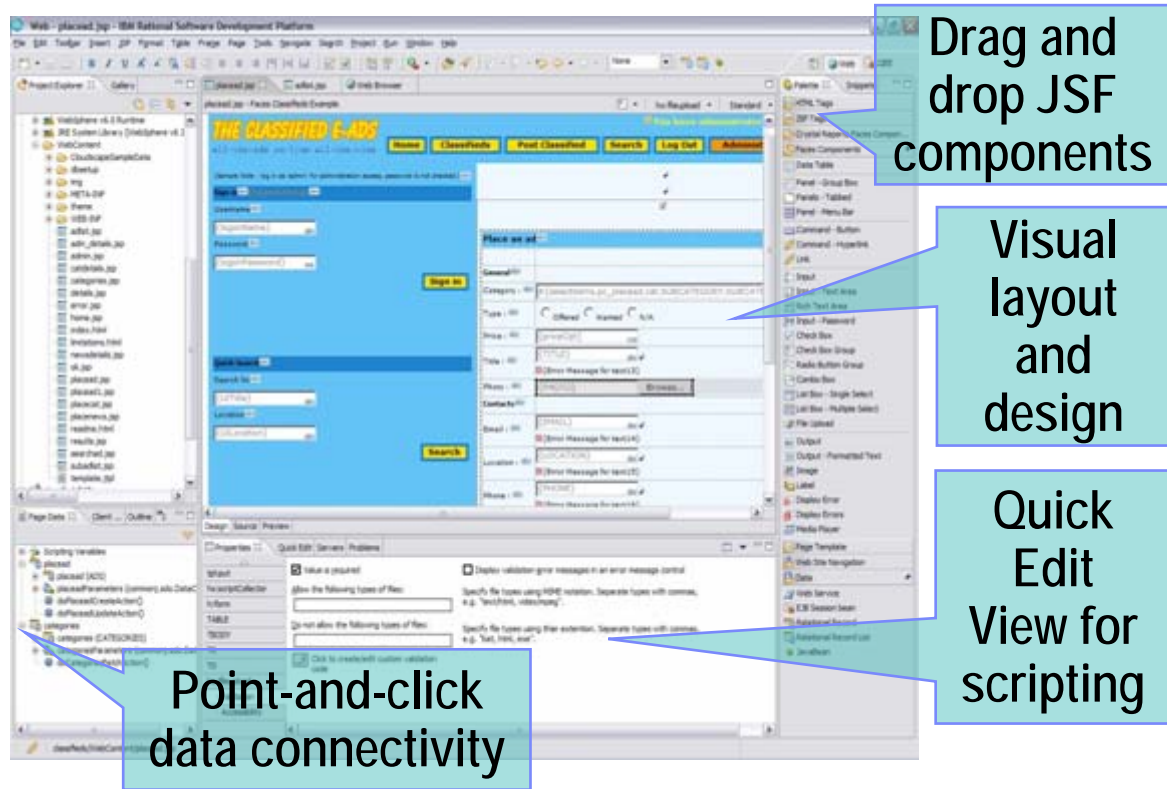
Simplicity ◄────────► **Productivity**
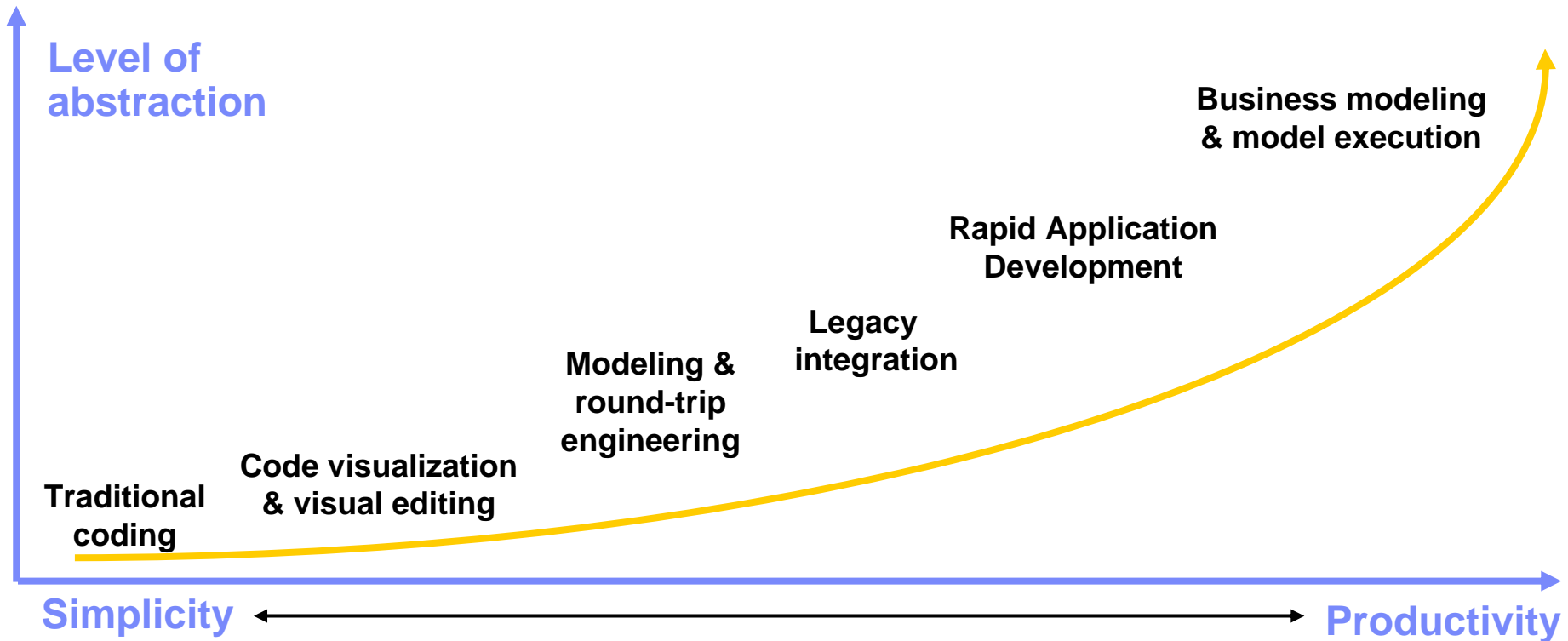
- Different projects need different development styles
- IBM offers products that address any and all of these styles
- Teams can gradually move to higher levels of abstraction over time

Build, test, and deploy Web, Web services and Java applications

Page Designer with JavaServer Faces support

- Web UI construction
  - ▸ Visual site layout tools
  - ▸ Drag-and-drop web client construction supporting: HTML, JSP, Servlet, Struts, JSF and SDO
- Rich Client UI construction
  - ▸ Visual Editor for Java for rich client composition
  - ▸ Supports Swing, AWT, SWT widgets
- Tools for Web services, Database, XML, EGL
- Eclipse Java Development Tools

Drag and drop JSF components

Visual layout and design

Quick Edit View for scripting

Point-and-click data connectivity

IBM Rational Web Developer for WebSphere Software

Build, analyze, test, profile, and deploy Web, Web services, Java, J2EE, and portal applications

- Includes all of the functionality in Rational Web Developer
- Component/Unit Test
- J2EE/EJB Tooling
  - ▶ Supports J2EE 1.3 and 1.4
  - ▶ Rapid Deployment for WAS v6 and integrated WAS test environments
- Portal/Portlet Design Tools
- Code Analysis Tools
  - ▶ Both static source code analysis and dynamic runtime analysis
- UML Visual Editors
- Includes: Rational ClearCase LT and the RUP configuration for Java Developers

Models & Diagrams
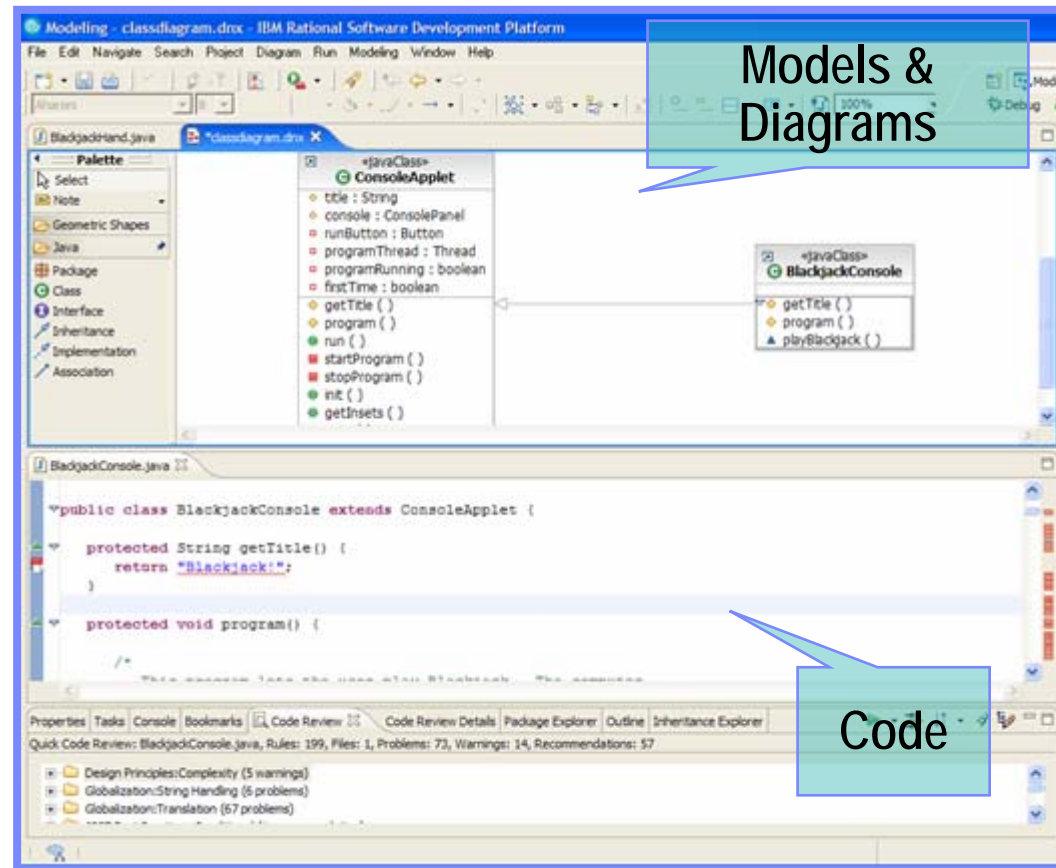
Code

IBM Rational Application Developer for WebSphere Software

UML-based visual modeling and design

- **UML 2.0 Modeling**
  - ▸ UML 2.0 Diagrams
  - ▸ UML Profile Editor
- **Pattern/Transform Authoring**
  - ▸ Sample UML-to-code transforms for EJB, Java, and C++
- **Reusable Asset Browser**
  - ▸ Browse and import assets from a repository
- **Report Generation**
  - ▸ HTML and XML based data extraction and reporting
- **Lifecycle Integrations**
  - ▸ Drag-and-drop association of RequisitePro requirements with models
  - ▸ Interface to CM tools

Diagram links as first-class citizens

"In diagram editing" to accelerate modeling.

New "Diagram Navigator" view provides a diagram filtered view of the models and workspace

Inheritance view

New properties view

IBM Rational Software Modeler

Model-driven development of Java, J2EE, and C++ applications

- Includes all of the functionality in RWD, RAD, and RSM

- UML Language Transforms
  - UML-to-code transforms for EJB, Java, and C++

- Java Structural Analysis
  - Automatic anti-pattern and pattern detection
  - Architectural discovery, analysis, metrics, and stability reporting

- C++ Development Tools
  - C/C++ editors and build management, compiler and debugger integration, and UML code editors

- Includes: Rational ClearCase LT and the RUP configuration for Software Architects

Automatic generation of "topic" diagrams based on the results of the code analysis

Patterns and anti-patterns are rendered in the diagram editor. Navigation to detailed code is supported

Code review pane providing a report of detected issues. Report is inclusive of J2EE detailed code analysis results

"Details View" providing an overview and avoidance guidance for anti-patterns

IBM Rational Software Architect

Business Driven Development offerings
Software quality

GOVERNANCE DASHBOARD

Process & portfolio management | Requirements & analysis | Design & construction

Business driven process

Change & configuration management | **Software quality**

Benefits

- Ensure reliability, functionality, scalability
- Accelerate test cycles
- Support multiple skill levels
- Share responsibility for quality across the team

Capabilities

- Runtime Analysis
- Unit, functional and performance testing
- Distributed test execution
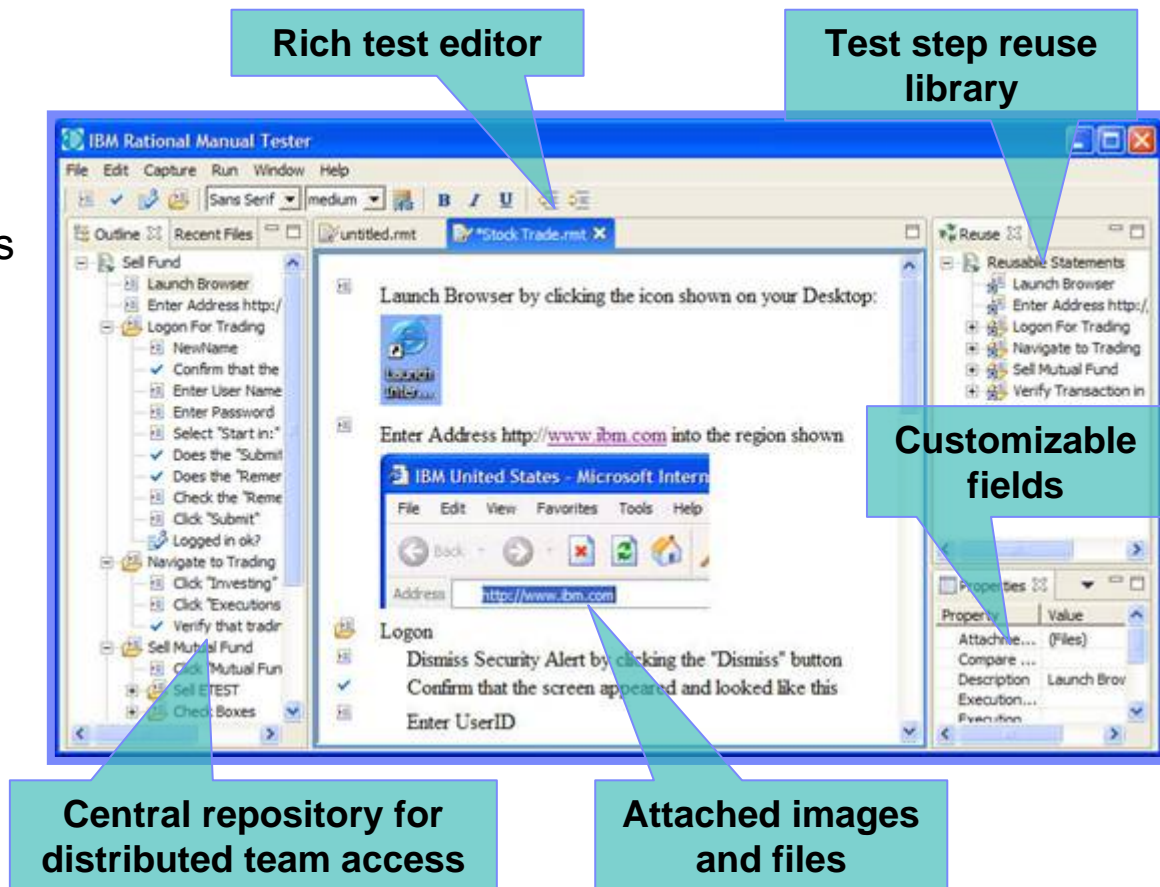- Test planning, reporting and analysis

Key Products

- IBM Rational Manual Tester
- IBM Rational Functional Tester
- IBM Rational Performance Tester
- IBM Rational Robot
- IBM Rational PurifyPlus
- IBM Rational Test RealTime

Plan, manage and organize manual testing

- Flexible support for manual test authoring, organization and execution

- Test any software or non-software system

- For business analysts and testers

- Reduces impact of software change and human error on manual testing efforts

- Add organization and reuse to manual test efforts

- Drag-and-drop test step reuse

- Rich editor with multiple customization points

- Assistance for verifying and entering data

- Test import / results export capabilities

- Distributed team support using central test repository

Rich test editor

Test step reuse library

Customizable fields

Central repository for distributed team access

Attached images and files

IBM Rational Manual Tester

Verify application functionality

- Comprehensive functional and regression test automation

- Tests Java, VS.NET WinForms, Web, Siebel and terminal-based applications

- For project or department QA teams, testers and GUI developers

- Wizards-based test development

- Ensures proper use case implementation before deployment

- Supports fact-based evaluations of project readiness and application quality

- Choice of 100% pure Java or VB.NET for test script development

- Maximized reuse with intelligent script maintenance

  ▸ Fully versionable test assets

  ▸ Robust object recognition engine

Eclipse or VS.NET-based editor and debugger

ScriptAssure™ for test script resiliency

Version control ready

Java, VS.NET, Web and terminal-based application support

Data-driven test assistance

Java in Eclipse or VB.NET in VS.NET

IBM Rational Functional Tester

Analyze application load and performance

- Provides Web, Siebel and SAP application load and performance testing

- For testers and deployment managers

- Validate scalability under variable multi-user loads prior to deployment

- Provides cross-tier transaction breakdown and resource monitoring to pinpoint bottleneck

- Simple, tree-based tests
  - Optional insertion of Java code for advanced customization

- Flexible modeling and emulation of diverse user populations

- Automated identification and variation of dynamic data

Visual test editor

Real-time reporting

Flexible test design and scheduling

Server resource data collection
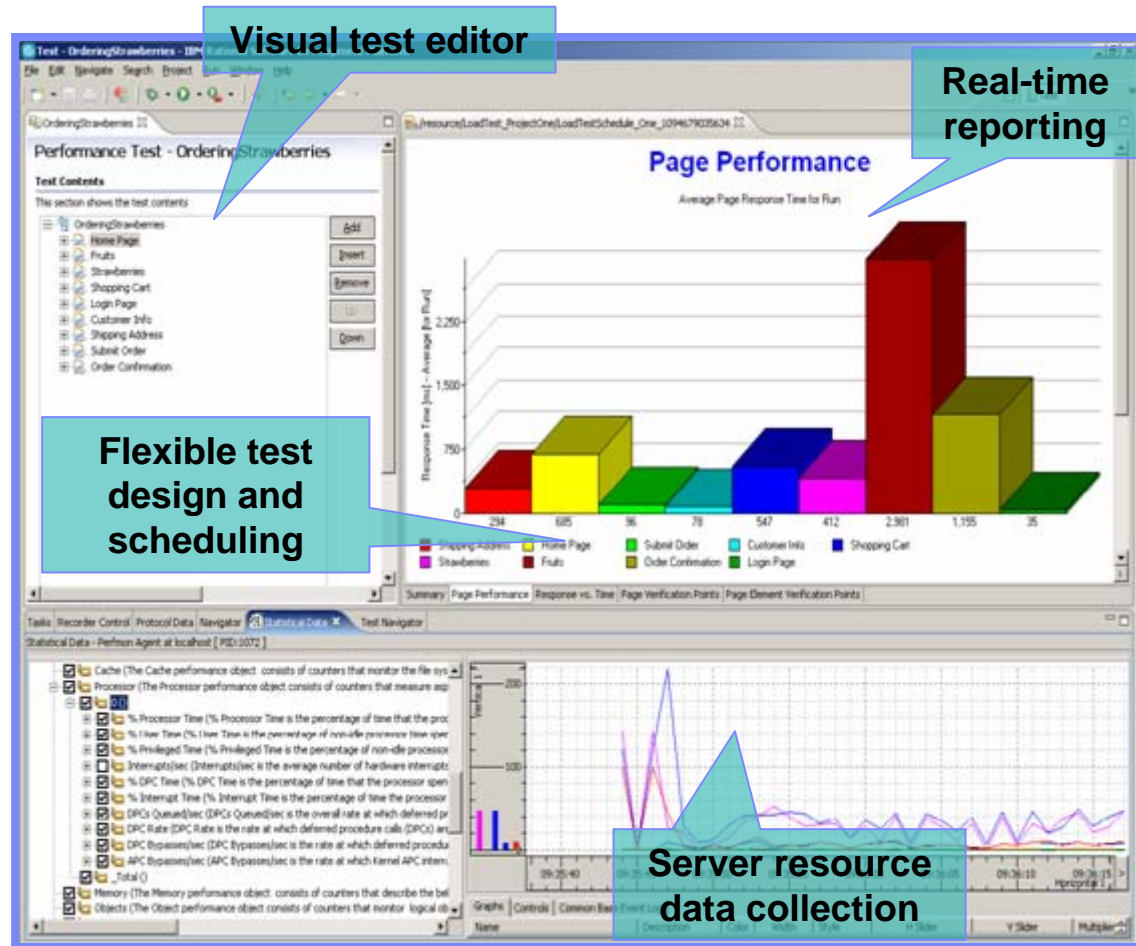
IBM Rational Performance Tester

Automated global test management

- Coordination of globally distributed testing

- Single project view including quality metrics and status

- Configurable workflows easily enable test management best practices

- Project security

Requirement	Change/Defect Management	Test	Configuration Control	Release

e-Signature Approvals
Policy Approval
(Enforcement Owner)

Test Case	Execution	Validation	Approve

IBM Rational ClearQuest
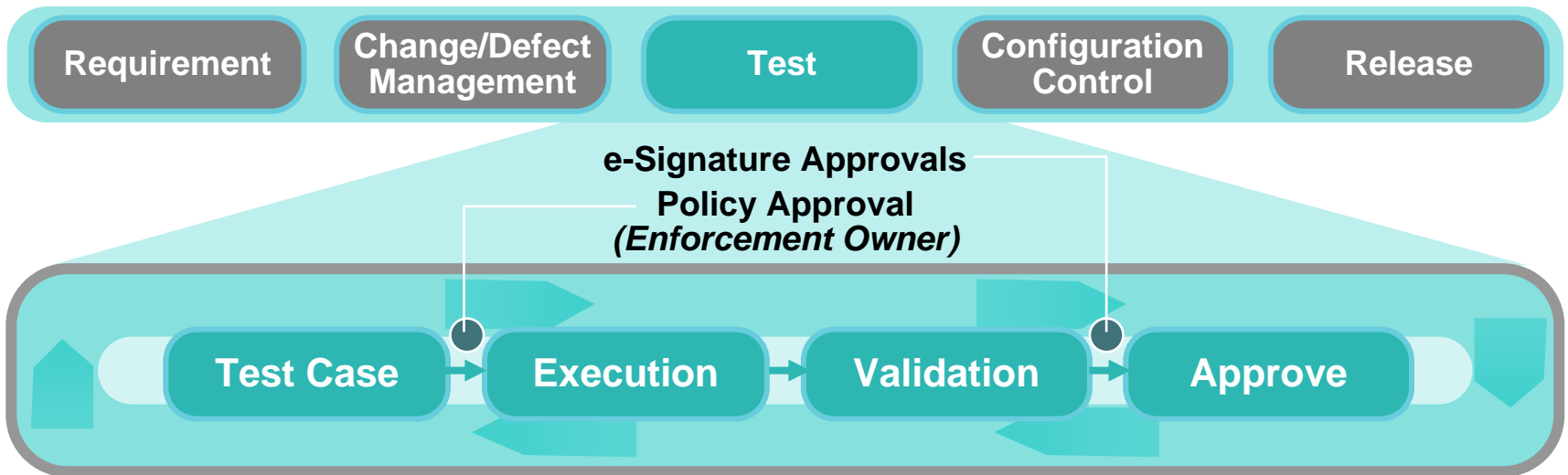
Business Driven Development offerings
Change and configuration management

GOVERNANCE DASHBOARD

Process & portfolio management   **Requirements & analysis**   **Design & construction**

Business driven process

Change & configuration management   **Software quality**

Benefits	Capabilities	Key Products
▪ Quickly respond to change	▪ Change and asset management	▪ IBM Rational ClearCase
▪ Develop anytime, anywhere	▪ Build and release management	▪ IBM Rational ClearQuest
▪ Ensure predictable results	▪ Flexible workflow support	▪ IBM Rational Team Unifying Platform
▪ Promote and support reuse	▪ Traceability across the lifecycle	

Managing change
Project challenges

Did requirement 462 make it into this release ?

Analyst

Where's the bottleneck?

Project Manager

Add promotion calculation

Bug 849

New platform

New customer transaction

Bug 527

New GUI button

98

New v...

Bug 179

Bug 348

Bug 291

Of course I didn't forget a file...

Developers

Why did the build break?

Integrator

Build 3

Build 2

Build 1

Are the requirements I need to test in this build?

Testers

Activity-based change management
Ensure predictable results

- Simplifies key SCM functions and workflows

- Easy to adopt

- Optimized for team productivity

- Based on hundreds of successful CM implementations

Unified Change Management

Manage Activities
- To do lists
- Automated workflow

Manage Assets
- Versioning: code, models, XML, HTML
- Parallel development
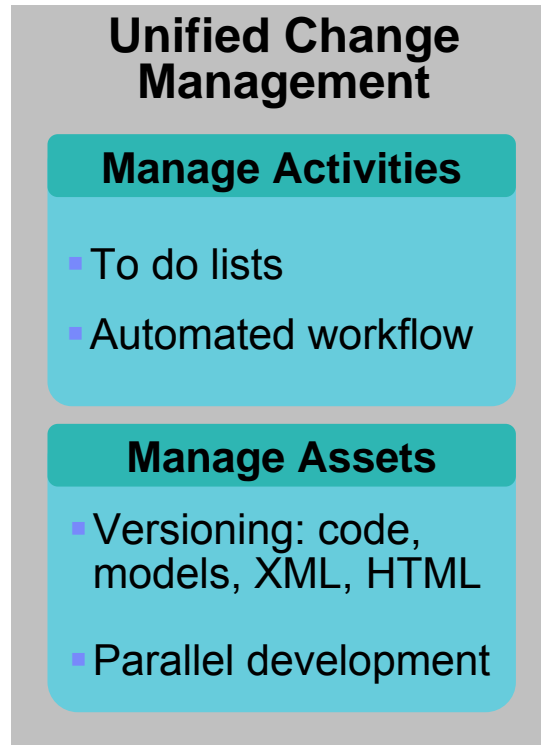
Manages High-level Objects
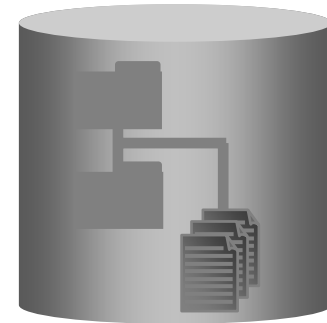
✓ Components
✓ Streams
✓ Baselines
✓ Activities

IBM Rational ClearCase and IBM Rational ClearQuest

Manage change in *Your* environment

Rational ClearCase and Rational ClearQuest Menu and Toolbar
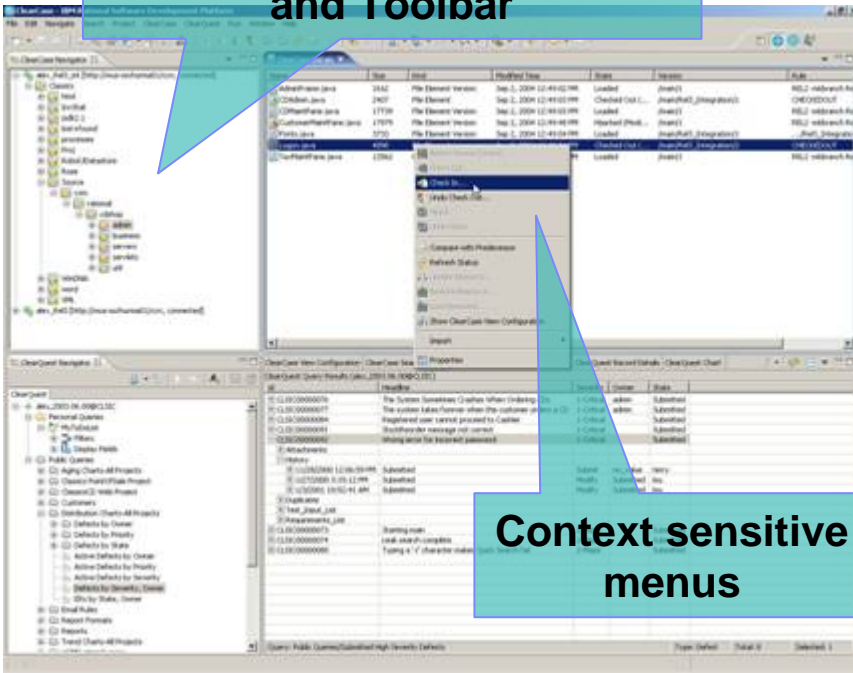
Rational ClearCase and Rational ClearQuest Menu and Toolbar

Context sensitive menus
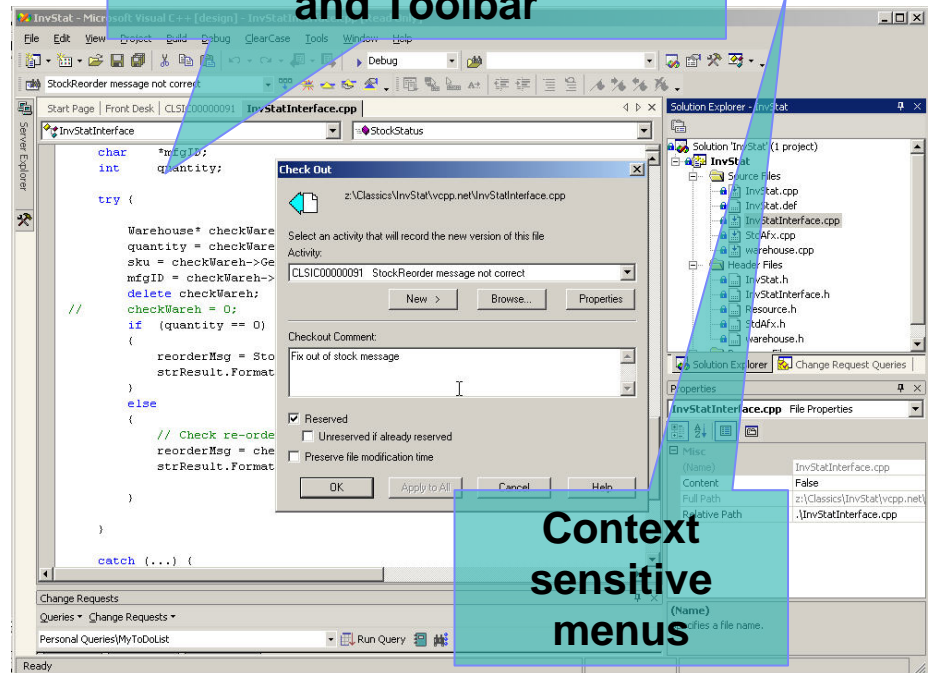
Context sensitive menus

IBM Rational ClearCase and IBM Rational ClearQuest
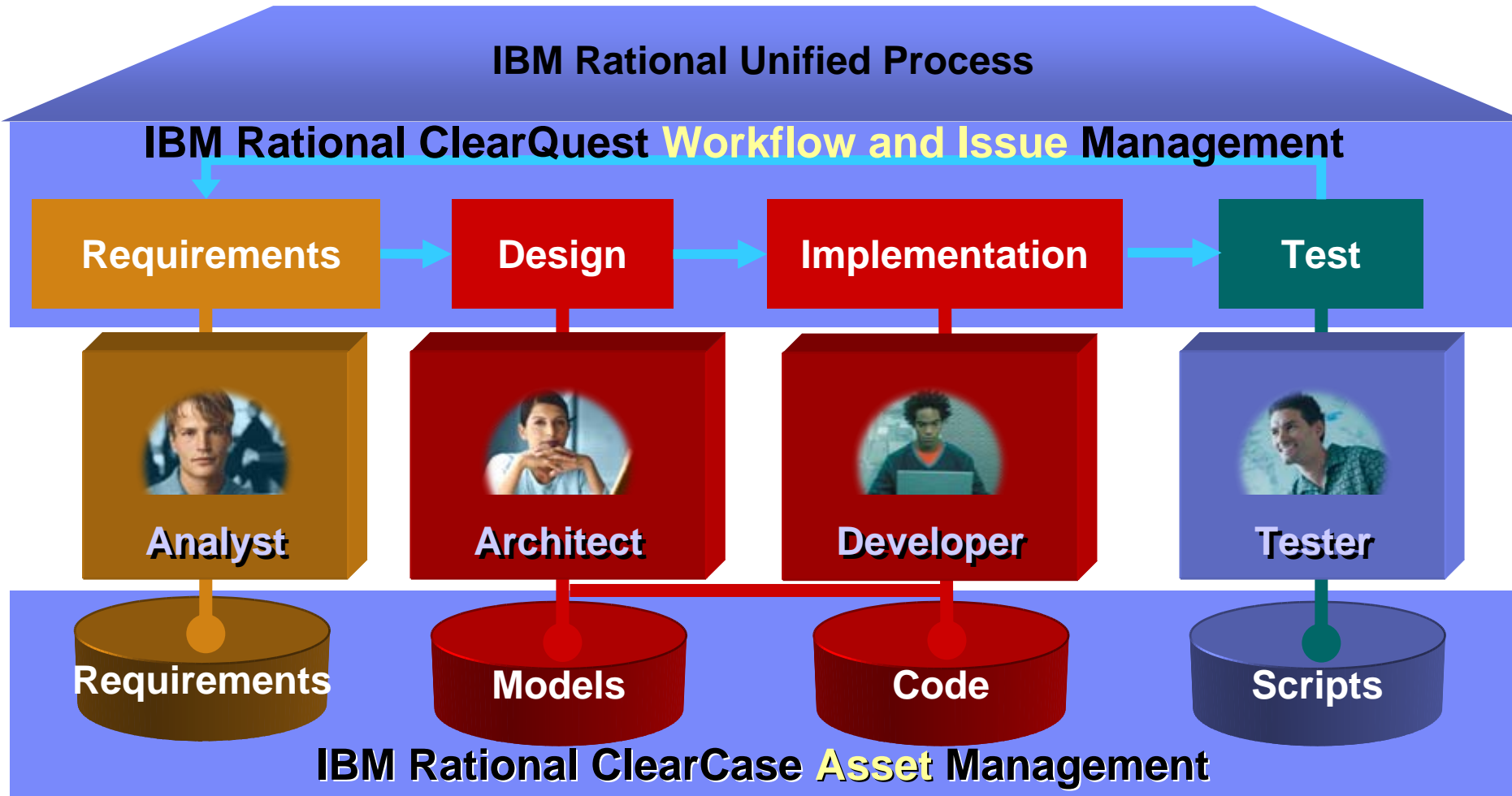
Automated build management

New IBM Rational ClearQuest and IBM Rational ClearCase v7 with IBM Rational Build Forge v7 integration

- Automated build management

- Detailed record of build content

- Support for continuous builds

- New IBM Rational ClearQuest build record for tracking and reporting
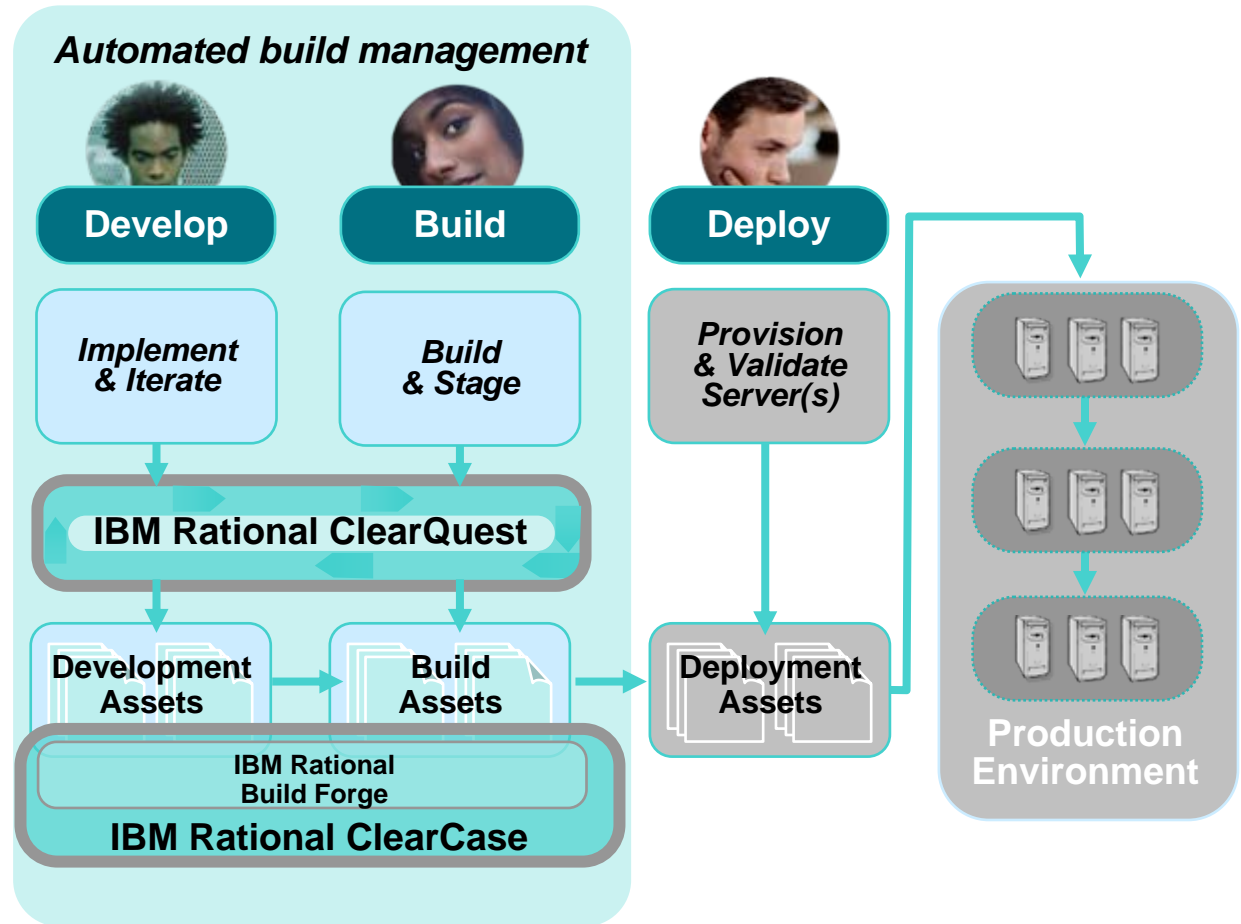
Rational BuildForge: System Overview

BUILD/RELEASE FRAMEWORK

Management Console
Centralized Web-based, Collaborative Distributed Access, Role-Based Security

IDE Plug-Ins
Developer Self-Service, Role-Based Security

Workflow	Control	Acceleration	Notification	Scheduling	Log Analysis	Tracking	Reporting

Process Automation
Automated, Repeatable Application Development Lifecycle

Development	Source Control	Product Build	Quality Assurance	Package	Release

Scripting — Python, VBscript, Batch, Perl, KSH

IDEs	Languages	Source Control	Change Mgmt	Build Tools	Test Tools	Release Tools
• RAD	• Java	• ClearCase	• ClearQuest	• ClearMake	• TestManager	• Tivoli
• Eclipse	• C	• StarTeam	• Remedy	• Ant	• Performance	• WebSphere
• Visual .NET	• C++	• Perforce	• ChangeMan	• NAnt	• Functional	• WebLogic
	• C#	• CVS	• DevTrack	• Make	• Robot	• WIS
	• etc.	• PVCS	• Bugzilla	• GNUMake	• LoadRunner	• etc.
		• VSS	• etc.	• NMake	• TestDirector	
		• Synergy		• Open Source	• WinRunner	
		• Subversion		• etc.	• Junit	
		• etc.			• etc.	

Platforms — UNIX, Windows Mac, Linux, Proprietary

Business Driven Development offerings
Process and portfolio management

GOVERNANCE DASHBOARD

Process & portfolio management　　**Requirements & analysis**　　**Design & construction**

Business driven process

Change & configuration management　　**Software quality**
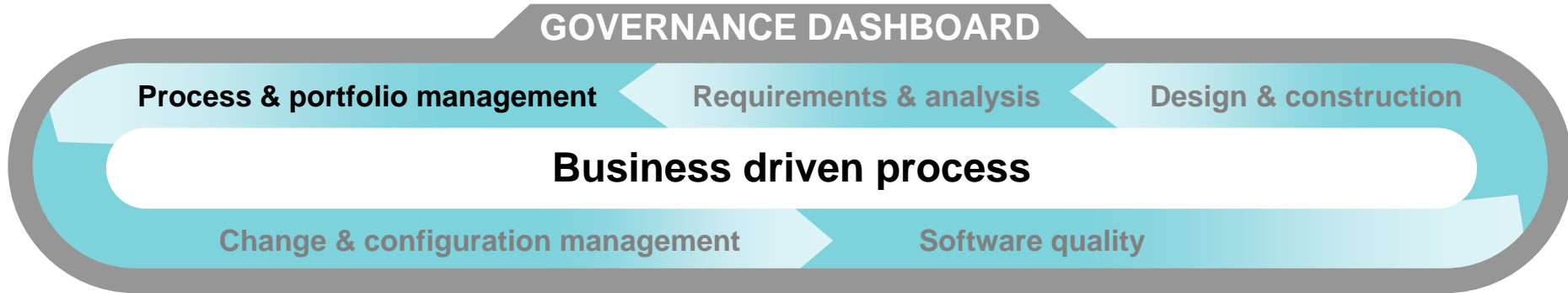
Benefits	**Capabilities**	**Key Products**
■ Align IT efforts with business priorities	■ View and monitor portfolio dashboard	■ IBM Rational Portfolio Manager
■ Accurately scope projects	■ Plan and estimate projects	■ IBM Rational Team Unifying Platform
■ Mitigate risks early	■ Manage teams with proven best practices	■ IBM Rational Method Composer
■ Equip the team to work effectively together	■ Measure progress based on accurate data	■ IBM Rational Suite

IBM Rational Portfolio Manager
Aligning priorities, projects, and people

IT & Executive Leadership

✓ Balance portfolios, prioritize investments

✓ Align resources with strategic enterprise objectives

Project & Program Managers

✓ Make timely, informed decisions based on accurate project data

✓ Ensure best practices are repeated for all management processes

Practitioners

✓ Input and track time and expense

✓ Leverage reusable process templates for collaboration and communication

Development Environment

✓ Generate accurate, objective status data

IBM Rational Portfolio Manager

Measure Progress and Quality

Automatically collect results across your development tools

Project Dashboard

Requirements	Models
Test Assets	Code

Project Plans

MS Project

Text File

IBM Rational ProjectConsole

IBM's next generation process solution with tooling, process libraries, and unified method architecture

- New commercial process product with tooling and content that supports business-driven development

- Supports a broad range of project types that map to customers' current high priority IT initiatives

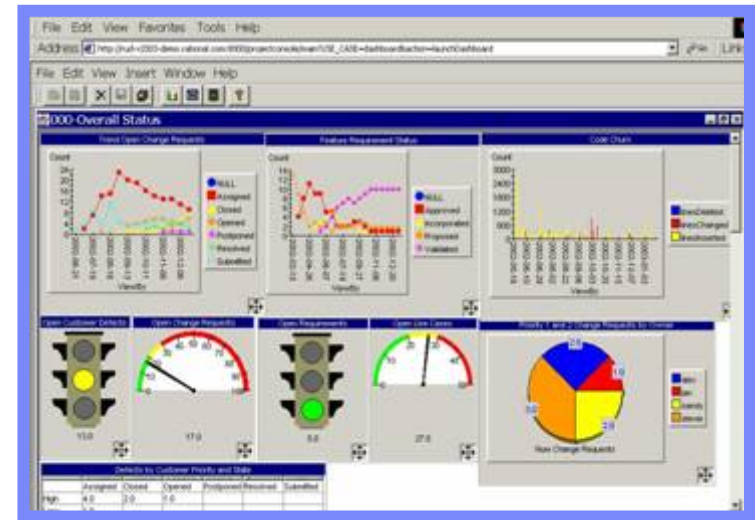- Aligns IT processes with Project Portfolio Management to addresses enterprise needs

- New easy-to-use form-based tools for authoring, configuring, and viewing process guidance

- Provides consistent results across all projects through proven best practices integrated with practitioner tools

Reusable process fragments captured as Capability Patterns (CP)

Leverage out-of-the-box delivery processes for COTS, J2EE, Systems Engineering, SOA, etc.

Drag & drop CPs, activities or tasks to augment the project plan template

View the workbreak down structure, what roles are required, or what artifacts are input / output

IBM Rational Method Composer

40

Agenda

- Business trends that impact software and systems delivery
  - ▸ Challenges and opportunities

- **Evolving software and systems delivery**
  - ▸ Business driven development
  - ▸ The IBM Rational Software Development Platform
  - ▸ **Business Driven Development Solutions**

- Business Driven Development in action
  - ▸ Live Demo

Business Driven Development Solutions
Geographically Distributed Development

GOVERNANCE DASHBOARD

Business driven process

Manage value

- Comprehensive insight into distributed projects
- Consistent portfolio management practices

Develop flexibly

- Resource management across geographical boundaries
- Provide "next door" access to distributed assets for reuse

Control risk and change

- Enable faster response through 7x24 change management
- Consistent development analytics across projects

Enabling Products

- Rational Portfolio Manager
- Rational Method Composer

- Rational Portfolio Manager
- Rational Change Management Solutions

- Rational ClearQuest
- Rational ProjectConsole
- Rational Software Quality products

Business Driven Development Solutions
Regulatory Compliance

GOVERNANCE DASHBOARD

Business driven process

Manage value

- Enterprise-wide visibility into compliance remediation projects
- Line-of-sight from compliance requirements through delivery

Develop flexibly

- Create and enforce compliant development processes
- Automate workflow and approval cycles

Control risk and change

- Enforce ITIL and COBiT requirements for change and release management

Enabling Products

- Rational RequisitePro
- Rational ClearQuest
- Rational Portfolio Manager

- Rational ClearQuest
- Rational ClearCase

- Rational ClearQuest
- Tivoli Provisioning Manager
- Rational Software Quality Products

Business Driven Development Solutions
SOA Governance

GOVERNANCE DASHBOARD

Business driven process

Manage value	Develop flexibly	Control risk and change
▪ Resource allocation and management	▪ Customizable SOA development and governance best practices	▪ Closed loop services management
▪ SOA governance guidance	▪ Integrated architecture and development platform	▪ Consistent change management
▪ Comprehensive management view		▪ Business level monitoring

Enabling Products

▪ Rational Portfolio Manager	▪ Rational Unified Process for SOA	▪ Rational ClearQuest
▪ Rational Method Composer	▪ Rational Software Architect	▪ Rational ClearCase
▪ Tivoli Composite Application Manager	▪ WebSphere Business Modeler	▪ IBM Tivoli Unified Process
	▪ Rational PurifyPlus	▪ WebSphere Business Monitor

IBM: Driving industry standards
Driving convergence for developers
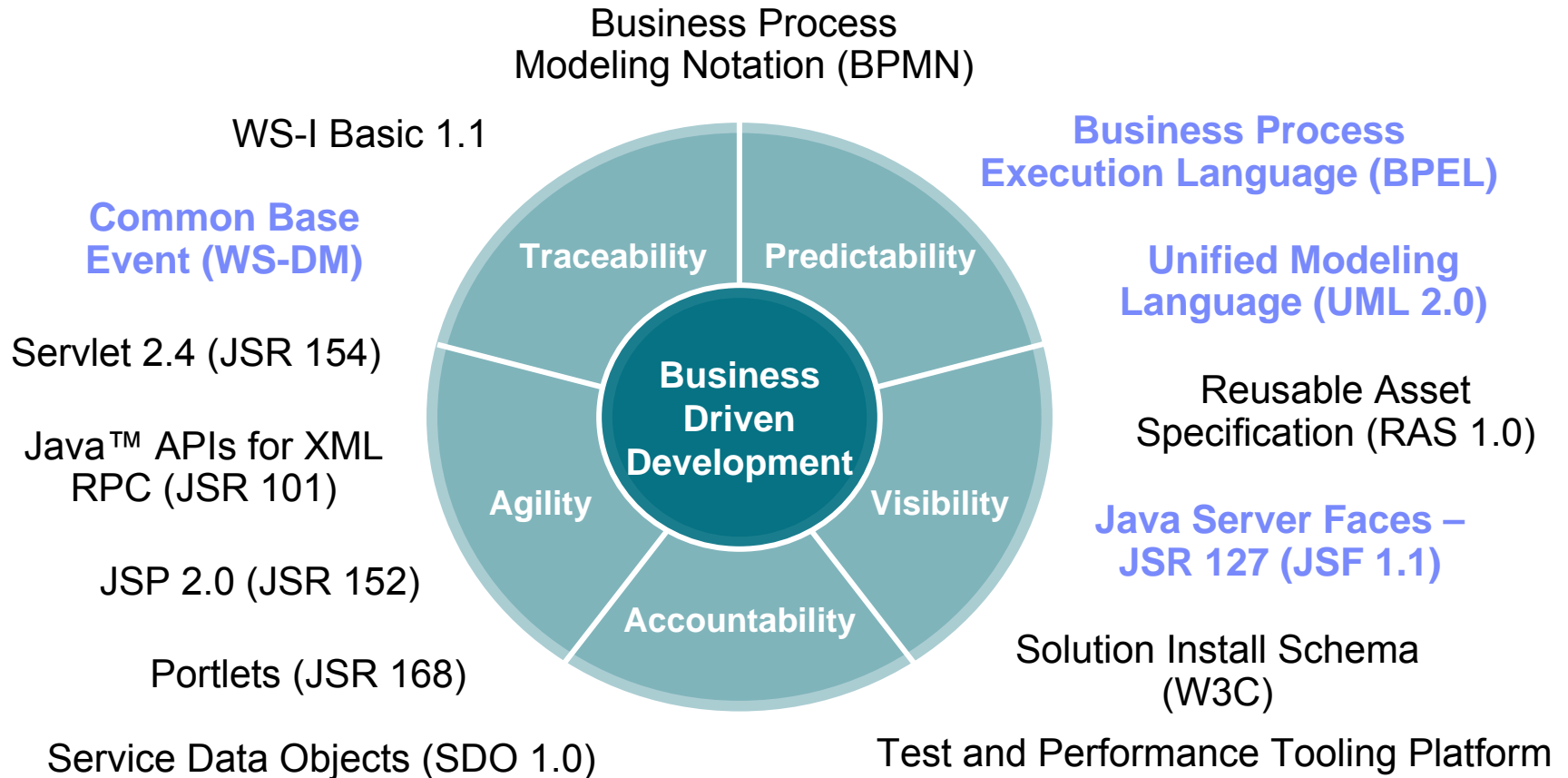
Business Process
Modeling Notation (BPMN)

WS-I Basic 1.1

**Common Base
Event (WS-DM)**

Servlet 2.4 (JSR 154)

Java™ APIs for XML
RPC (JSR 101)

JSP 2.0 (JSR 152)

Portlets (JSR 168)

Service Data Objects (SDO 1.0)

**Business Process
Execution Language (BPEL)**

**Unified Modeling
Language (UML 2.0)**

Reusable Asset
Specification (RAS 1.0)

**Java Server Faces –
JSR 127 (JSF 1.1)**

Solution Install Schema
(W3C)

Test and Performance Tooling Platform

Traceability

Predictability

**Business
Driven
Development**

Agility

Visibility

Accountability

Agenda

- Business trends that impact software and systems delivery

  ▸ Challenges and opportunities

- Evolving software and systems delivery

  ▸ Business driven development

  ▸ The IBM Rational Software Development Platform

  ▸ Business Driven Development Solutions

- **Business Driven Development in action**

  ▸ **Live Demo**

Live Demo Workflow
Roles, tasks, tools

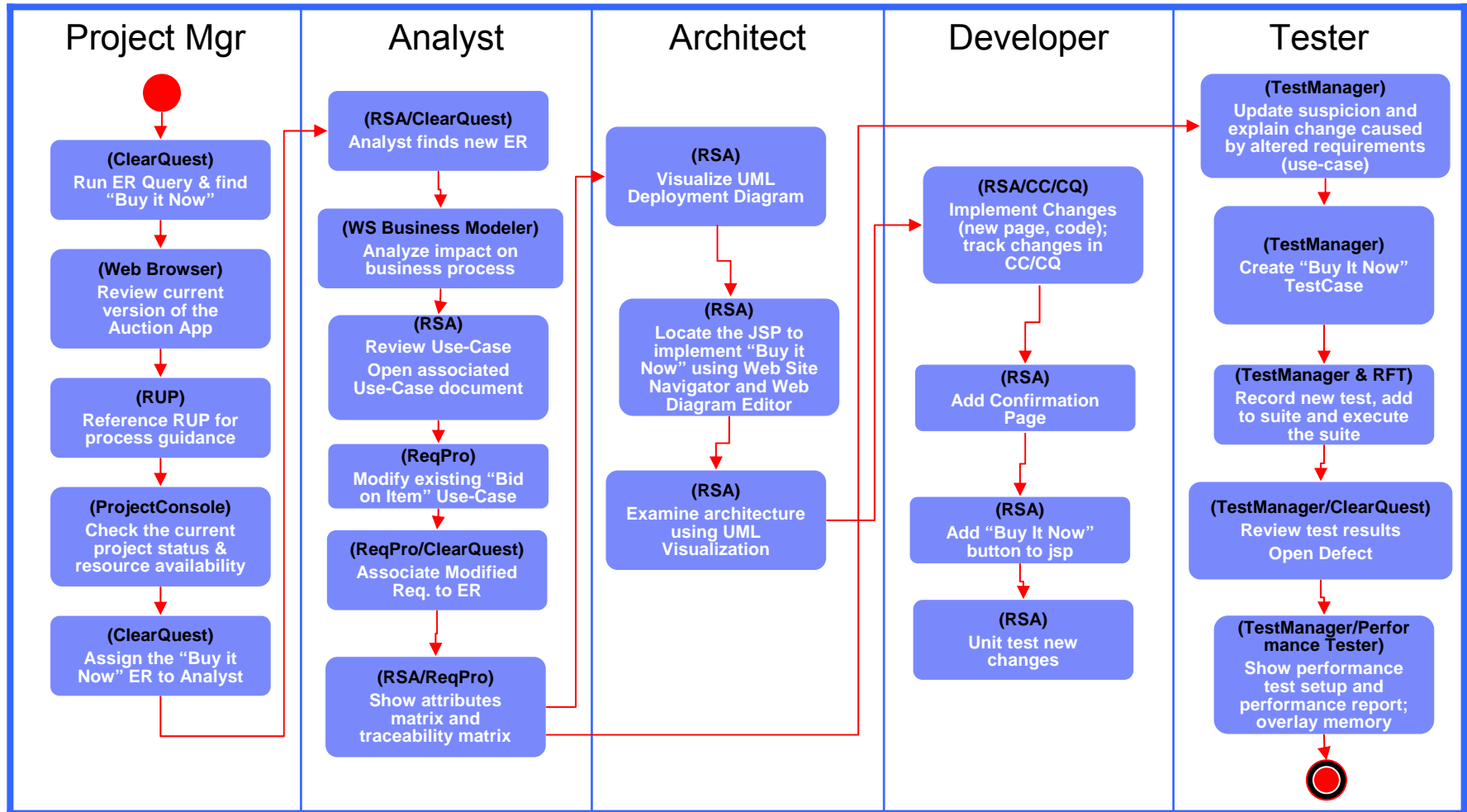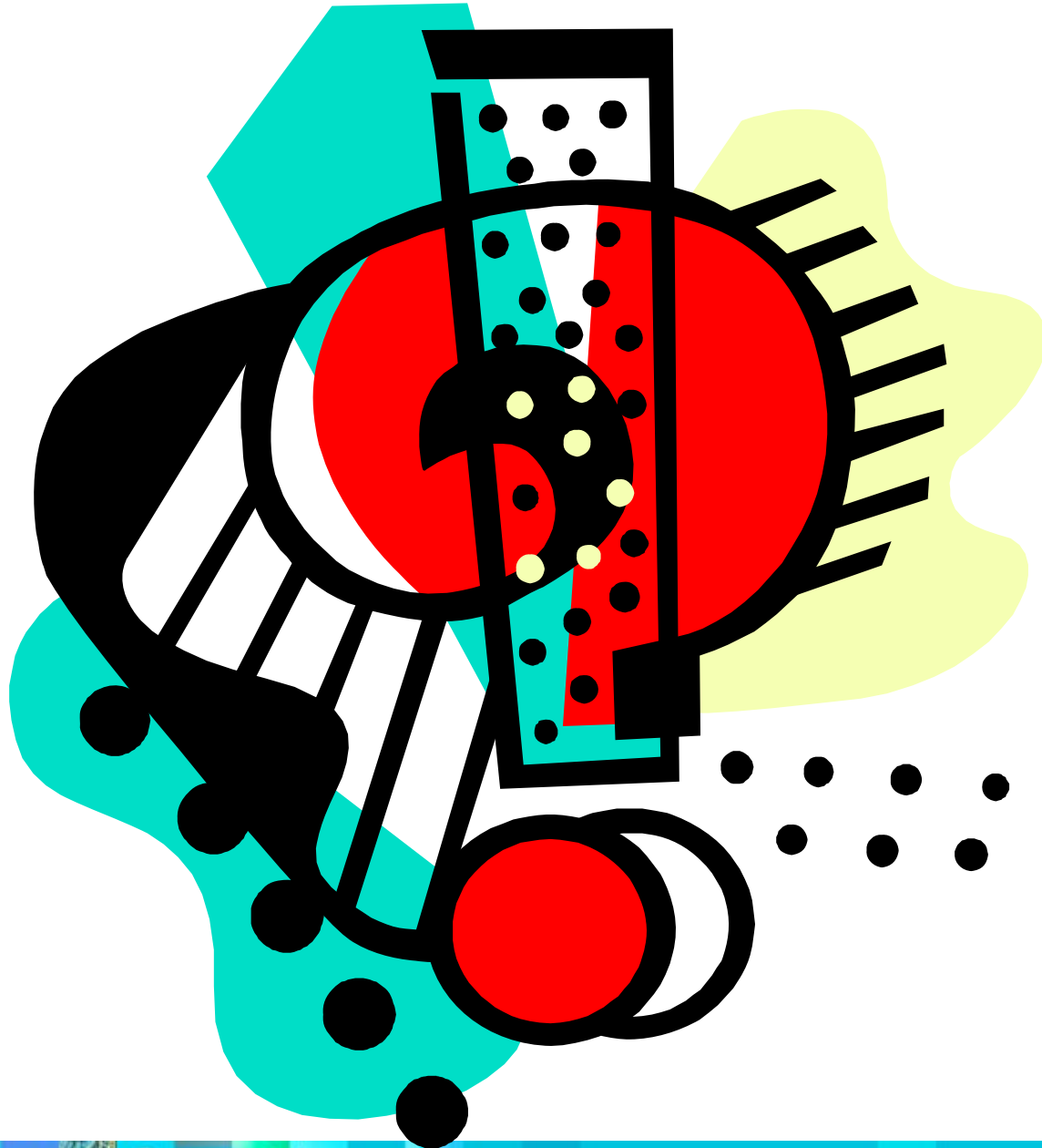| Project Mgr	Analyst	Architect	Developer	Tester
(ClearQuest) Run ER Query & find "Buy it Now"	**(RSA/ClearQuest)** Analyst finds new ER	**(RSA)** Visualize UML Deployment Diagram	**(RSA/CC/CQ)** Implement Changes (new page, code); track changes in CC/CQ	**(TestManager)** Update suspicion and explain change caused by altered requirements (use-case)
(Web Browser) Review current version of the Auction App	**(WS Business Modeler)** Analyze impact on business process	**(RSA)** Locate the JSP to implement "Buy it Now" using Web Site Navigator and Web Diagram Editor	**(RSA)** Add Confirmation Page	**(TestManager)** Create "Buy It Now" TestCase
(RUP) Reference RUP for process guidance	**(RSA)** Review Use-Case Open associated Use-Case document	**(RSA)** Examine architecture using UML Visualization	**(RSA)** Add "Buy It Now" button to jsp	**(TestManager & RFT)** Record new test, add to suite and execute the suite
(ProjectConsole) Check the current project status & resource availability	**(ReqPro)** Modify existing "Bid on Item" Use-Case		**(RSA)** Unit test new changes	**(TestManager/ClearQuest)** Review test results Open Defect
(ClearQuest) Assign the "Buy it Now" ER to Analyst	**(ReqPro/ClearQuest)** Associate Modified Req. to ER			**(TestManager/Performance Tester)** Show performance test setup and performance report; overlay memory
	(RSA/ReqPro) Show attributes matrix and traceability matrix			