

 IBM RATIONAL SOFTWARE COMES TO YOU

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# Effective Software Testing: Tools and strategies for project success

Andrea Dobosz – IBM Rational IT Specialist

IBM. **Rational.** software

## Agenda

- Business Driven Development
- Test Management
- Code and Unit Testing
- Manual Functional Testing
- Automated Functional Testing
- Break
- Performance Testing
- Wrap Up & Resources



## Agenda

- **Business Driven Development**
- Test Management
- Code and Unit Testing
- Manual Functional Testing
- Automated Functional Testing
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## Software delivery challenges for On Demand Business



### On Demand Business focus

- **Responsiveness** as a key competency
- **Effectiveness** of people as a critical success factor
- **Revenue growth** with cost containment



### Software delivery challenges<sup>1</sup>

- Keeping software projects **aligned** with changing business priorities
- Delivering better **business results** within the constraints of current investments and skill sets
- **Effectively managing** business and technical **risk**

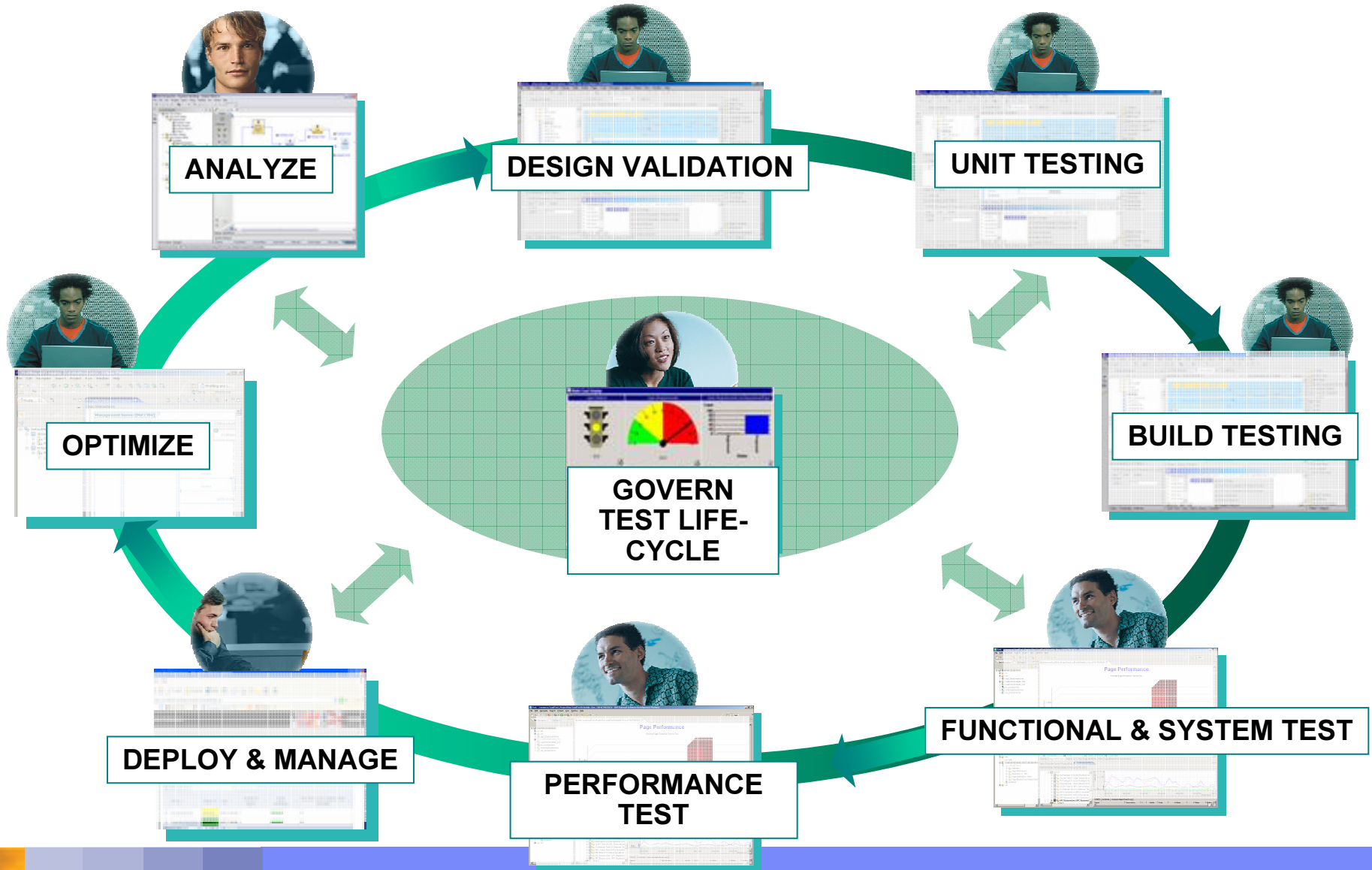
<sup>1</sup> IBM Rational research, November 2005





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# Integrated quality capabilities



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# 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 Modeler
- IBM Rational RequisitePro®
- IBM Rational Software Architect
- IBM Rational Software Modeler
- IBM Rational Rose® Data Modeler

#### Design & construction

- IBM Rational Software Architect
- IBM Rational Software Modeler
- IBM Rational Data Architect
- IBM Rational Application Developer
- IBM Rational Web Developer

#### Software quality

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

#### Change & configuration management

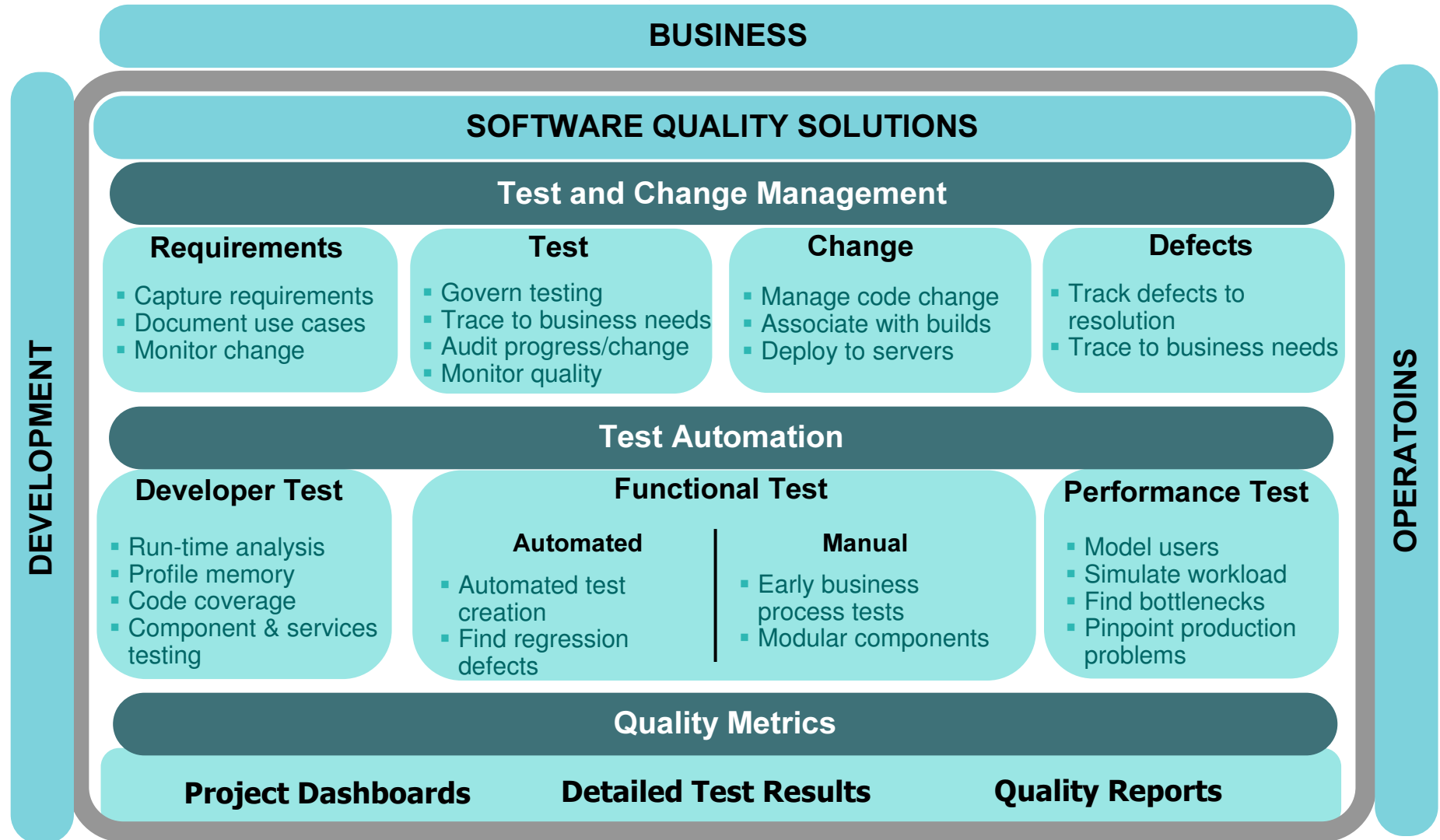
- IBM Rational ClearCase®
- IBM Rational ClearQuest®
- IBM Rational Team Unifying Platform™
- IBM Tivoli Provisioning Manager
- IBM Tivoli Configuration Manager
- IBM Tivoli Intelligent Orchestrator

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



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# Rational Software Quality Solutions



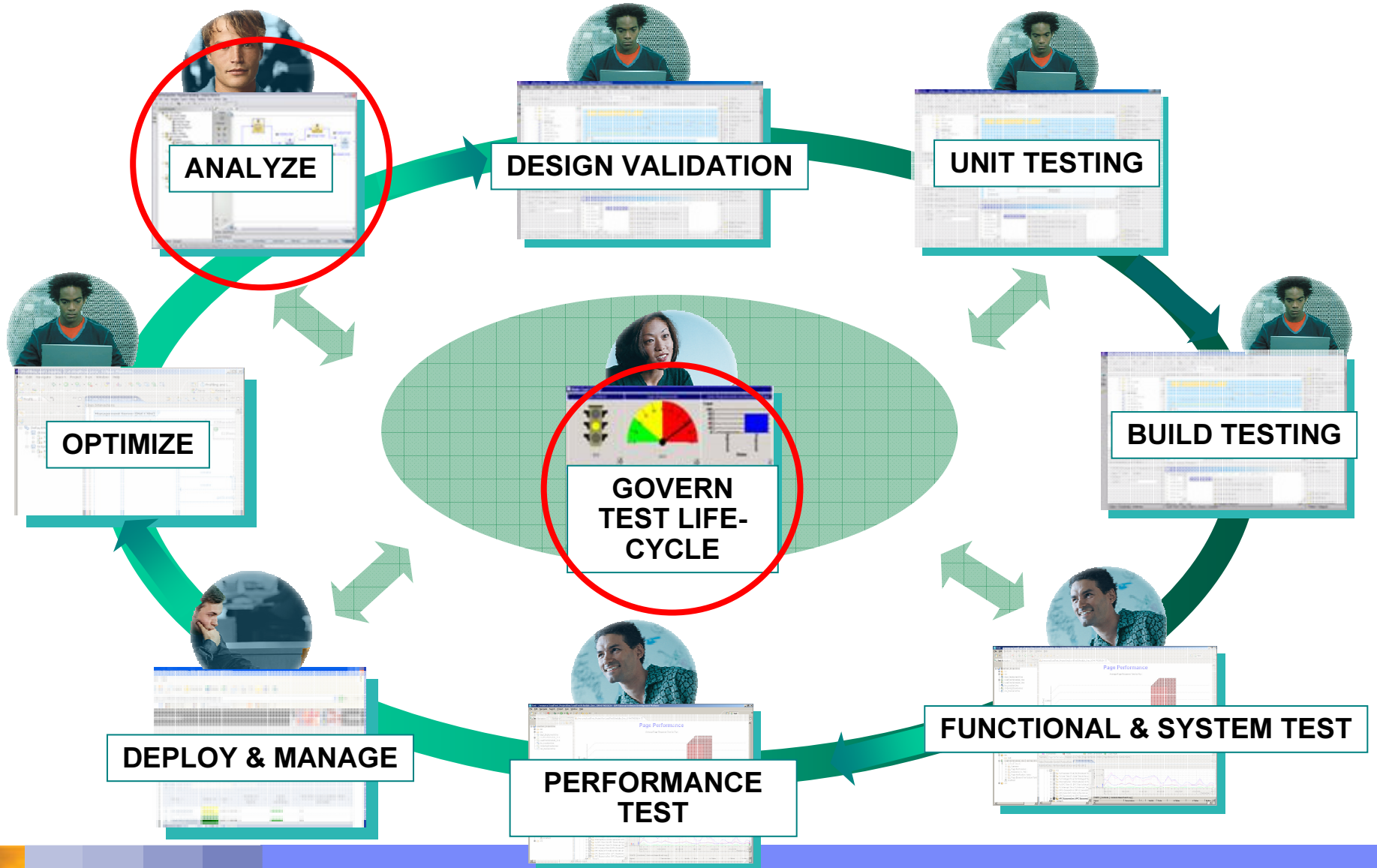
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# Integrated quality capabilities





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# What is Test Management?



**Plan**

**Create**

**Execute**

**Analyze**

- **Plan Objective:**
  - Organize and maintain an inventory of items to test
- **Create Objective:**
  - Capturing the steps required to complete a given test
- **Execute Objective:**
  - Assembling scripts in sequence to perform a suite of tests
- **Analyze Objective:**
  - Determine current status of testing project



# Challenges of Test Management

## ■ Comprehensive

- Keep track of test assets including requirements, test scripts, logs, results and reports
- Ensure testing addresses the requirements and business use cases

## ■ Distributed

- Accommodate the requirements of both dedicated, independent QA teams as well as integrated project teams and distributed teams to ensure high operational integrity.

## ■ Extensible

- Lower the cost of test lab management
- Simplify the management of tools from multiple vendors

## ■ Configurable

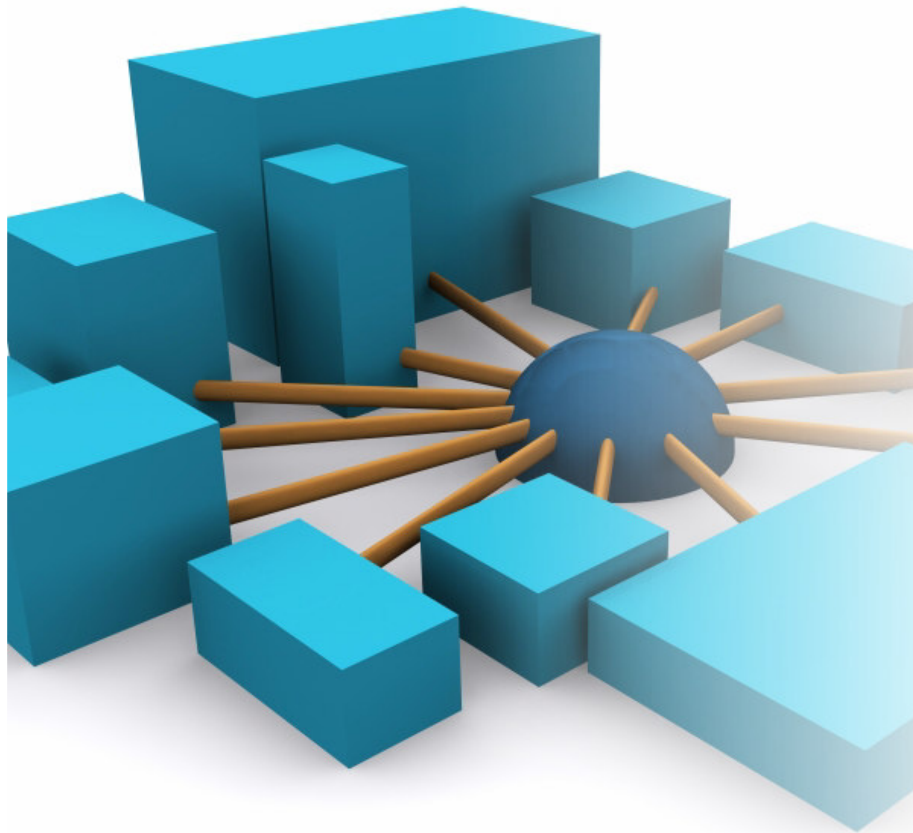
- Ensure compliance and enforcement of project and company policies
- Project-specific needs and workflow automation



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# ClearQuest: The hub for life-cycle management

*Govern the test and development process*



## IBM Rational ClearQuest

Test Change Defects

- Single project view
- Global test project coordination
- Configurable, enforceable processes
- Extensible test ecosystem





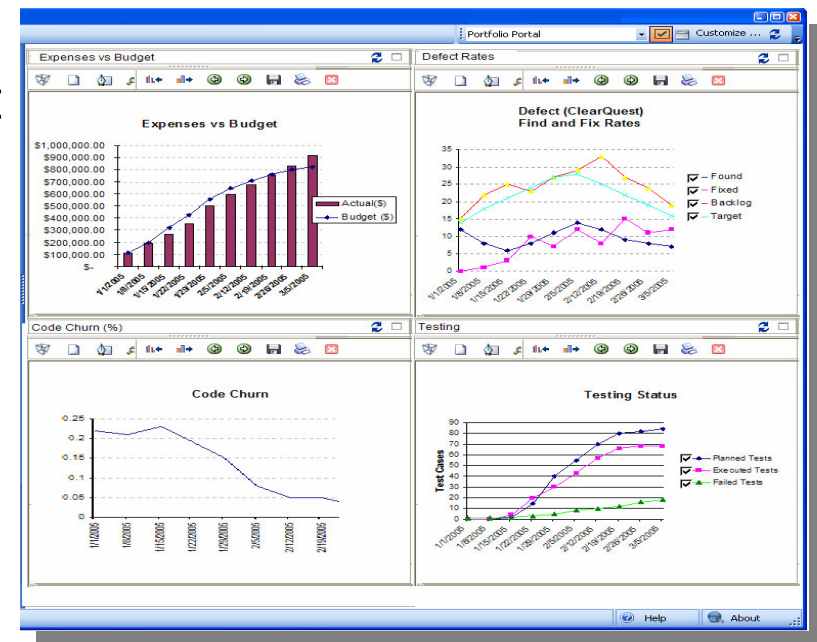
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## Single project view

*Single solution to manage tests, defects and project change*

### Benefits:

- Consolidated, real-time view of the entire project status
- Traceable, auditable relationships between development, test and project artifacts
  - Manages test planning, test results, quality metrics, and defects
  - Central repository with integrated version control
  - Comprehensive quality metrics in project dashboards and

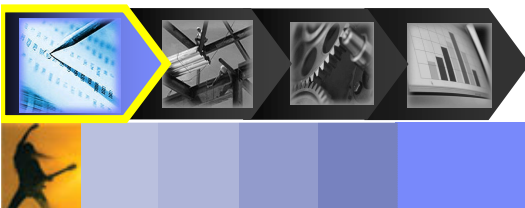
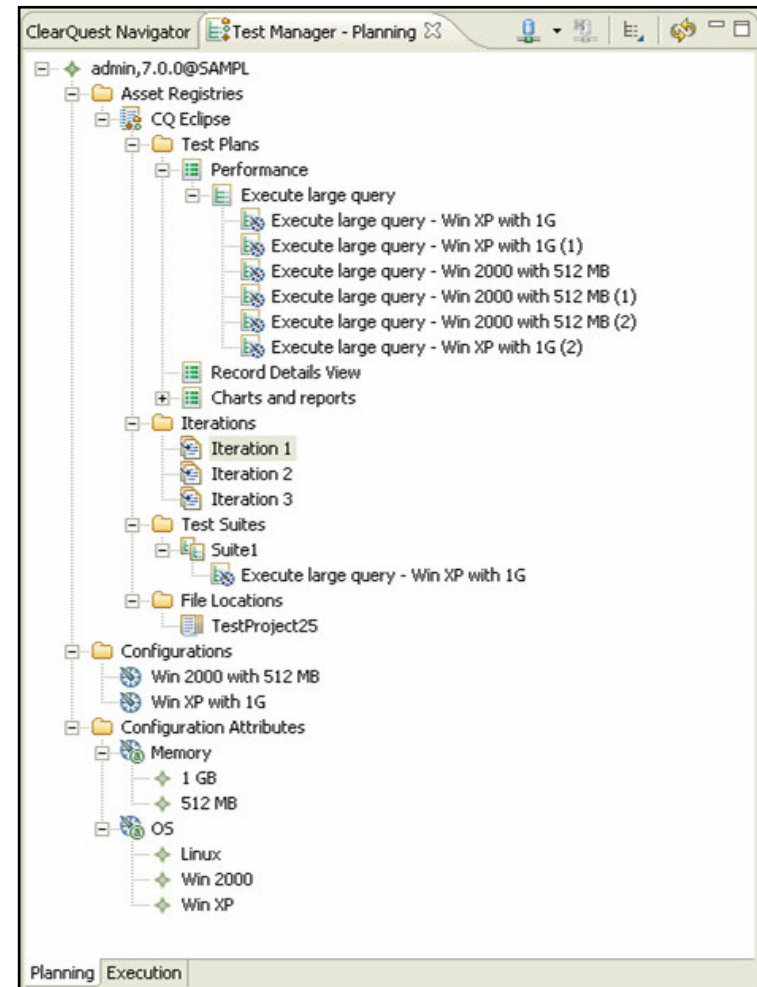


user management

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## Plan: Enterprise test management & planning

- Manages test planning, test results, quality metrics, and defects
- Link requirements to tests
- Automates sharing and reuse of distributed assets
- Extensible customization of forms and workflows
- Auditable test change history
- e-Signature support
- Supports enterprise-level databases (Oracle, DB2, SQL Server, etc)



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## Create and Execute: Extensible test ecosystem Integrated with Rational, open source and 3rd party test automation tools for Test Execution and Analysis

### Benefits:

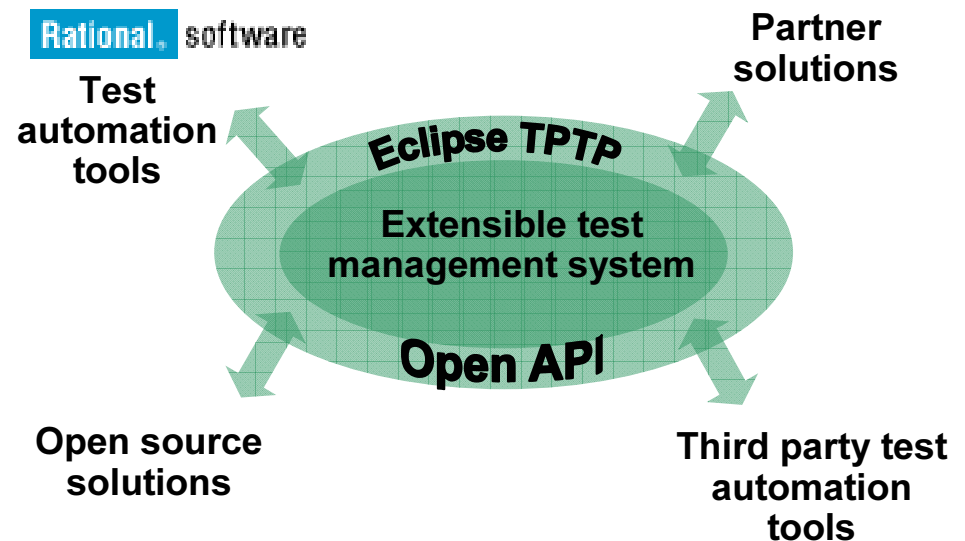
- Lowers the cost of test lab management
- Simplifies the management of tools from multiple vendors

- Integrated with Rational Functional Tester, Rational Manual Tester and Rational Performance Tester

- Integrates with SPI Dynamics QAInspect for security testing

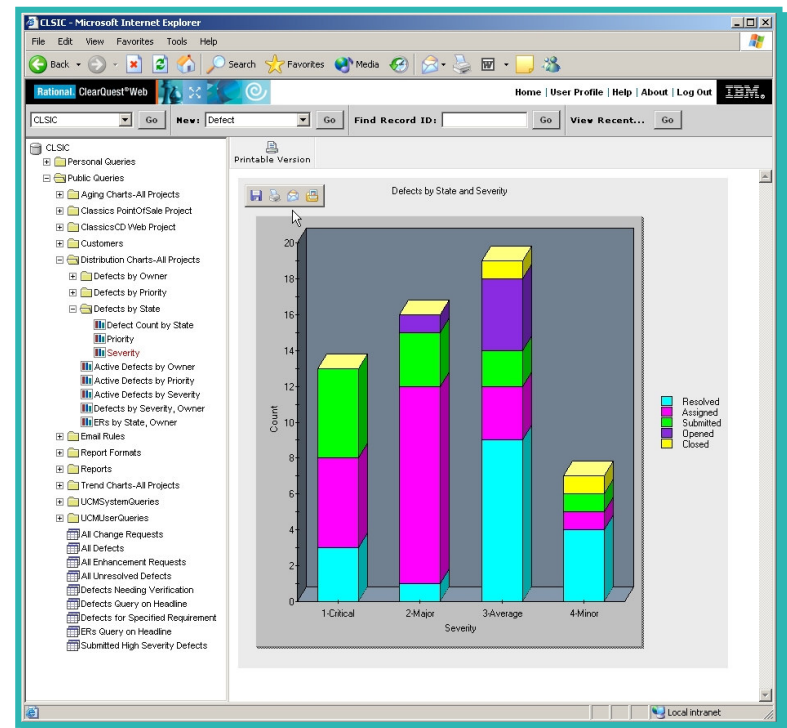
- Partner and customer

- Open source plug-ins



## Analyze: Comprehensive quality metrics

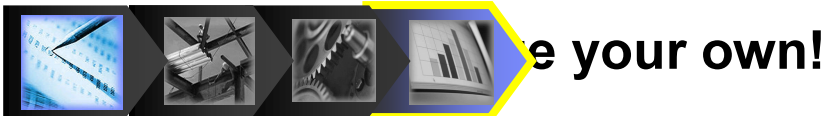
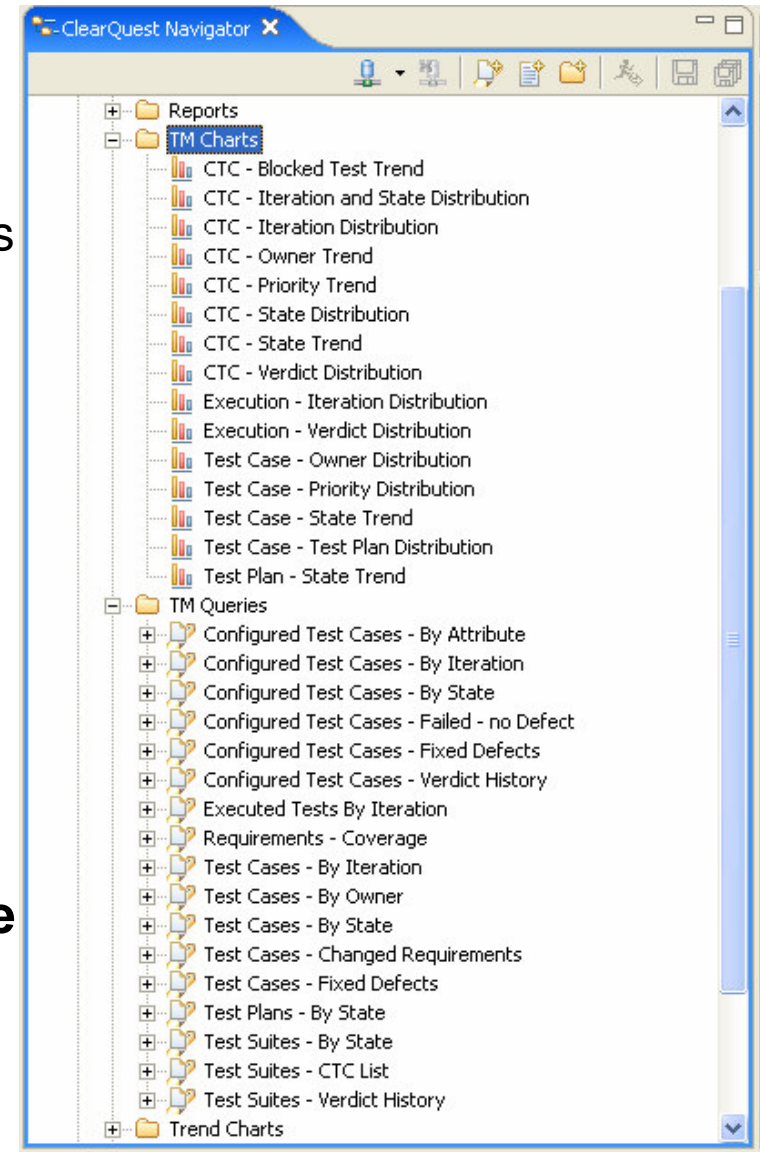
- Generate reports to monitor test progress
  - Run reports to summarize test case results
  - Run reports to measure requirements coverage
- Key considerations when creating schedules
  - Ability to report against test motivators
  - Ability to monitor current project



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## Analyze: Test Reporting and Metrics

- **Built-in queries, charts, and reports:**
  - **Coverage/Suspicion**
    - Impact of requirement change on Test Cases
    - Impact of defects change on Test Cases
  - **Status**
    - Planned tests vs. implemented
    - Passed vs. failed in this iteration
    - Failed test cases without attached defect
    - Requirements without any test case defined
  - **Trend over time**
    - # of Test Cases
    - # of Passed vs. Failed Test Cases
- **Link test results to defects and requirements**
- **Web publishing of quality metrics**



## Global project coordination

### *Distributed and co-located testing and development support*

#### **Benefits:**

- Ability to leverage globally distributed talent
- Simplifies the complexities of geographically distributed test coordination
  - High scalability for large enterprise projects
  - Web-based test planning and quality metrics reporting
  - Automates sharing and reuse of distributed test assets





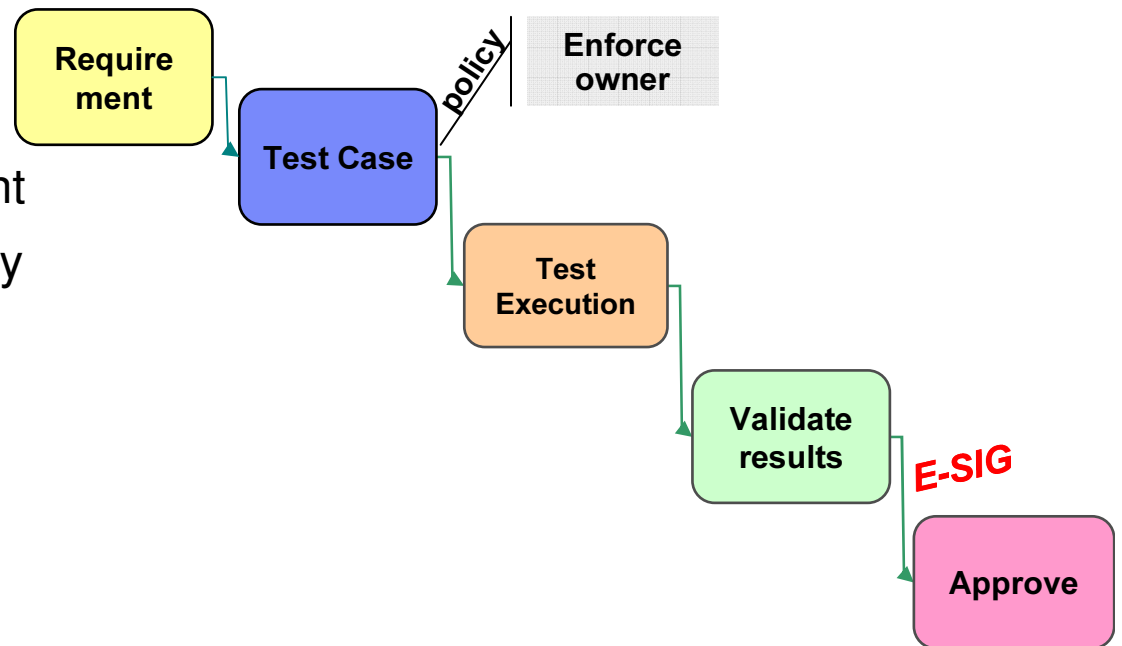
## Configurable, enforceable process

*Customize and enforce your test processes and workflows*

### Benefits:

- Ensure compliance and enforcement of project and company policies
- Configurable for project-specific needs and workflow automation

- Data collection and process customization & enforcement
- Auditable test change history
- e-Signature support for regulatory compliance
- Project security



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# DEMO

## *What You'll See:*

- Test Planning with IBM Rational ClearQuest
- Test plan creation and analysis
- Test Reporting and Analysis

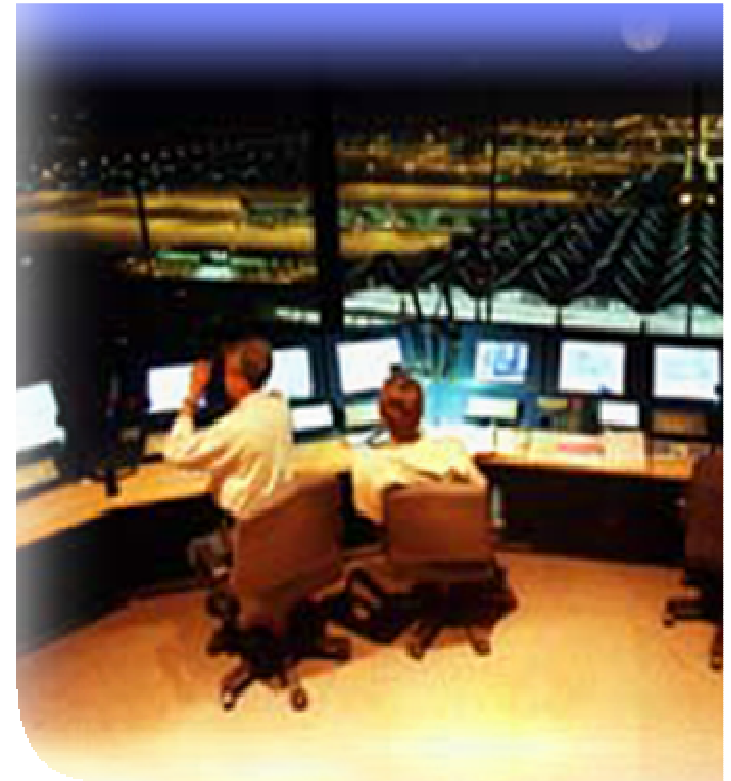




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## Summarizing Key Features in ClearQuest

- **Comprehensive**
  - Increase productivity with a single, comprehensive solution for test and defect management.
  - Manage test planning, test results, test analysis, reports and defects
  - Common repository and integrated version control
  - Integrated quality metrics in project dashboards and reports
- **Support for distributed teams**
  - Scalable for enterprise wide projects with co-located, distributed, or outsourced test teams
  - Web UI
  - Replication
- **Extensible**
  - Integration with 3<sup>rd</sup> Party test tools through adapters
- **Configurable**
  - Ensure compliance , both internally and externally, through tighter process control and project customization.
  - Improved delivery mechanism, audibility and controls
  - Customize workflows and enforce processes to ensure compliance with your project's standards
  - User management & security



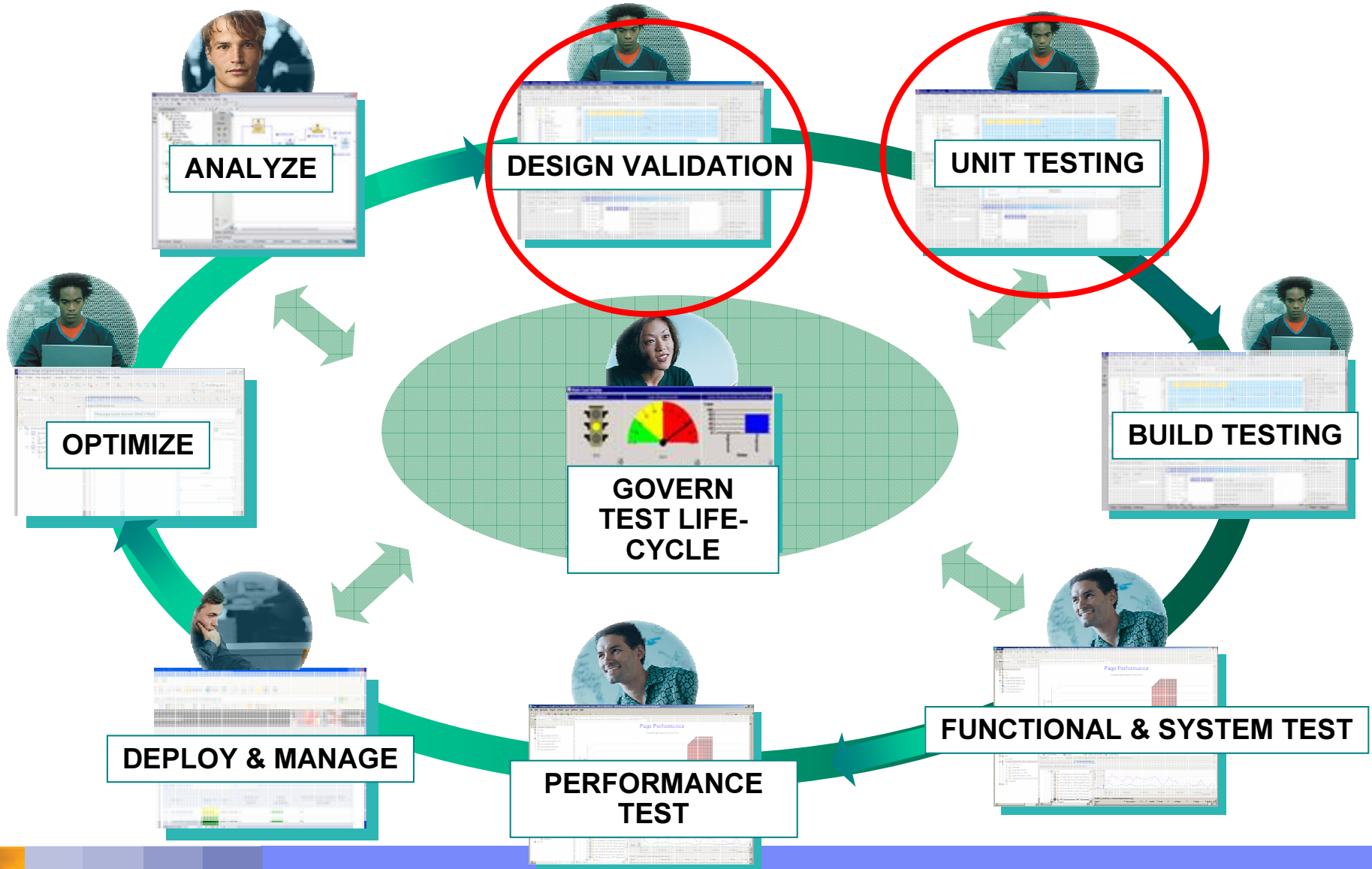
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# Integrated quality capabilities



## Challenge: Reliable Software Is Critical To Success

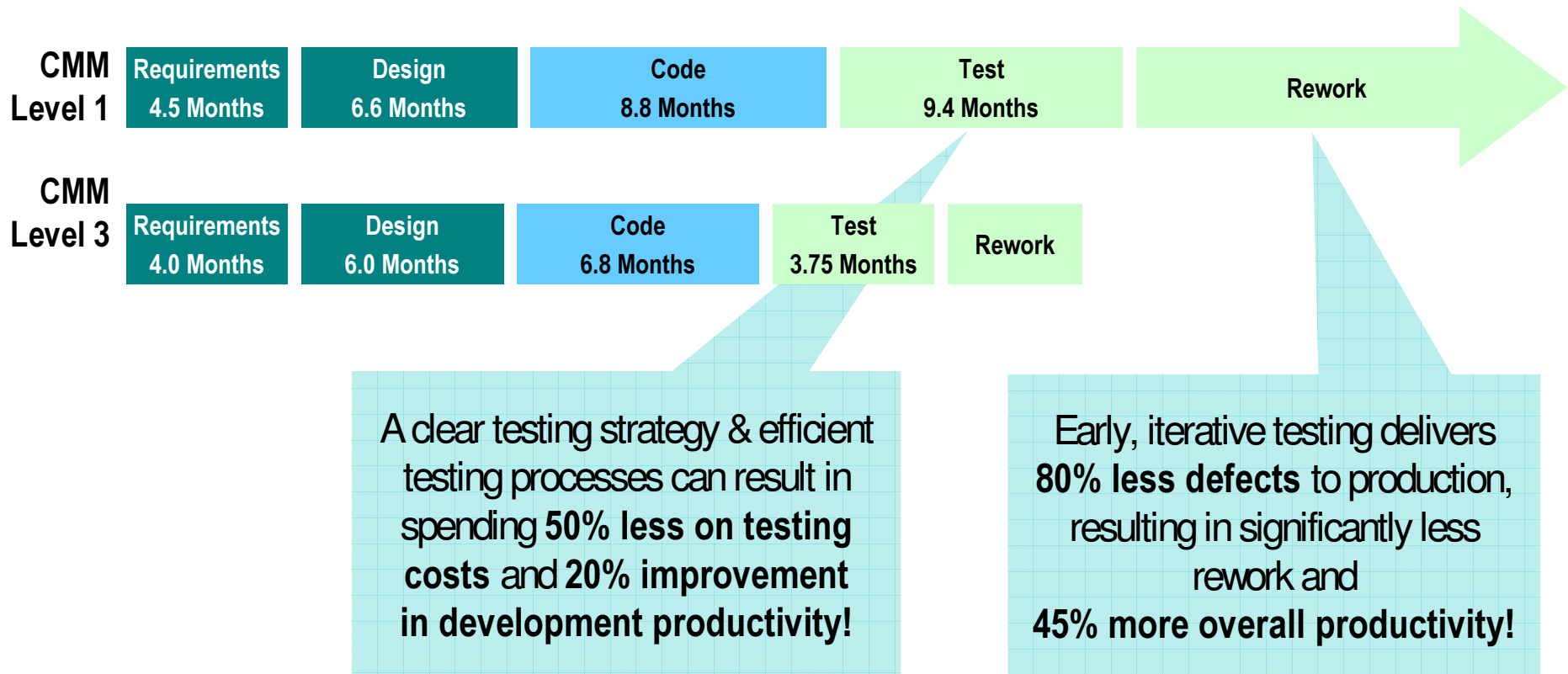
### Challenges:

- Customers expect delivery of reliable applications
  - Application quality can be a key differentiator
- Building reliable applications is hard!
  - Difficult to validate component and code quality
  - Too much time do you spent tracking down memory corruption problems
  - Integration always takes longer than planned
  - Developers spend too much time tracking down “irreproducible” errors?
- Tracking down just one problem can take a developer days or even weeks!
- Late Discovery of Defects increases rework



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# Challenge: Reduce Rework Costs



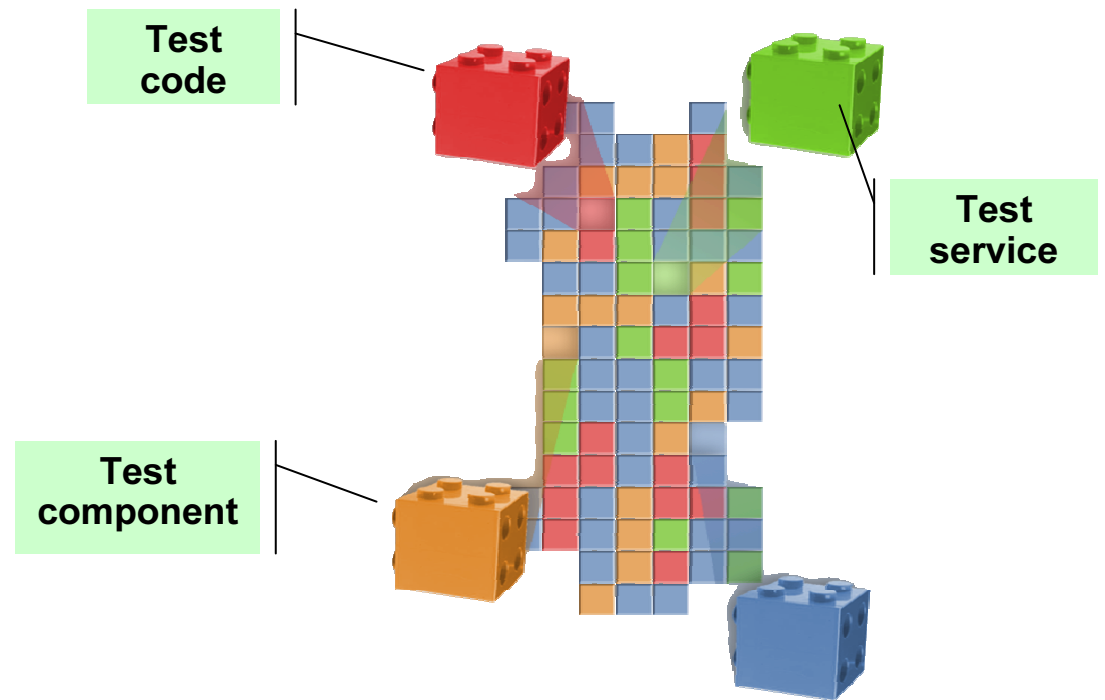
Note: CMM Level 1 organizations spend 30%+ of project dollars on testing.  
CMM Level 3 organizations spend 15%.



# Services, Business Processes & Component Tests

## Benefits:

- Reduces risk of late defect discovery
- Validate component and code quality
  - Create test scenarios from WSDL files
  - Support data-driven testing and stubbing
  - WS-I conformance of WSDL files
  - Validate SOAP message
  - Automated code review
  - Run-time analysis
  - Embedded systems testing





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# Develop fast, reliable code

## IBM Rational PurifyPlus

- Developer test solution to ensure creation of fast, reliable code
- Memory corruption and leaks – even in third party code
- Graphical view of performance data to identify bottlenecks
- Identify untested and dead code
- Multi-platform and multi-language support for Unix, Windows, Linux, Java, .NET, VB6, C/C++, and more

The screenshot displays the IBM Rational PurifyPlus interface within a Microsoft Development Environment. The main window shows a function detail for 'VSLDemo.exe (Snapshot)' with the following statistics:

- Method: WordCount.Scan
- Calls: 45,482
- Current method bytes allocated: 75,732 (16.28% of Focus)
- Total method bytes allocated: 990,282
- Number of Objects: 5,130
- M+D bytes: 183,490 (39.44% of Focus)
- Avr M bytes: 71

Below these statistics are two tables:

Object Name	Size	O+R	GCs	Line	References
System.String 1C7C290	12	N/A	16	211	0
System.String 1C7C2F0	12	N/A	16	211	0
System.String 1C7C318	12	N/A	16	211	0
System.String 1C7C378	12	N/A	16	211	0
System.String 1C7C3AC	12	N/A	16	211	0
IntBox 1C7C3F4	16	N/A	16	237	0
IntBox 1C7C41C	16	N/A	16	237	0
System.String 1C7C480	12	N/A	16	211	0

Caller	Calls	Current method bytes allocated
WordCount.Parse	45,482	183,490

Descendant	Calls	Current method bytes allocated
String.Concat	21,878	103,518
FileStream.ReadByte	69,637	4,240
Garbage Collector	5	0
JIT Compiler	5	0
System.Debugger.Attach	45,482	0

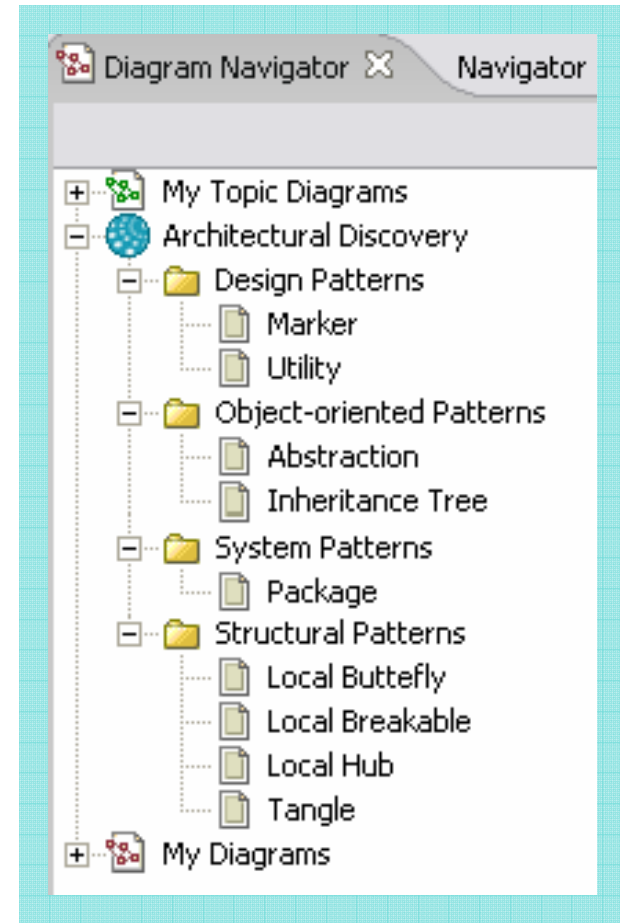
The interface also includes a 'PurifyPlus Navigator' on the right showing the project structure, a 'Model Explorer' showing the class hierarchy, and an 'Output' window at the bottom displaying debug messages.



# Architecture review and rules-based analysis

## IBM Rational Software Architect

- Automatic detection of design patterns and important Object Oriented structures
- Structural anti-pattern detection of tangles, hubs, butterflies
- Automated refactoring of tangles through QuickFixes
- Verification of architectural integrity
  - The architect defines architectural constraints for the packages, classes, interfaces or their relationships
  - These architectural constraints are recorded as rules based on pre-defined templates
  - The rules verify the integrity of the architecture and report all violations of the architectural constraints

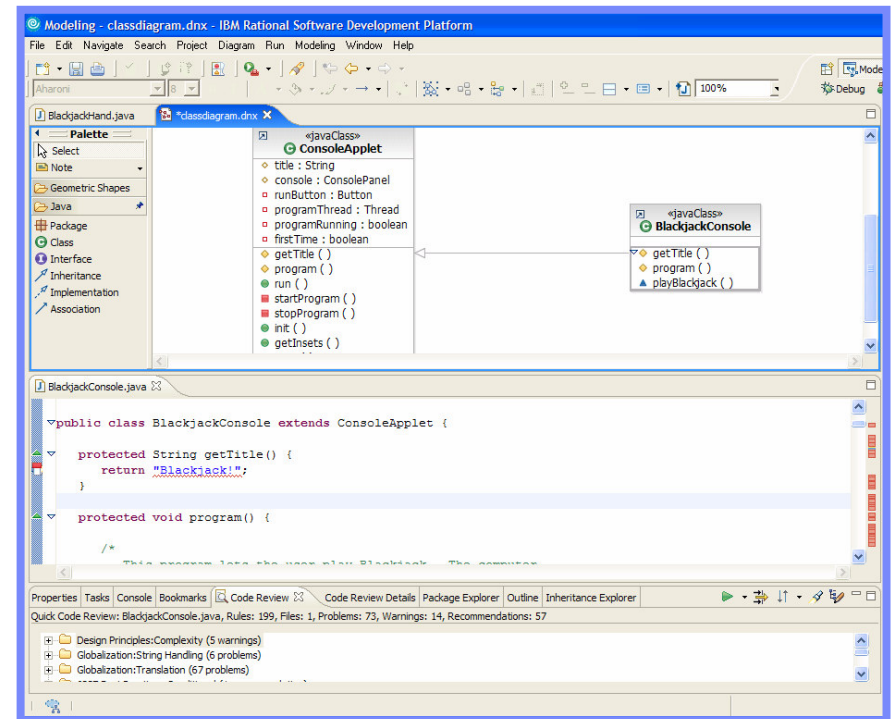




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# Test web services, Java, J2EE, and Portal applications *IBM Rational Application Developer*

- Code Analysis Tools
  - Both static code analysis and dynamic runtime analysis
  - Sequence diagram runtime trace with performance, thread and code coverage
  - Advanced memory leak detection
  - Remote data collection across multiple servers
  - User-defined run-time probes
  - Interactive reports and metrics



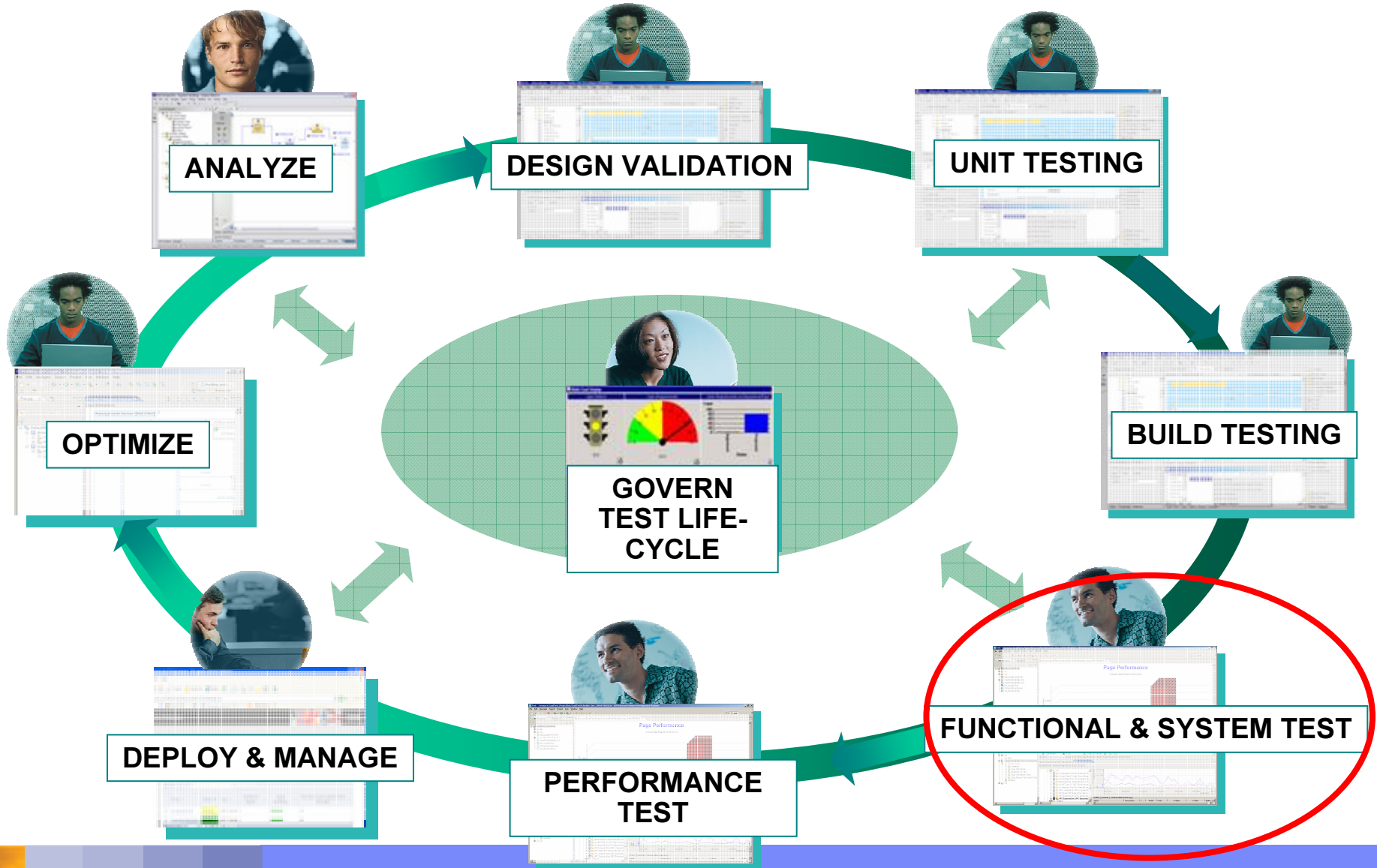
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- Business Driven Development
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# Integrated quality capabilities



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## What is Manual Functional Testing?

*The manual process of ensuring fitness for use*

- Using human labor to validate the business use cases and fitness for use of an application, system or device
- Includes labor to plan, design, execute and evaluate the status of the application or device under test
- Experience indicates over 75% of the testing done today is performed manually



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## Challenges of Manual Functional Testing

*Three things that complicate the life of a manual tester*

- **Labor Intensive**
  - Too much time is spent maintaining manual test documentation for application changes
- **Resistant to Change**
  - Each project has diverse processes, tester skill sets and types of applications and devices under test
- **Unreliable**
  - Accidental human-error with data entry and validation often skews test results





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# Transform Manual Testing with IBM Rational Manual Tester

*From ad-hoc testing to controlled and efficient testing*

## ■ Labor Intensive

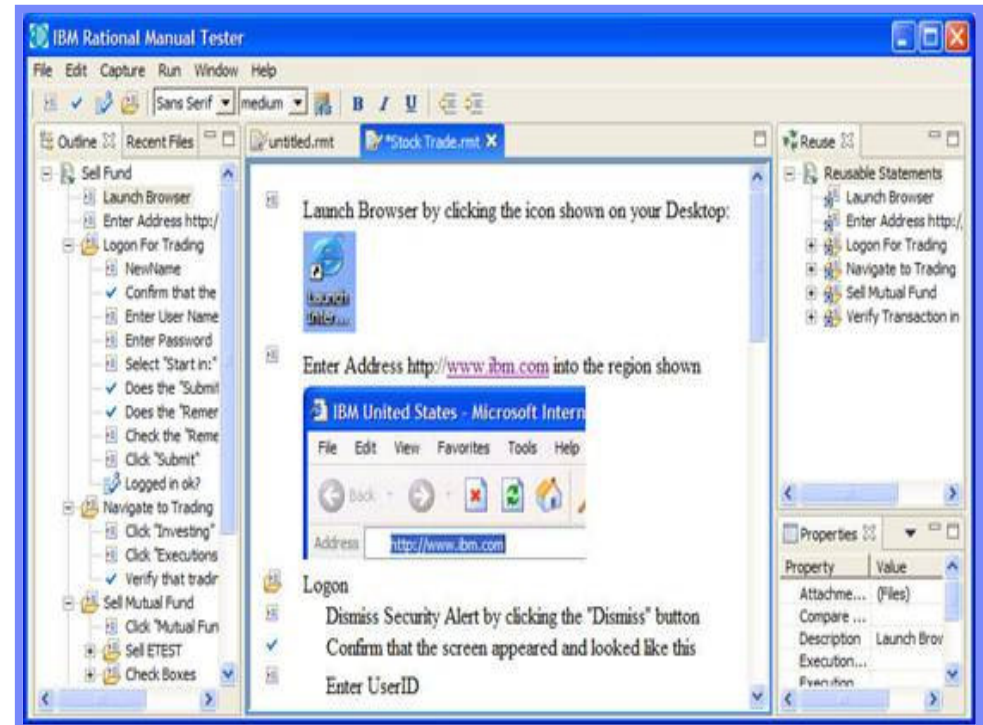
- Minimizes test maintenance with linked content. Make changes in only one location to update all tests.

## ■ Resistant to Change

- Provide a consistent interface that can be used to document tests for any device from can opener to computer

## ■ Unreliable

- Automate data entry and data validation during test execution to



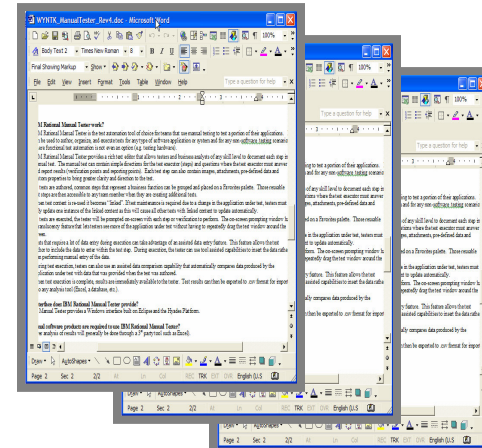
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# Consolidate Test Creation and Maintenance

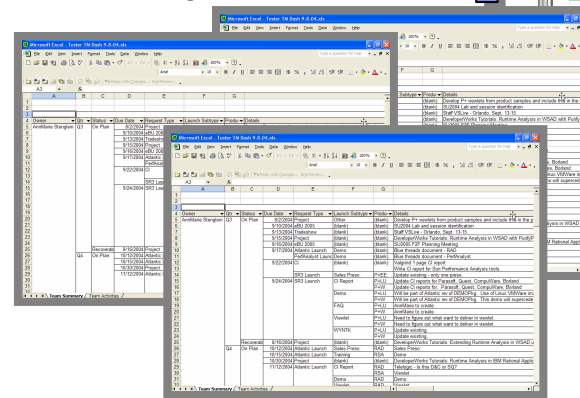
## Benefits:

- Leverage Existing Test Documents
- Rich Editing Environment
- Jump-start adoption of Rational Manual Tester by leveraging existing assets
- Bulk import manual tests documented in Word or Excel
- Provides a rich text editing environment to document clear, easy to understand tests
- Allows embedding of images or attach files to add clarity and detail
- Provide a consistent Test Interface

## Microsoft Word documents



## Microsoft Excel spreadsheets



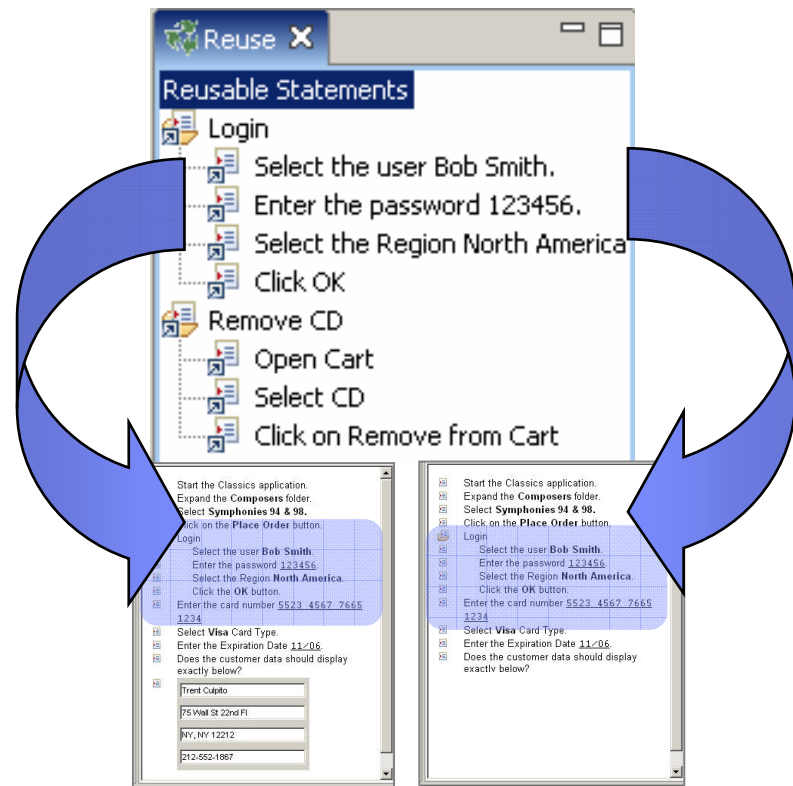
## Rational Manual Tester test

Start the Classics application.  
Expand the **Composers** folder.  
Select **Symphonies 94 & 98**.  
Click on the **Place Order** button.  
Login  
Select the user **Bob Smith**.  
Enter the password **123456**.  
Select the Region **North America**.  
Click the **OK** button.  
Enter the card number **5523 4567 7665 1234**.  
Select **Visa Card Type**.  
Enter the Expiration Date **11/06**.  
Does the customer data should display exactly below?

Trent Culpito
75 Wall St 22nd Fl
NY, NY 12212
212-552-1867

## Reduce test maintenance and ensure consistency

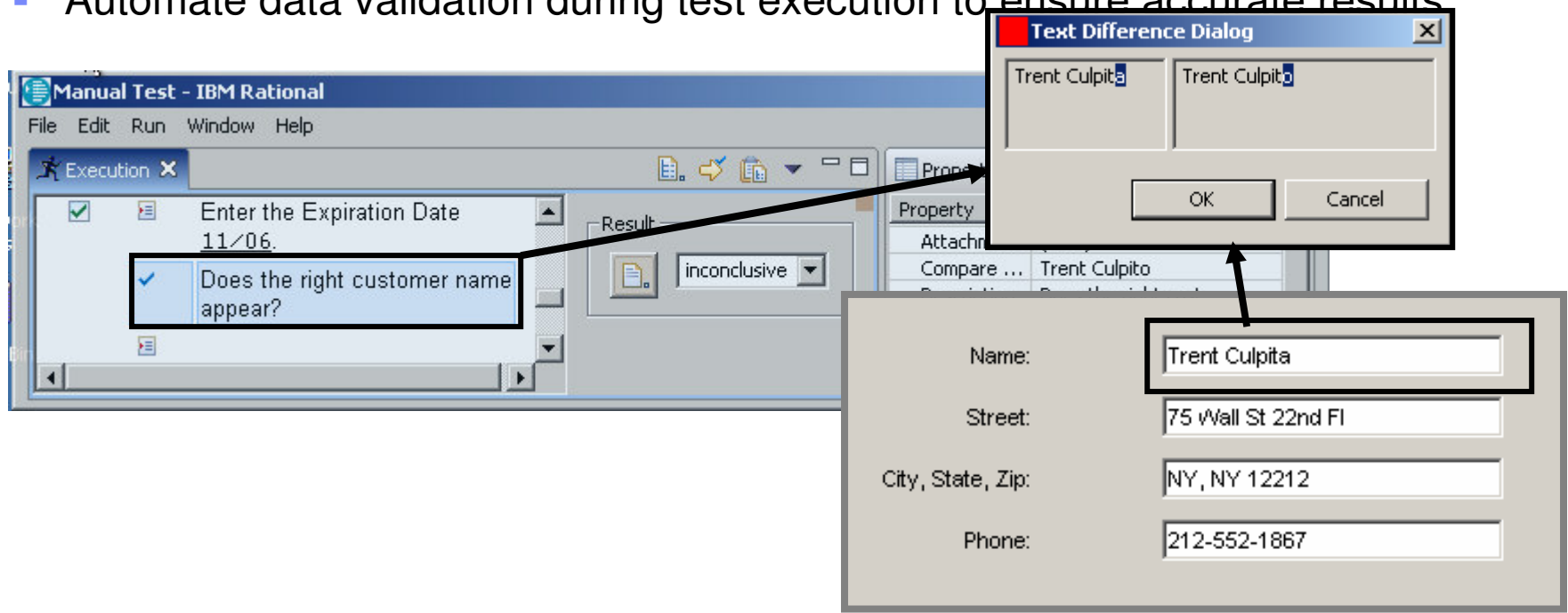
- **Benefit:**
  - Enable Shared Content Across Multiple Tests
  - Create commonly used test statements once
  - Reuse statements across multiple tests through simple drag and drop
  - Maintenance of shared content is efficient with single-point updating of shared content
  - Ensures consistency and reduces test maintenance





## Assisted Data Entry and Data Verification

- **Benefit:**
  - Reduce human error
  - Store critical data used during the test as part of the test instructions
  - Automate data entry during test execution to speed entry and reduce errors
  - Automate data validation during test execution to ensure accurate results



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# DEMO

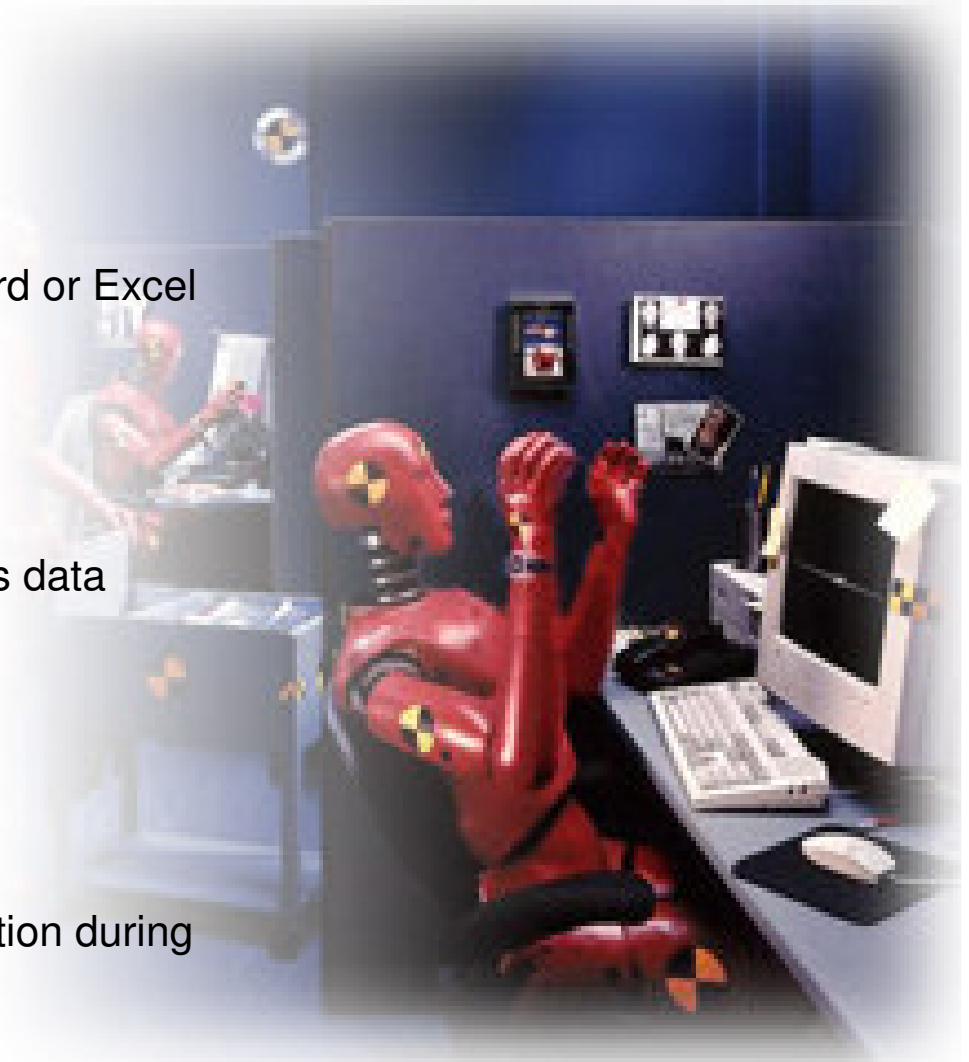
## *What You'll See:*

- Manual testing with IBM Rational Manual Tester v6.1
- Test creation, reuse and execution



## Summarizing Key Features in Manual Tester

- **Advances manual testing**
  - Rich text editor for test authoring
  - Test step reuse palette
  - Test script import from Microsoft Word or Excel
- **Satisfies diverse needs**
  - Supports usage by distributed teams
  - Generates spreadsheet-ready results data
  - Multiple validation points
  - Custom data fields
- **Minimizes Test Maintenance**
  - Assisted data entry and data verification during test execution



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# BREAK

## *What we've seen so far:*

- Test Planning challenges, tools and demo
- Code and Unit testing challenges and tools
- Manual Functional Testing challenges, tools and demo

## *What's coming up next:*

- Automated Functional Testing challenges and tools
- Performance Testing challenges, tools and demo



## Agenda

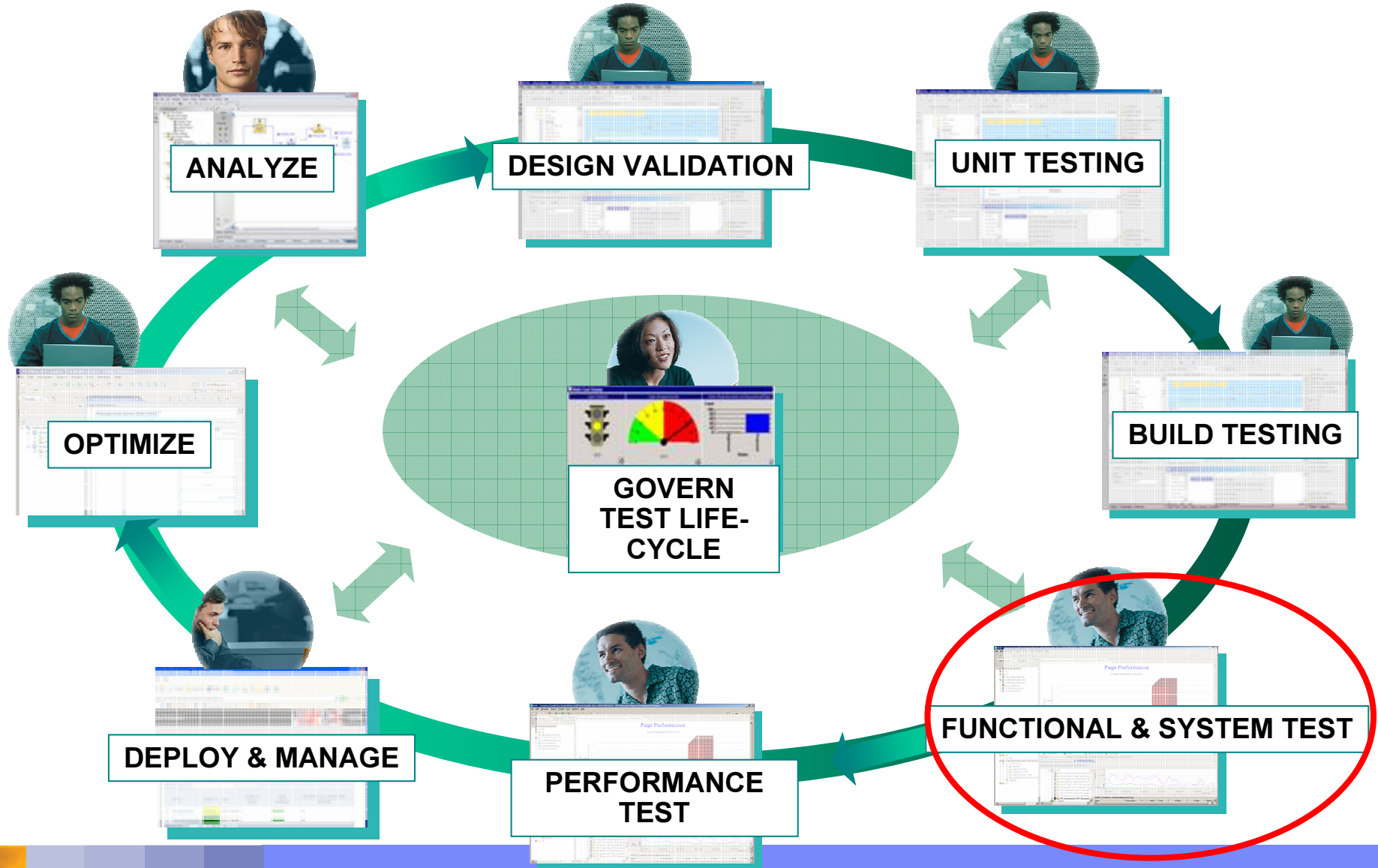
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# Integrated quality capabilities



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## What is Automated Functional Testing?

*The automated process of ensuring fitness for use*

- Using automation tools to capture actions taken against an application in script format.
- Three Step Process
  - Record actions into a script format – either VB.NET or Java
  - Optionally enhance scripts with custom coding
  - Execute scripts – ideally overnight to increase test productivity to 24/7



**Record**



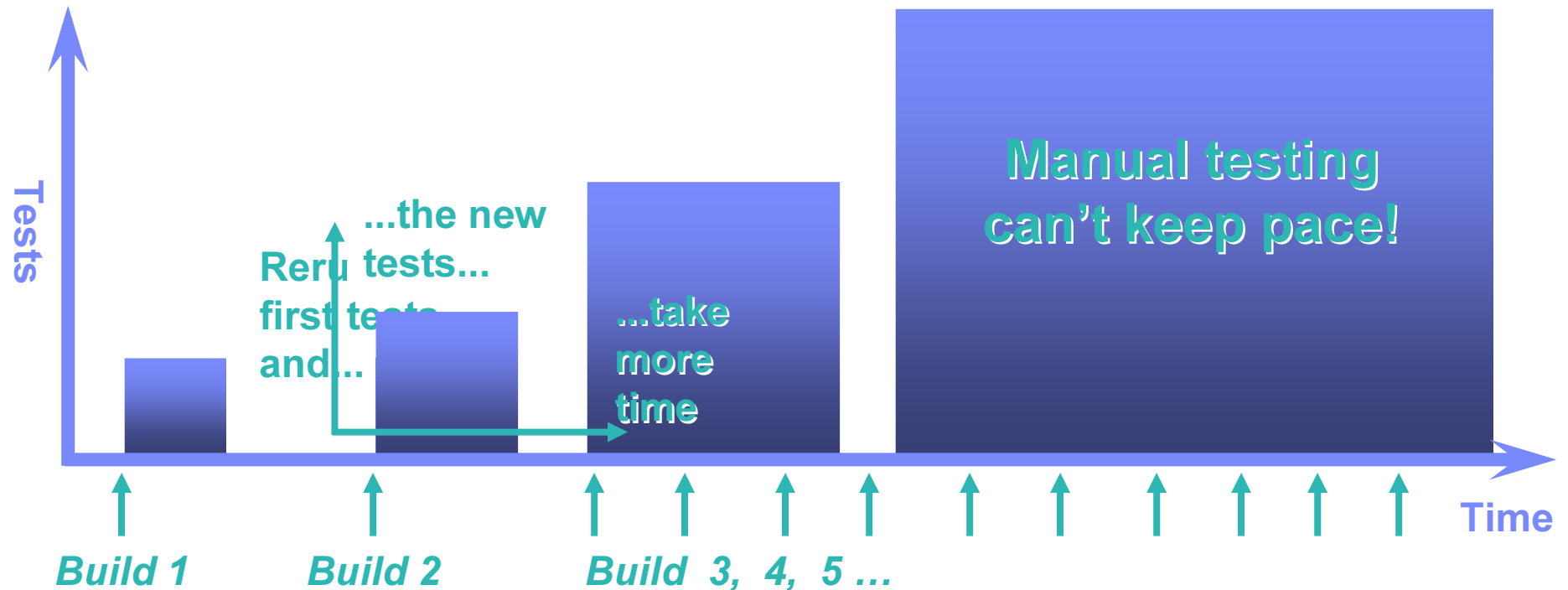
**Enhance**



**Execute**



## Challenge of Manual Functional Testing with Short Test Cycles



- Manual testing alone can't keep pace with the rapid development of applications.....
  - Quality will be sacrificed to keep on schedule



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## Challenges of Automated Functional Testing

*Three things that complicate the life of an automated functional tester*

- Control cost of test automation
  - Inexperienced testers face steep learning curve for tools
  - Test maintenance grows with project
- Testing Tools Lack Flexibility
  - Power users hands are tied by tool limitations
- Test Team Integration
  - Managing script changes with parallel development
  - Sharing test assets with the larger software team

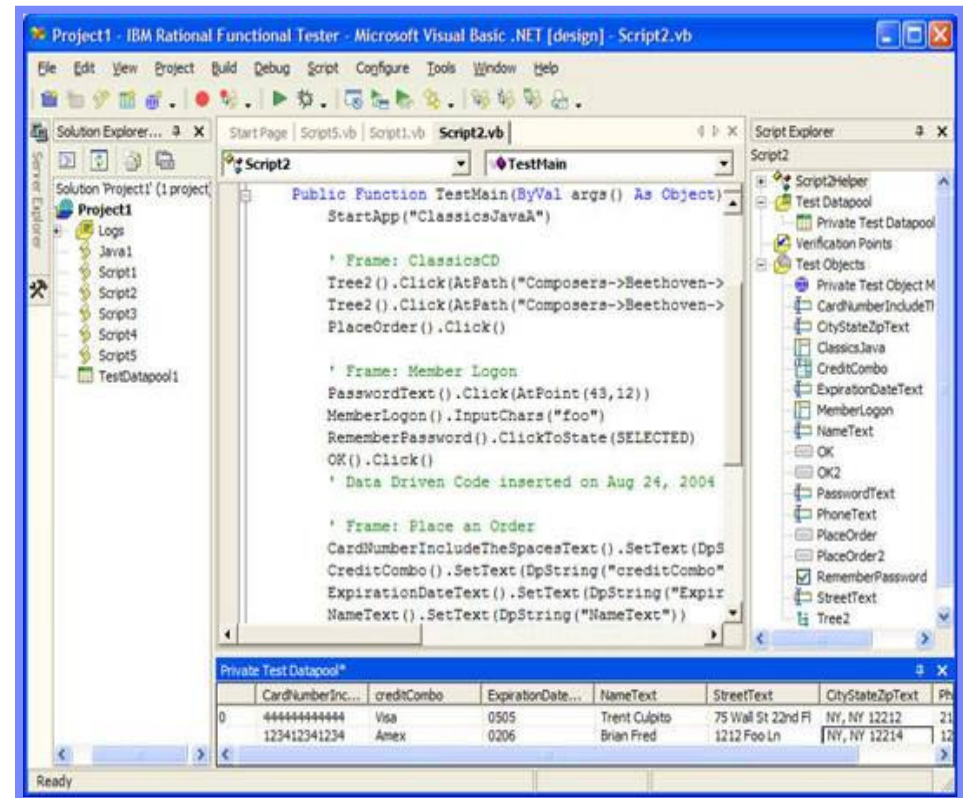


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# Functional Testing with IBM Rational Functional Tester Plus

*Test automation for the novice and the professional*

- Control cost of test automation
  - ScriptAssure technology ensures test script playback even with changes in application geography
  - Wizard assistance for common tasks such as data driven tests
- Testing Tools Lack Flexibility
  - Full flexibility of Java or VB.net to address all application testing challenges
- Test Team Integration
  - ClearCase LT included to incorporate support for parallel development and geographically distributed teams



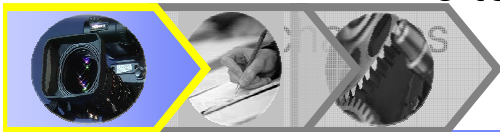
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# Control of Test Automation

## *Recording Scripts*

### **Benefits:**

- Lowers cost of application testing
- Improves test productivity and accuracy
  - Creates a Test Script that captures all system-user interaction
  - Test scripts are recorded on the fly, as user navigates application
  - Verification points are inserted to validate system response
  - Formalize end-to-end tests that exercise business processes
  - Automate functional testing of composite applications
  - Broad support for modern and legacy application environments
  - Minimize test maintenance with tests resilient to frequent





## Flexibility: Recording Scripts *Environment Support*

- IBM Rational Functional Tester Plus supports the following environments:
- Web
- Java
- Any VS.NET application running under the .NET Framework
- Terminal Emulation
  - Add-on support for 3270/5250/VT100 terminal-based applications

- Legacy Applications:
  - Visual Basic
  - C/C++
  - PowerBuilder
  - Delphi
  - Win32



### Additional Packages

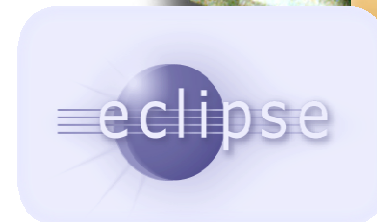
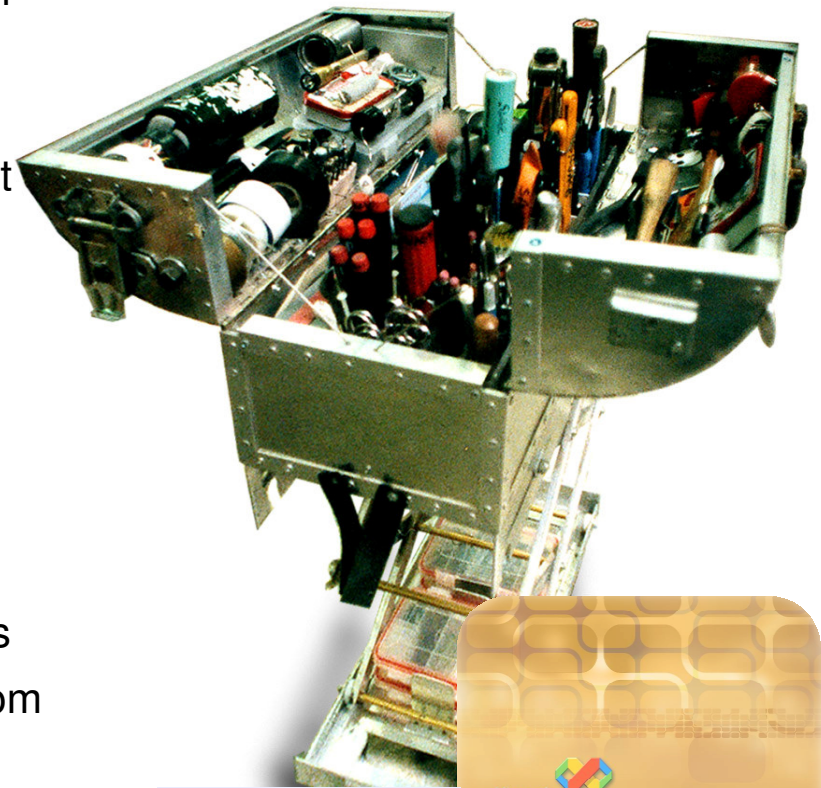
- Support for Siebel 7.7 Implementations

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# Flexibility: Enhancing Scripts

## *Flexible Coding Language*

- IBM Rational Functional Tester uses Java or VB.net for scripting
  - Standard language syntax
    - Not a custom version of Java or VB.net
  - Augments language commands with test specific functions
    - Click, Verify, Select, etc...
- Flexible power to enhance scripts
  - Programmatic access to all GUI objects
  - Datapool facility enables data driven tests
  - Leverage existing code and resources from a variety of sources
    - Books, Internet, developerWorks, etc...



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# Control Cost of Test Automation

Reliable Playback with Script Assure

Version 1.0

Version 2.0

Account # / Log In ID  
  
  
Click here to save your s

Customer Log On

**No User Intervention Required With ScriptAssure™**

Property	Value
.class	Html.INPUT
.classIndex	0
.id	button1
.name	userLogin
.type	submit
.value	Log in

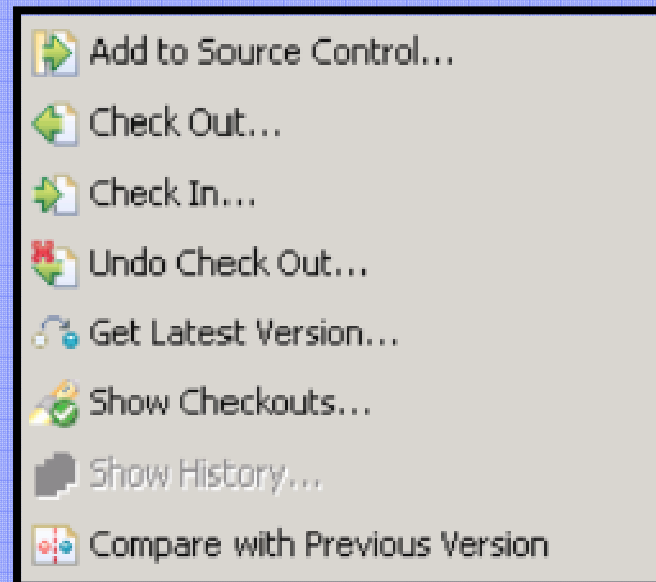
Property	Value
.class	Html.INPUT
.classIndex	0
.id	button1
.name	userLogin
.type	submit
.value	Log On



# Test Team Integration

## Version Control of Scripts

- Functional Tester includes ClearCase LT for test script version control
- ClearCase LT enables parallel script development
  - Work simultaneously on multiple releases
  - Coordinated workflows across the team
  - Secure, versioned

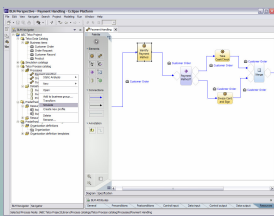


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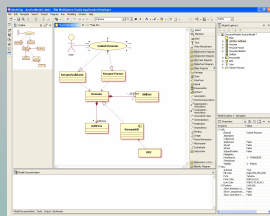
# Test Team Integration: Leverage open standards

*Expand test ecosystem and practitioner productivity*

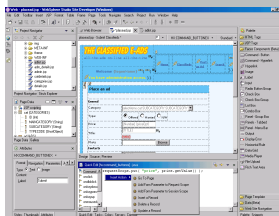
**Analyst**



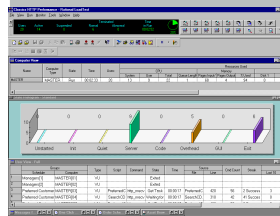
**Architect**



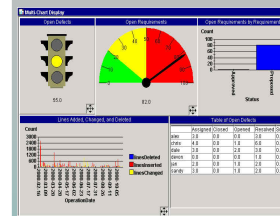
**Developer**



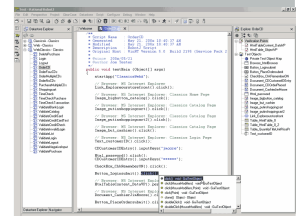
**Tester**



**Project Manager**

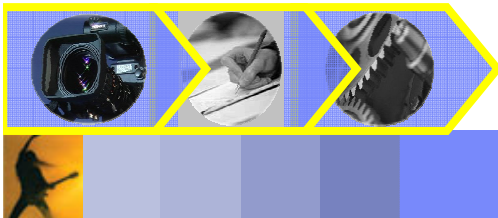


**Deployment Manager**



**IBM Rational Functional Tester built on Eclipse  
Eclipse Test and Performance Tools Platform (TTP)  
Support for open source SAFS keyword driven testing framework  
Ability to leverage community created add-ons  
Custom code for advanced testing extensions**

**Shared environment with development teams for improved team asset sharing**





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# DEMO

## *What You'll See:*

- Functional Testing with IBM Rational Functional Tester v6.1
- Test creation, modification and execution





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# Summarizing Key Features in IBM Rational Functional Tester Plus



- **Control Cost of Test Automation**
  - Create data driven tests without coding
  - Static data and properties verification
  - Dynamic data validation without coding
  - Reliable playback with ScriptAssure
  - Remote and local playback on various platforms
  
- **Flexibility**
  - Flexible coding language
  - Broad Environment Support:
    - Web, Java, .net
  - Powerful, professional debugger
  - Object map editing flexibility
  
- **Test Team Integration**
  - Version control of scripts



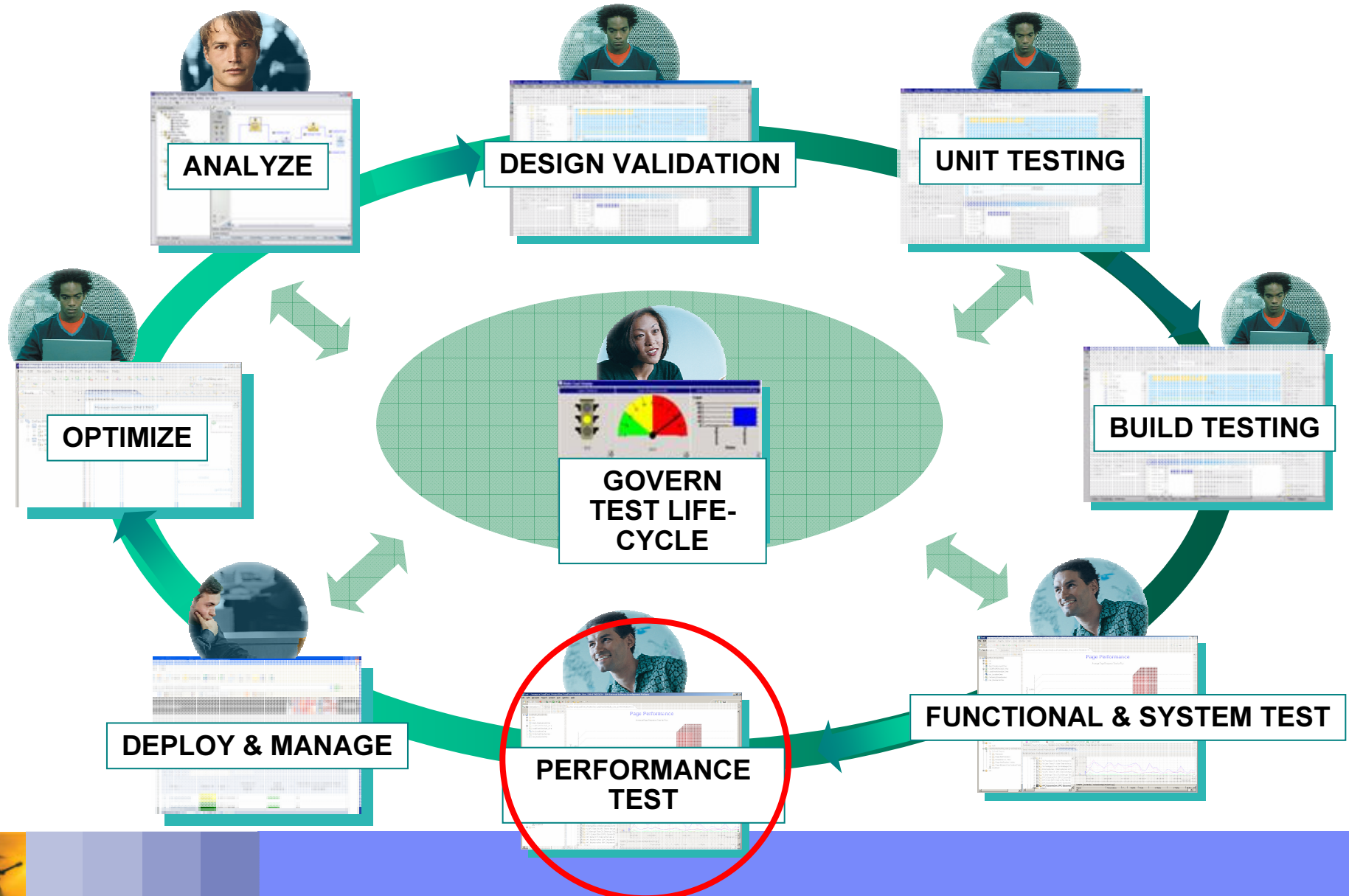
## Agenda

- Business Driven Development
- Test Management
- Code and Unit Testing
- Manual Functional Testing
- Automated Functional Testing
- Break
- **Performance Testing**
- Wrap Up & Resources



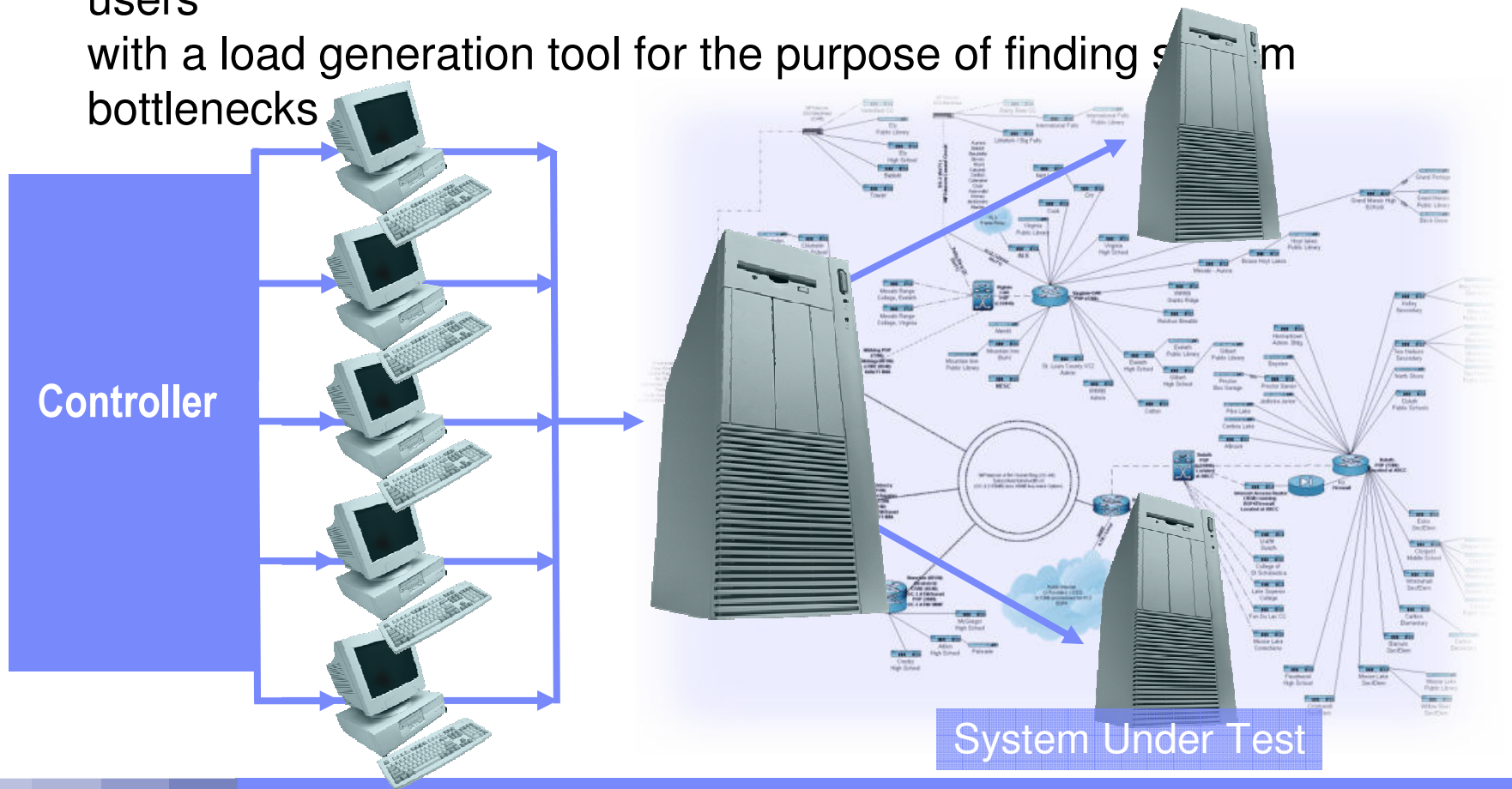
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# Integrated quality capabilities



# What Is Performance Testing?

- The process of exercising an application by emulating actual users with a load generation tool for the purpose of finding system bottlenecks



## Why do Performance Testing?

- Because a break at any point in your system means your customers are not getting the service you think they are

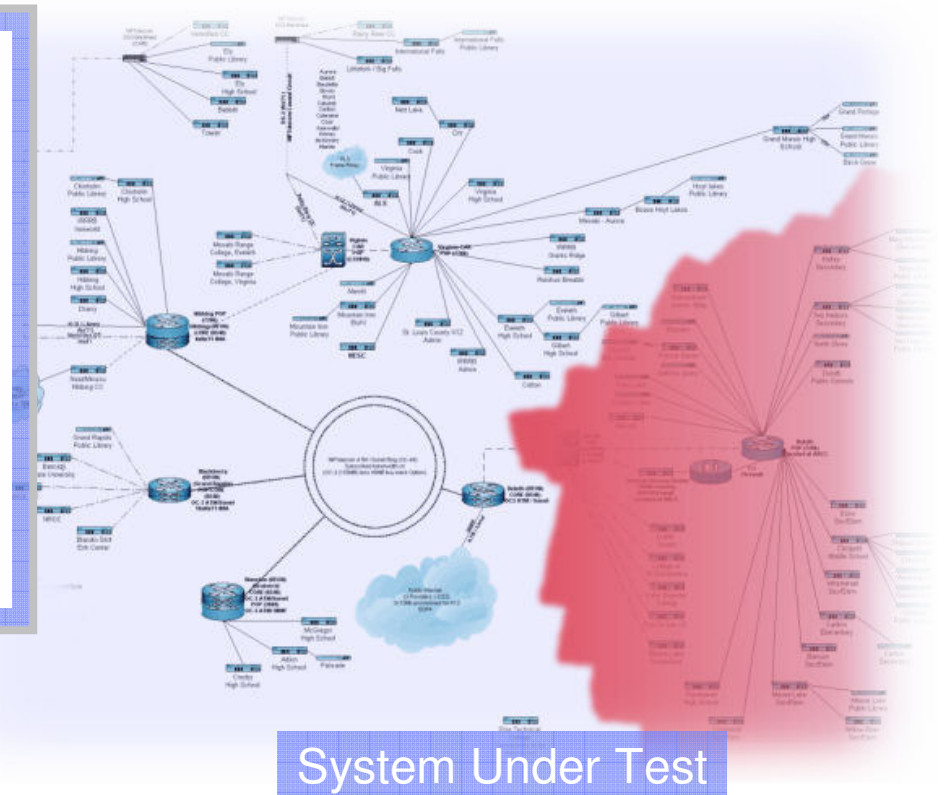
### The page cannot be displayed

There is a problem with the page you are trying to reach and it cannot be displayed.

Please try the following:

- Click the **Refresh** button, or try again later.
- Open the home page, and then look for links to the information you want.

HTTP 500.13 - Server too busy.





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## Creating a Performance Test

*Creating a performance test is a three step process*



**Build Scripts      Schedule Workload      Execute & Analyze**

- **Script Creation Considerations**
  - Visual test editor, varying input data & correlating server responses
- **Scheduling Considerations**
  - Accurately representing a true user workload
- **Execute and Analyze Considerations**
  - Validating responses & finding the bottleneck





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# Challenges of Performance Testing

*Three things that complicate the life of a performance tester*

- Complex Tools & Complex Task
  - Tool complexity and lack of experience intimidates many first time users
- Testing Tools Lack Flexibility
  - Power users hands are tied by tool limitations
- Problem Discovery and Diagnosis
  - Pinpointing the problem is only the first step
  - The real challenge is determining the cause

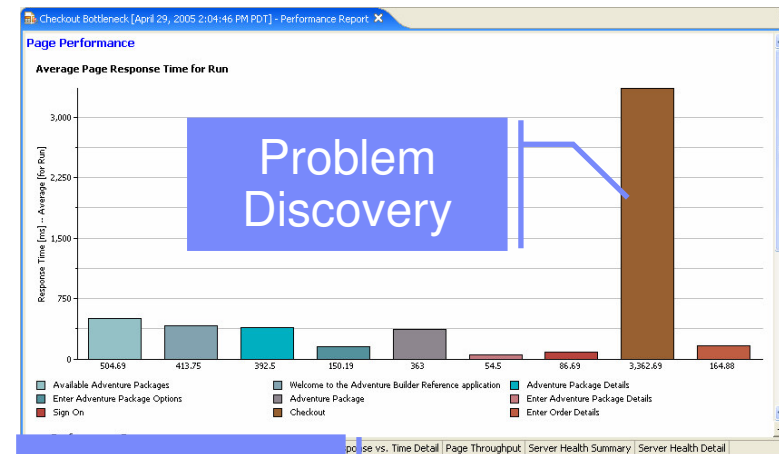


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# Performance Testing with IBM Rational Performance Tester

## Problem discovery and diagnosis with Day 1 Productivity

- Complex Tools & Complex Task
  - Performance Tester masks complexity of scripts and automates task of ensuring data consistency
- Testing Tools Lack Flexibility
  - Performance Tester tests use Java to enable custom coding solutions to application specific challenges
- Problem Discovery and Diagnosis
  - Pinpoint cause of application slow downs for J2EE applications
  - Interface with Tivoli products for complete environment analysis



Problem Diagnosis

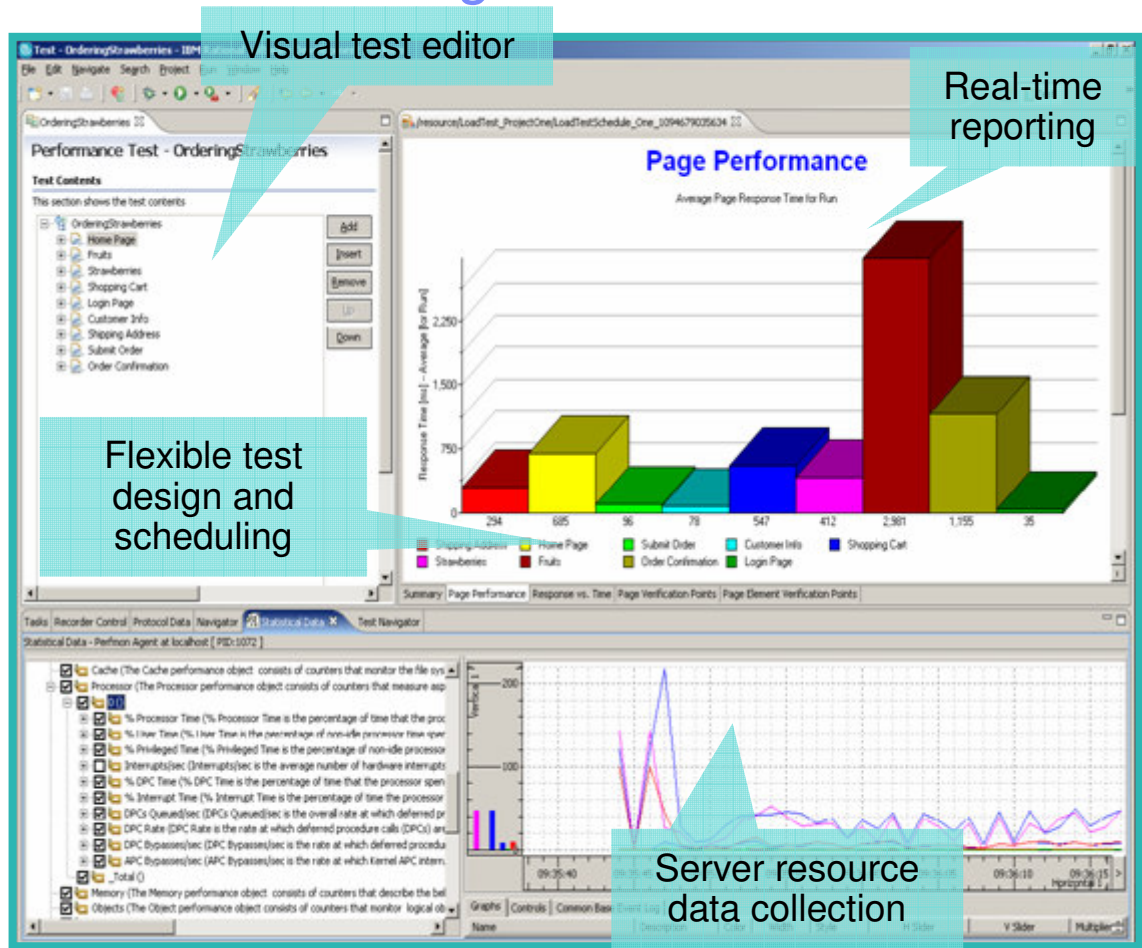
Execution Statistics - ARM Data Collector at demo [ P.D: 3752 ] (Filter: No filter)

Package	<Base Time (se...	Average Base T...	Cumulative Tim...	Calls
com.sun.j2ee.blueprints.opc.powebservice	11.07%	5.54%	11.07%	3.64%
PoEndpointBean	11.07%	5.54%	11.07%	3.64%
submitPurchaseOrder(com.sun.j2ee.b...	11.07%	11.07%	11.07%	1.82%
ejbCreate()	0.00%	0.00%	0.00%	1.82%
com.sun.j2ee.blueprints.waf.controller.web	5.09%	5.09%	23.15%	1.82%
(default package)	3.27%	0.82%	73.64%	7.27%
com.ibm._jsp	2.33%	0.33%	3.40%	12.7...
com.ibm.ws.rsadapter.jdbc	1.77%	0.15%	2.67%	21.8...
db2j.ai.c	0.85%	0.11%	0.85%	14.5...
db2j.bk.b	0.59%	0.12%	1.01%	9.09%
db2j.bk.c	0.58%	0.10%	0.89%	10.9...
com.sun.j2ee.blueprints.waf.view.template	0.34%	0.34%	3.74%	1.82%

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# Reduce Complexity with Performance Tester: Create Performance Tests without Coding

- Create simple, tree-based tests
  - Remove the need for programming
  - Tests are represented in a tree view as a sequential flow of web pages
- Flexible modeling and emulation of diverse user populations
- User interface enables:
  - Data pooling
  - Automated identification and variation of dynamic



- Conditional events

## Testing Flexibility with Performance Tester

- Performance Tester provides support for the following Environments:
  - Web
  - Siebel
    - Siebel 7.7, 7.8
  - SAP
    - SAP 4.6C & R/3 Enterprise (4.7)
    - SAPGUI for Windows 6.20 & 6.40
  - Citrix Presentation Server
- Validate scalability under variable multi-user loads prior to deployment
- Provides cross-tier transaction breakdown and resource monitoring to pinpoint bottlenecks
- Optional insertion of Java code for advanced customization



Linux, and UNIX servers or z/OS hardware

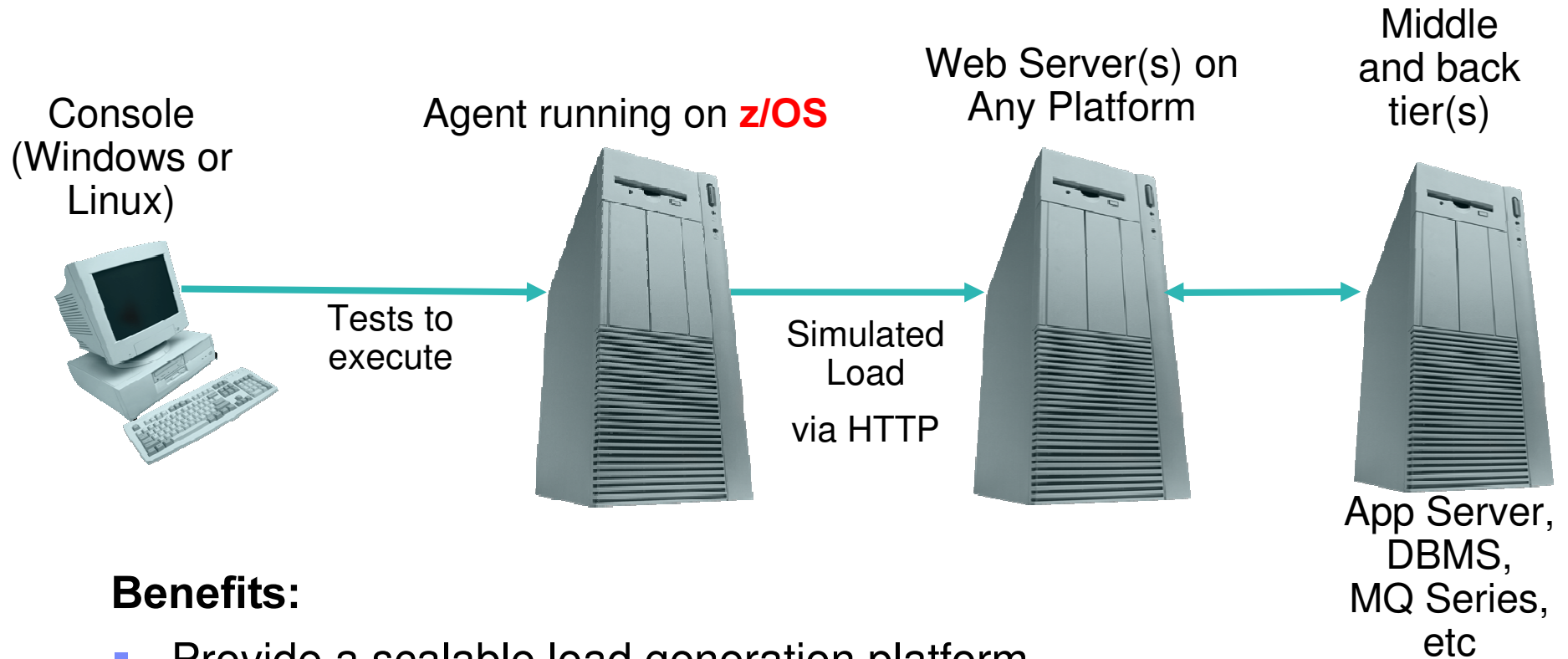
and



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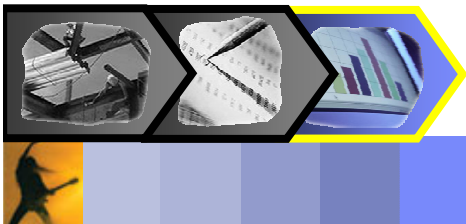
# Testing Flexibility with Performance Tester

## Deployment of Rational Performance Tester for z/OS



### Benefits:

- Provide a scalable load generation platform
- Leverage customer investment in z/OS



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# Problem Discovery and Diagnosis: Leverage production data for root cause analysis

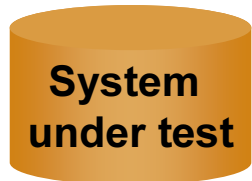
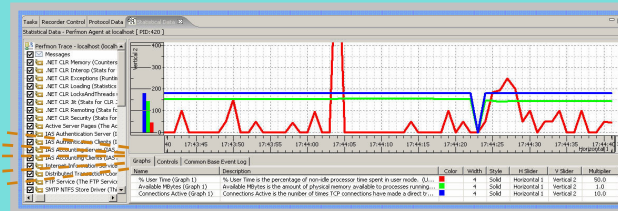


Tester (Test Lab)

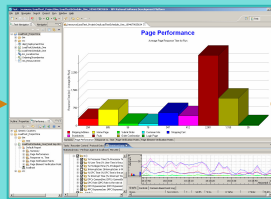
**Tivoli** software 

Self-managing  
autonomic  
capabilities

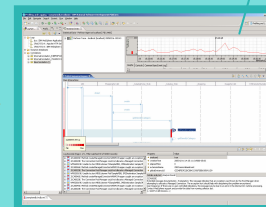
Analyze Resource Load Across Tiers  
(Memory, Message Queue, etc.)



User Load



Analyze  
Web Page  
Performance



Analyze  
Transaction  
Performance

Rational ClearQuest /  
Rational ClearCase

Submit actionable data to  
the development team

Development



Rational Application  
Developer

Root Cause Analysis



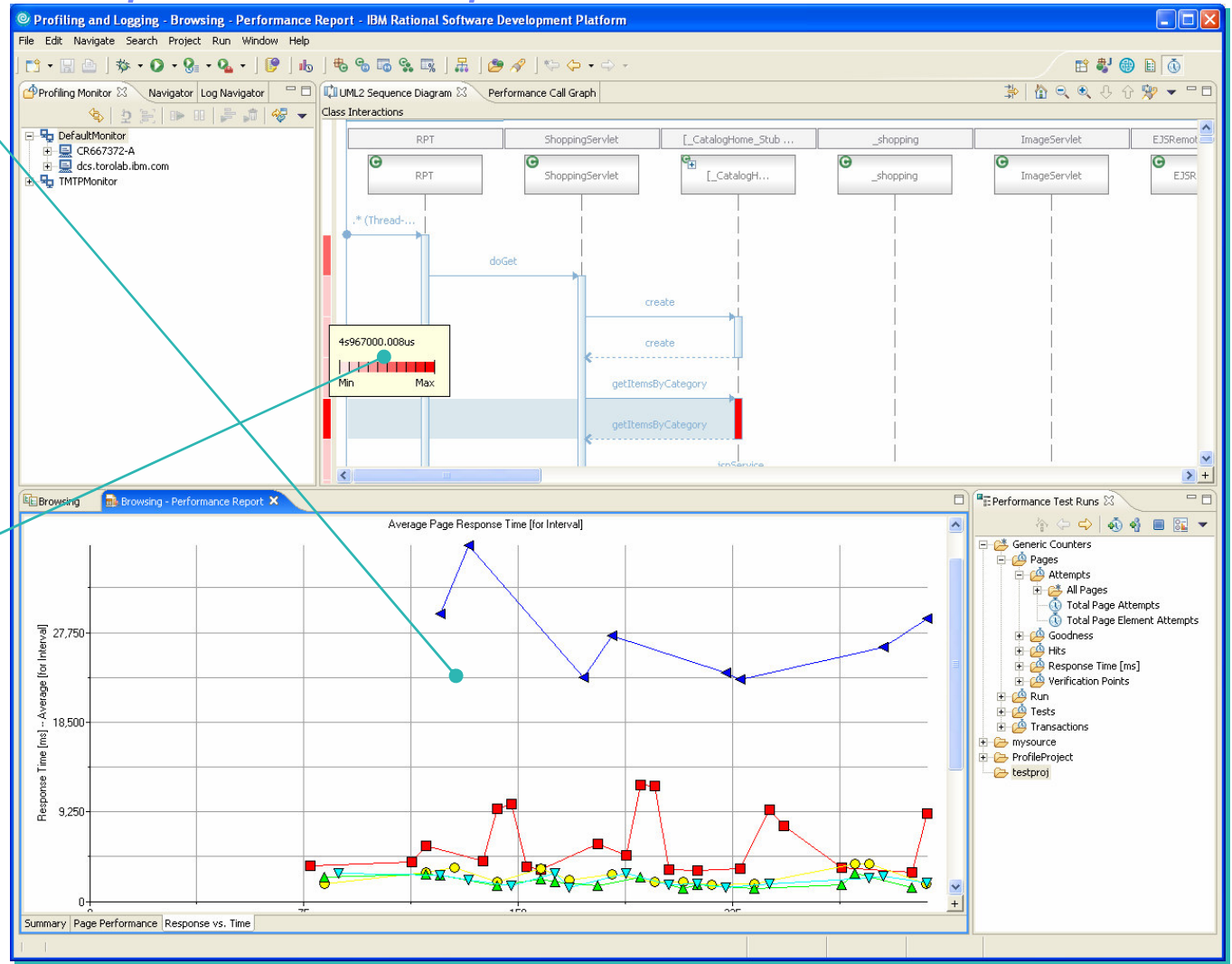


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# Problem Discovery and Diagnosis: *Identify root cause of performance problems*

IBM Rational Performance Tester decomposes poor response times identified during a performance test...

...into the amount of time spent within each application component.



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# DEMO

## *What You'll See:*

- Performance Testing with IBM Rational Performance Tester v6.1
- Test creation, modification and execution
- Response and Resource Utilization Analysis

## *What You Won't See:*

- Programming or Code



## Summarizing Key Features in Performance Tester

- **Built for Day 1 Productivity**
  - Create code free tests
  - Mask complexity to get the job done
- **Advanced Data Access & Manipulation**
  - Create code free schedules
  - Automated data variation and synchronization
- **Lower Cost of Performance Testing**
  - Low resource requirements
  - Desktop IDE integration



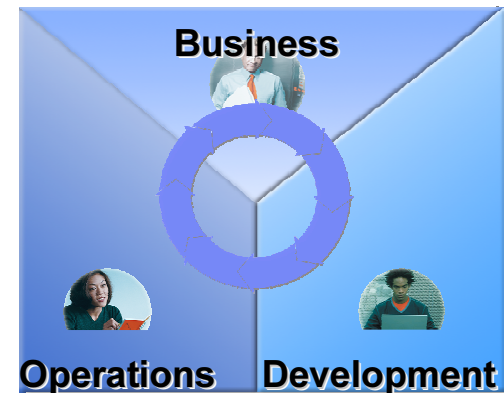
## Agenda

- Business Driven Development
- Test Management
- Code and Unit Testing
- Manual Functional Testing
- Automated Functional Testing
- Break
- Performance Testing
- **Wrap Up & Resources**



## Summary

- Lifecycle Approach to Software Quality Supports
  - Quality focus early in lifecycle
  - Quality integrated into the software development lifecycle
  - Govern and controlled testing to manage risk and compliance
  - Support for testing service oriented architectures
  - Support open standards
- IBM Software Quality Solutions Provide
  - Faster time-to-value
  - Consistent, reliable application delivery
- IBM leads in hosting design, construction & testing in Eclipse



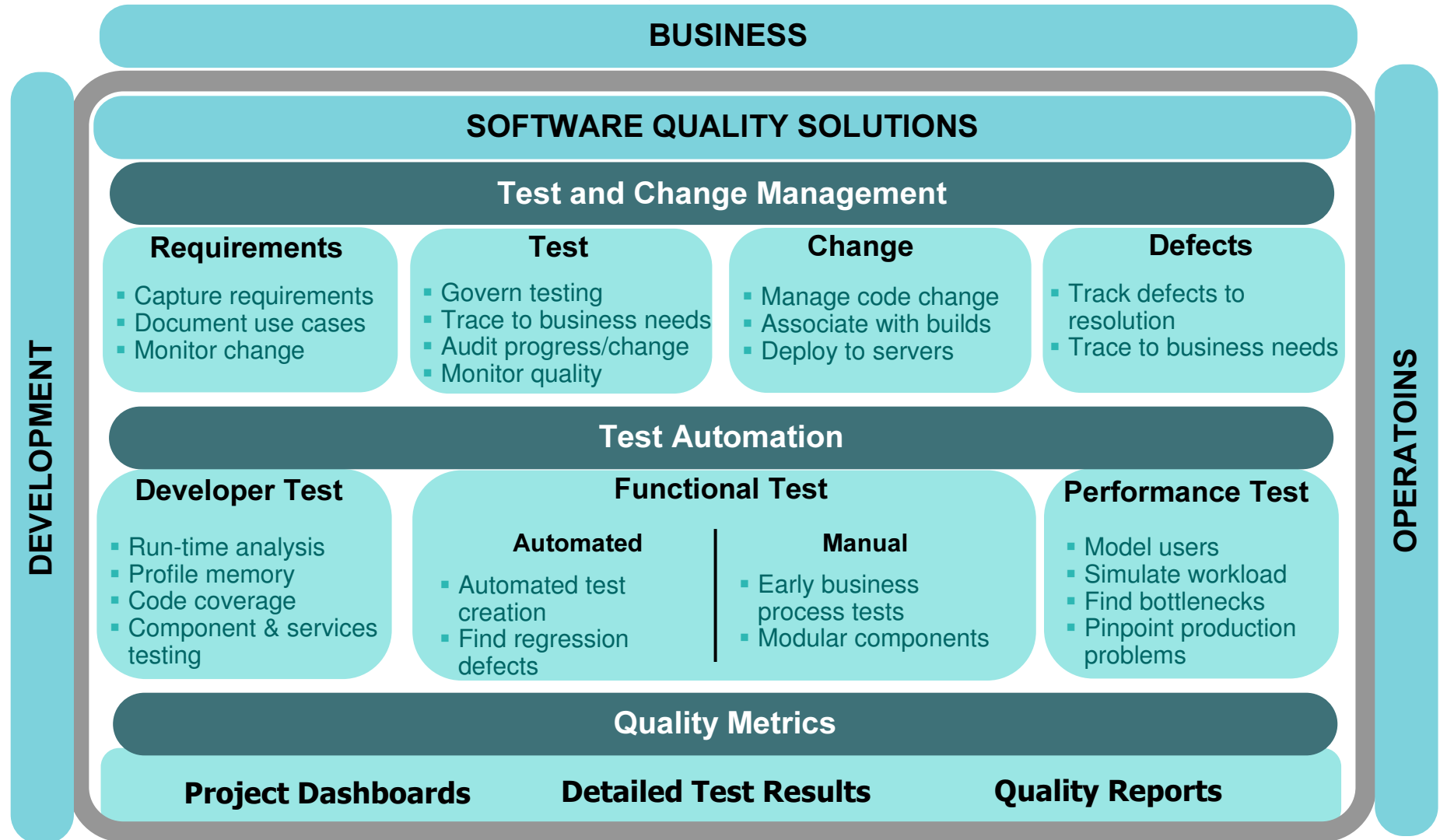
***“IBM, of course, is extremely well positioned to help companies tackle the whole [ITLM] problem, given its comprehensive product portfolio, extensive partner programs, and worldwide Global Services organization.”***

*Melissa Webster, IDC, May 2005 - “IT Life-Cycle Management: Will a Platform Emerge?”*



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# Rational Software Quality Solutions





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## Next Steps...

The screenshot shows the IBM website's navigation and content for 'Software quality'. The top navigation bar includes 'Home', 'Products', 'Services & solutions', 'Support & downloads', and 'My account'. A search bar is visible with a 'Search' button. The main content area is titled 'Software quality' and includes a sub-header 'Rational software'. The text describes the goal of creating high-quality applications and the importance of quality in software development. It mentions that IBM Rational addresses all aspects of quality with a complete and modular platform for teams who build embedded systems and software products. A sidebar on the left lists various categories like 'Software', 'Trials and betas', 'Support', etc. Below the main text, there are sections for 'Related links' and 'Rational offers the following products for automation'.

Country /region [selected] | Terms of use

Home | Products | Services & solutions | Support & downloads | My account

Software > Rational > **Software quality**

Rational software

The goal of any software development effort is to create high quality applications. But what exactly does 'quality' mean? Quality is the subjective impression felt by end users about how well an application addresses their needs. It is a combination of perceptions about an application's functionality, usability, reliability, performance, scalability and a host of other characteristics. To fulfill this tall order, development organizations must commit to building quality into their applications from the beginning - otherwise, time works against project success.

Building quality into an application requires the deep commitment and collaboration of every person on the project team. It involves an iterative process and a set of tools to help team members automate error-prone aspects of their work, freeing them to focus on creativity and value. A testing team has a unique responsibility because they are responsible for finding mistakes in the various aspects of quality (functionality, usability, etc.) that slip through the cracks. IBM Rational addresses all aspects of quality with a host of tools that are part of the **IBM Software Quality** platform, a complete and modular platform for teams who build embedded systems, and software products.

Rational offers the following products for automation:

- **IBM Rational Manual Tester**: A manual testing tool that promotes test step reuse and reduces change on testers and business analysts.  
Download trial
- **IBM Rational Functional Tester**: A functional and regression testing tool that provides superior control and visibility into your applications.  
Download trial

### Contacting your IBM representative

<http://www.ibm.com/contact/us>

Call 1 800 728 1212

### Product Information on IBM.com

- [www.ibm.com/software/rational](http://www.ibm.com/software/rational)
- Success Stories
- PowerPack Evaluation: Trials, Demos, Betas
- Events: Webinars, Seminars, Conferences
- Literature, Technical Resources & Support



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## For More Information...

The screenshot shows the IBM developerWorks website interface. At the top, there is a navigation bar with the IBM logo, a 'Country/region [select]' dropdown menu, and a 'Terms of' link. Below this is a secondary navigation bar with links for 'Home', 'Products', 'Services & solutions', 'Support & downloads', and 'My account'. The main content area features a breadcrumb trail: 'developerWorks > Sample IT projects | Rational >'. The title of the page is 'Analyze system performance: Validate system scalability with IBM Rational Performance Tester V6.1'. Below the title, it indicates the level is 'Introductory', the author is 'Brian Bryson, IBM Rational', and the date is '26 May 2005'. A brief description follows: 'Learn how to analyze system performance with IBM Rational Performance Tester v6.1. This tutorial teaches you how to create a test plan, schedule, and execute your first performance test using Performance Tester. Along the way, you'll explore the challenges of performance testing and the solutions offered by Performance Tester to address these challenges.' A call to action button says 'Register now or sign in using your IBM ID and password.' Below this, there are sections for 'Prerequisites' (None), 'System requirements' (To complete the steps in this tutorial, you'll need to install IBM Rational Performance Tester V6.1 on a 64-bit operating system. A sample application (available with WebSphere Application Server V6.1) is also required.), 'Duration' (Under one hour), and 'Formats' (HTML, PDF). On the left side of the page, there is a sidebar with a 'developerWorks' menu and a 'Related links' section containing links to 'ISV resources', 'alphaWorks (emerging technologies)', 'Academic program', and 'IBM Redbooks'.

### ■ Technical Resources on IBM developerWorks

- [www.ibm.com/developerworks/rational](http://www.ibm.com/developerworks/rational)
- Manual, Functional & Performance Tester Tutorials
- Discussion forums

Technical articles and whitepapers



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THANK  
YOU

