Do IT Once . Do IT Right with IBM Rational Quality Management Solutions.
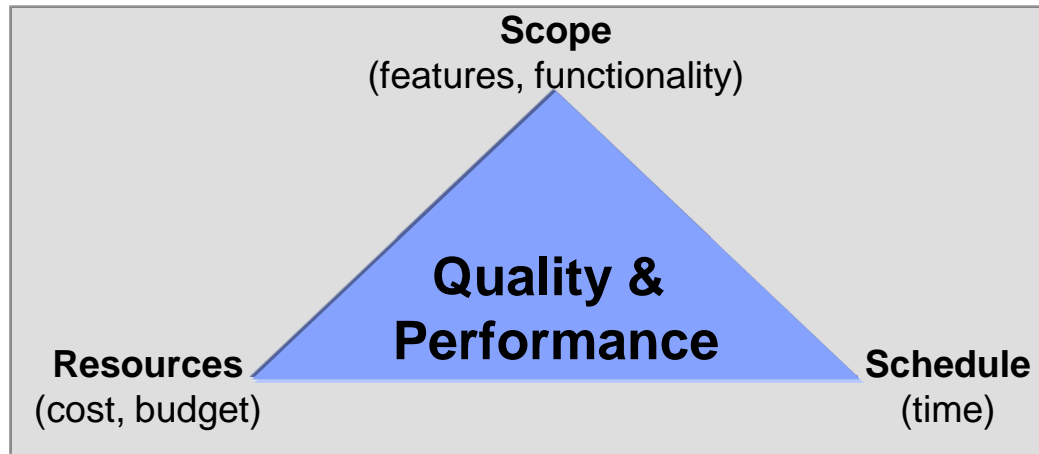
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Quality Management Challenges & Importance to the Business

- Business Transformation through Innovation **creates tremendous pressure on IT**
  - Drives to SOA and agile practices for speed to market
- Must "Break the Iron Triangle" **– traditional methods will not deliver**
  - On time, with fixed budget and improved quality/performance
- Quality & performance require **continuous, iterative and integrated lifecycle processes**

Scope
(features, functionality)

Quality & Performance

Resources
(cost, budget)

Schedule
(time)

Quality-enabling activities must start here and involve the entire team

IT Operations must be tied into the lifecycle

Analyst · · · · Architect · · · · Developer · · · · Tester · · · · Deployment Manager · · · · Operations

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Today's Challenges to Software Quality

- **Enterprise pressure to reduce cost**
- **Competitive demand to deliver faster**
- **Worldwide geographical dispersed development**
- **Increasingly complex software ecosystems**
- **New requirements for government standards**
- **Lack of domain knowledge/content**
- **Inability to search/reuse test assets**
- **Lack of leveraging previous test experiences**
- **Unclear business goals for test criteria**
- **Limited use of real customer data in verification**
- **Lack of published open standards for vendor integration**
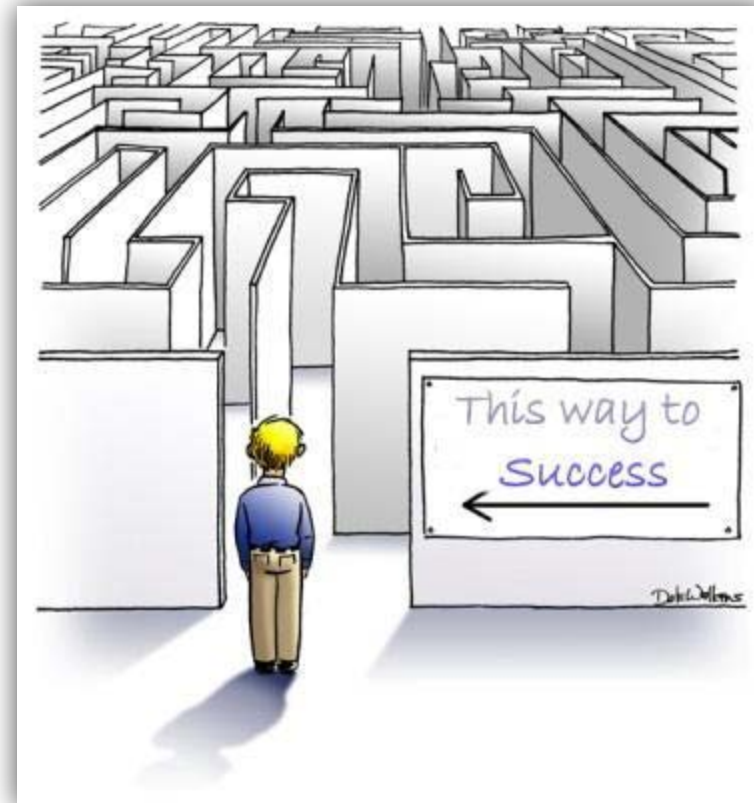
Quality paradigm is changing

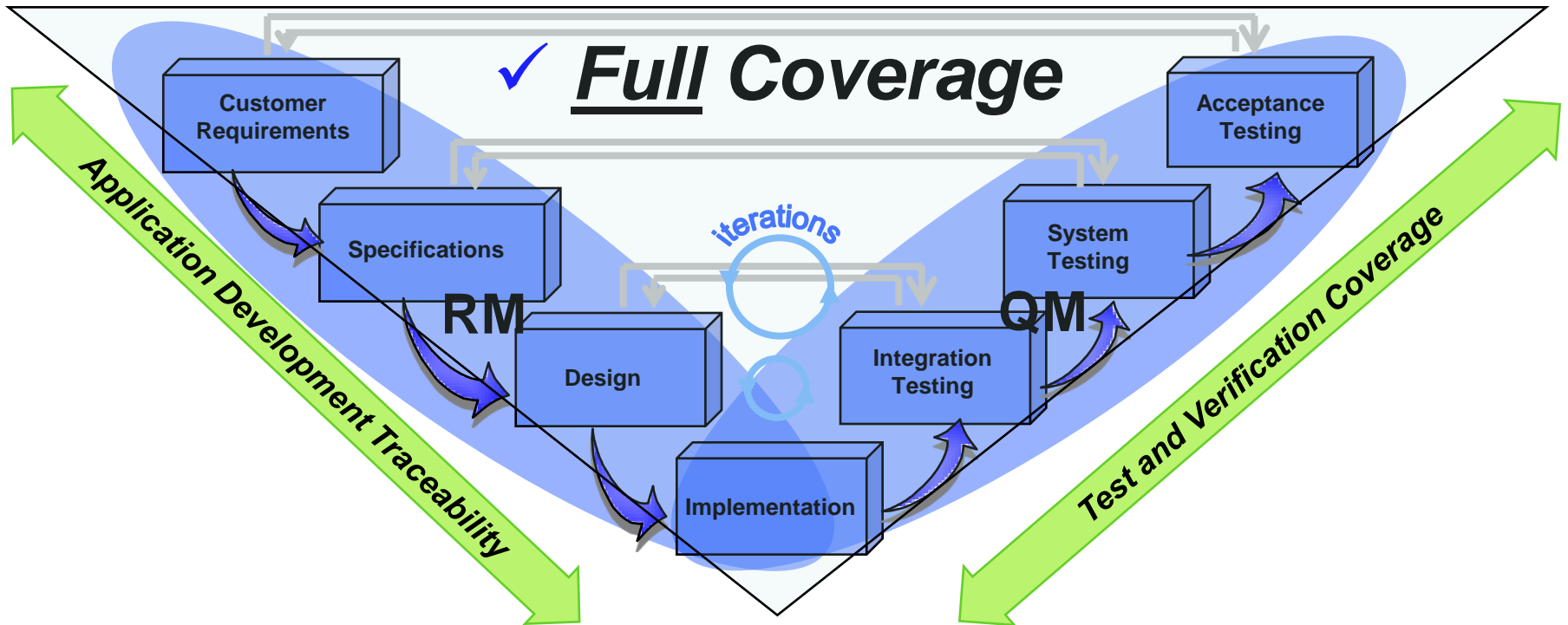## Test – functional silo within software development

- Testing addressed by QA before deployment

- Test as gatekeeper on final release decisions

- Distributed, single project orientation

- Scope – fit for use, reduction of application level defects

Quality – A strategic IT competency

- Quality considerations addressed at all phases

- Agile iterations involve multiple business & technical stakeholders

- Consolidation with internal center of excellence or outsourcing

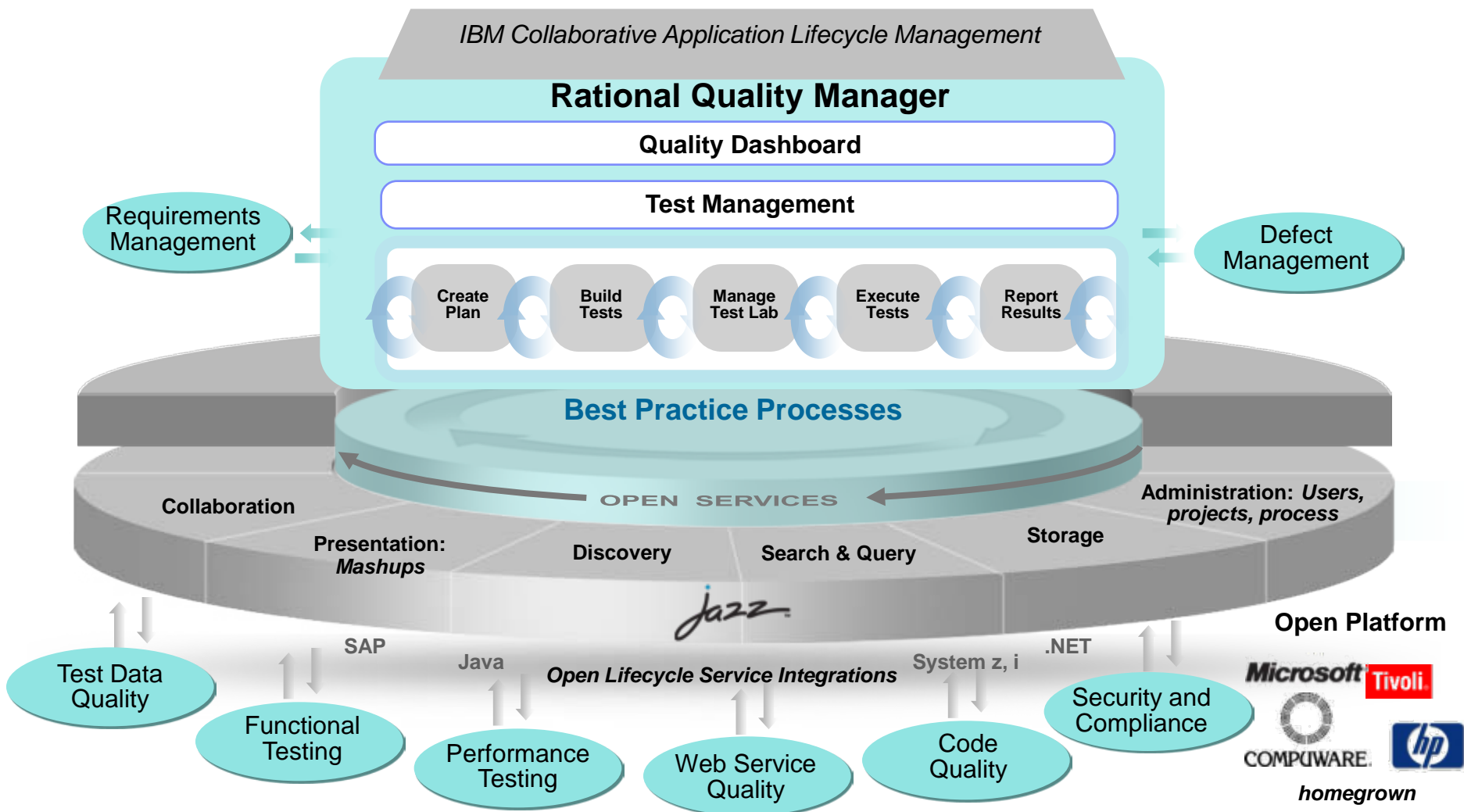- Scope – Customer satisfaction and improved business performance

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IBM Offers A Unique Solution

That Ensures Entire Lifecycle Collaboration and Traceability

✓ **_Full_ Coverage**

Customer Requirements

Specifications

RM

Design

iterations

Implementation

Integration Testing

QM

System Testing

Acceptance Testing

Application Development Traceability

Test and Verification Coverage

IBM's full life cycle coverage and traceability solution
- ✓ Common set of clear requirements shared by team
- ✓ Don't miss out critical requirements
- ✓ Assess requirements change impact
- ✓ Identify most critical requirements to test
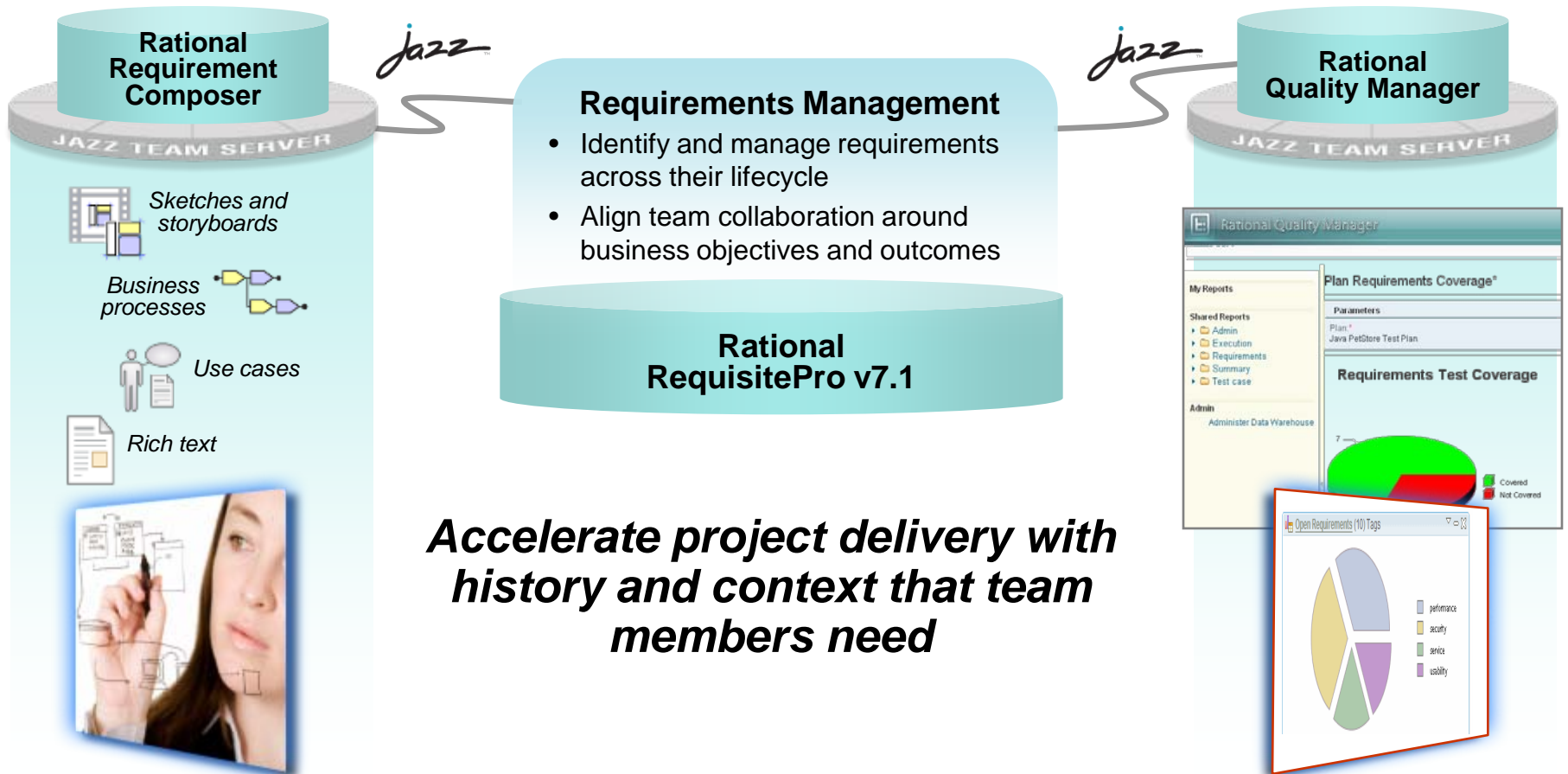- ✓ Prove compliance (audit-ability)

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Collaborative Application Lifecycle Management

IBM Collaborative Application Lifecycle Management

Rational Quality Manager

Quality Dashboard

Test Management

Requirements Management

Defect Management

| Create Plan | Build Tests | Manage Test Lab | Execute Tests | Report Results |

Best Practice Processes

OPEN SERVICES

Collaboration

Administration: *Users, projects, process*

Presentation: *Mashups*

Discovery

Search & Query

Storage

Jazz

Open Platform

SAP   Java   *Open Lifecycle Service Integrations*   System z, i   .NET

Test Data Quality

Functional Testing

Performance Testing

Web Service Quality

Code Quality

Security and Compliance

Microsoft **Tivoli.**

COMPUWARE. **hp**

homegrown

Traceable requirements definition and management

Challenge: Managing a shared understanding of requirements, business and delivery risks

Solution: Reduce rework, focus meetings, and reuse requirements artifacts on future projects

Rational Requirement Composer

Sketches and storyboards

Business processes

Use cases

Rich text

Requirements Management
- Identify and manage requirements across their lifecycle
- Align team collaboration around business objectives and outcomes

Rational RequisitePro v7.1

Rational Quality Manager

Accelerate project delivery with history and context that team members need

Rational Quality Manager

My Reports

Shared Reports
- ▸ 🗀 Admin
- ▸ 🗀 Execution
- ▸ 🗀 Requirements
- ▸ 🗀 Summary
- ▸ 🗀 Test case

Admin
  Administer Data Warehouse

Plan Requirements Coverage°

Parameters
Plan:*
Java PetStore Test Plan

Requirements Test Coverage

Covered
Not Covered

Open Requirements (10) Tags

performance
security
service
usability

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Collect: Collaborative and adaptive test plan management

Test plans that are easy to create and evolve with our projects

Structured test plan with multiple user defined sections

Track test plan history with version snapshots

Key sections:

Requirements
Test Cases,
Exit Criteria,
Quality Goals

Execute : Proof of process

Challenge: Centralized QA team works with multiple stakeholders across lines of business

Solution: Keeping version history and managing approval process at different phases

All project stakeholders can review, refine and sign-off on all quality related artifacts

Artifact Reviews and Approvals

Project A   **Analyst**
Requirements Signoff

Project B   **Project Manager**
Quality Certification

Project C   **Lab Manager**
Ready for Release

Review and Approvals

Work Item: Create

List the people who will be reviewers and approvers of this content and define your approval process.

View: All   Type Filter Text

Show All   Items per page   Previous | 1 - 2 of 2 | Next

	Review Type	Name	Status	Comments	Modified
☐	Approver	Mary (Manager)	Pending		
☐	Reviewer	Larry (Lab Manager)	Pending		

QA team maintains accurate project history with detailed artifact versioning

Java PetStore Test Plan   Saved successfully at 20:47:42   Create New Snapshot
Test Plan Overview | View Snapshots

Artifact Versioning

Show All   Items per page   Previous | 1 - 1 of 1 | Next

Type	Revision	Name	Date	Originator	Detail	Copy
📄	1	Draft version	1 minute ago	ADMIN		
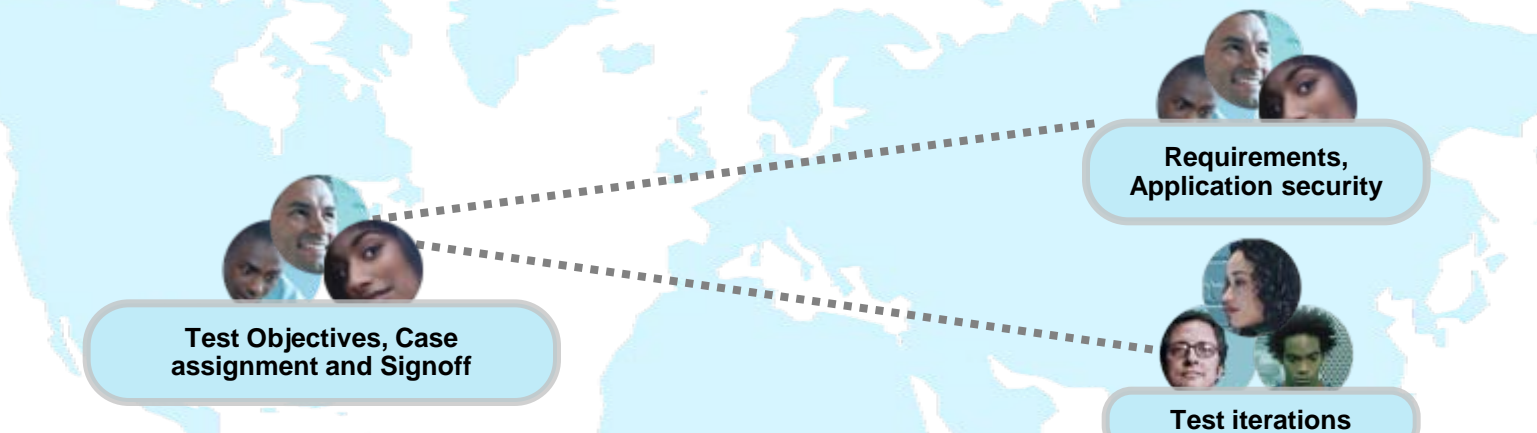
Previous | 1 - 1 of 1 | Next

Execute : Up to date work progress information

Task management for individual and team

Challenge: Assigning and coordinating test plan ownership and events across distributed teams

Solution: Visualize commitments, reduce rework, track tasks and monitor events

Requirements, Application security

Test Objectives, Case assignment and Signoff

Test iterations
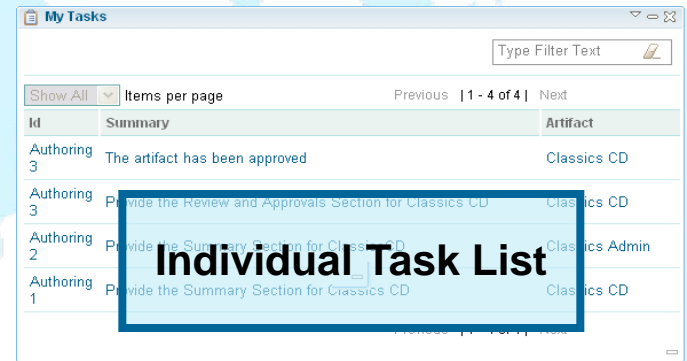
QM Event Log (17 new)

[9] Provide the Review and Approvals Section for Classics CD (3) 3 hours ago

* Login window does not appear (38) 3 hours ago

* Classics Request (37) 5 hours ago

* Provide the Test Scripts Section for New Customer Order (36) 5 hours ago

Page 1 of 3

Team event log

My Tasks

Type Filter Text

Show All	Items per page	Previous	1 - 4 of 4	Next
Id	Summary		Artifact
Authoring 3	The artifact has been approved		Classics CD
Authoring 3	Provide the Review and Approvals Section for Classics CD		Classics CD
Authoring 2	Provide the Summary Section for Classics CD		Classics Admin
Authoring 1	Provide the Summary Section for Classics CD		Classics CD

Individual Task List

Know what others are doing, know what others expect from you

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Execute: Collaborative Complexity
Task management for individual and team

Individual Task List

Team event log

- **Visualize commitments to reduce rework**
  - **Know what others are doing**
  - **Know what others expect from you**
- **Track Individual Tasks**
  - My Tasks portlet tracks work items assigned to individual team members
- **Monitor Team Events**
  - Team event log updates automatically as activities occur

Execute: Integrated Manual Test Authoring
Track execution results and defects from manual test e

Manual Test Execution

- **Manual test author and execute**

  - Step by step capture and execution of manual tests

  - Rich defect capture during execution, including screenshot and attachments

  - Simple intuitive interface for quick test execution

Inform: Infinite Perspectives
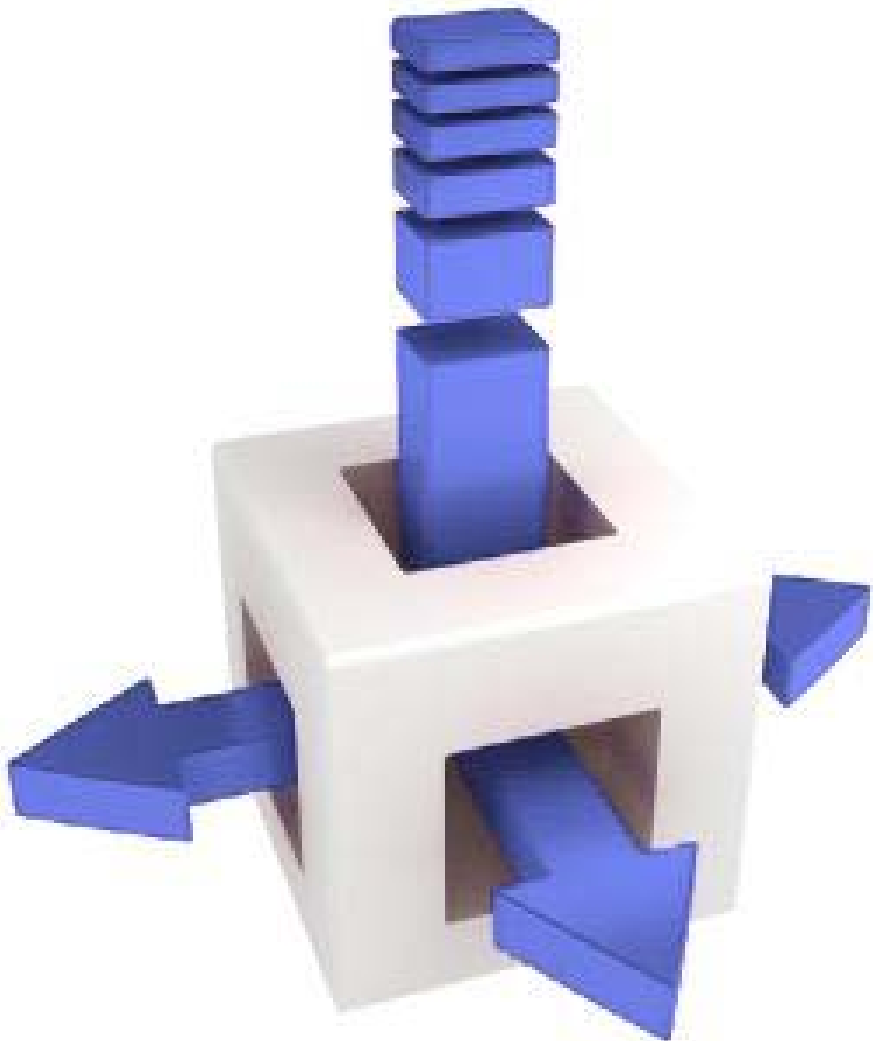
- **Inform**
    - **Contextual information**, on demand to provide you with the answers you need to drive software delivery quality

    - Reports and dashboards are **accessible from anywhere**, at anytime, governing and providing feedback into quality objectives.

    - Report against established criteria for **goal driven development**

Inform : Reduce risk with constant access to quality metrics

Lifecycle quality perspective to proactively manage risk

Quality Manager Dashboard

Manual and functional test automation results available

Performance risks are always visible and quickly resolved
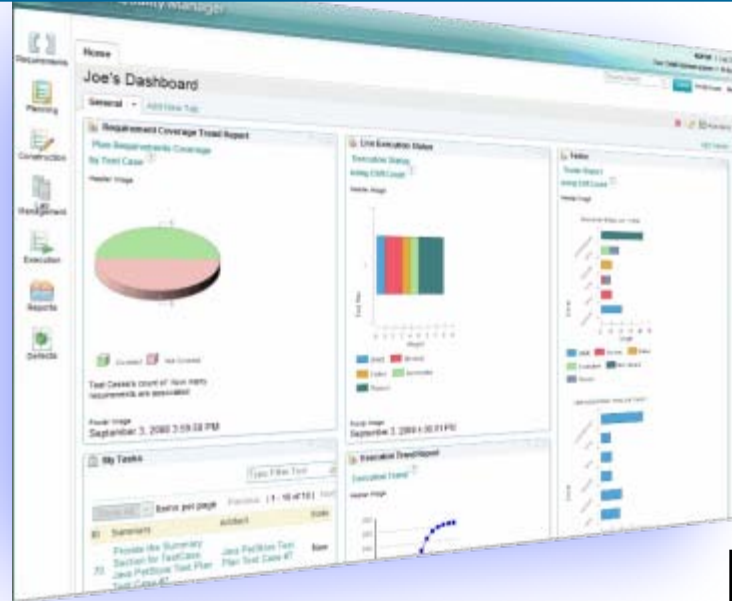
Testing of requirements can be tracked to assure business needs are realized

Security risks are monitored continuously to ensure business continuity

Change management and defect tracking fully integrated to assure all changes to production are tested

Maximize your investment in test automation
With IBM Rational Functional Tester

- Achieve success quickly and minimize maintenance
  - ‣ Simplified natural language scripting with Storyboard testing
  - ‣ Eclipse based or Visual Studio .net
  - ‣ Easy to learn
  - ‣ Maximize reuse
- Complete test coverage
  - ‣ Supports testing for Java, Web, Visual Basic .Net, SAP, Siebel, Web 2.0, Power Builder and Terminal Based applications
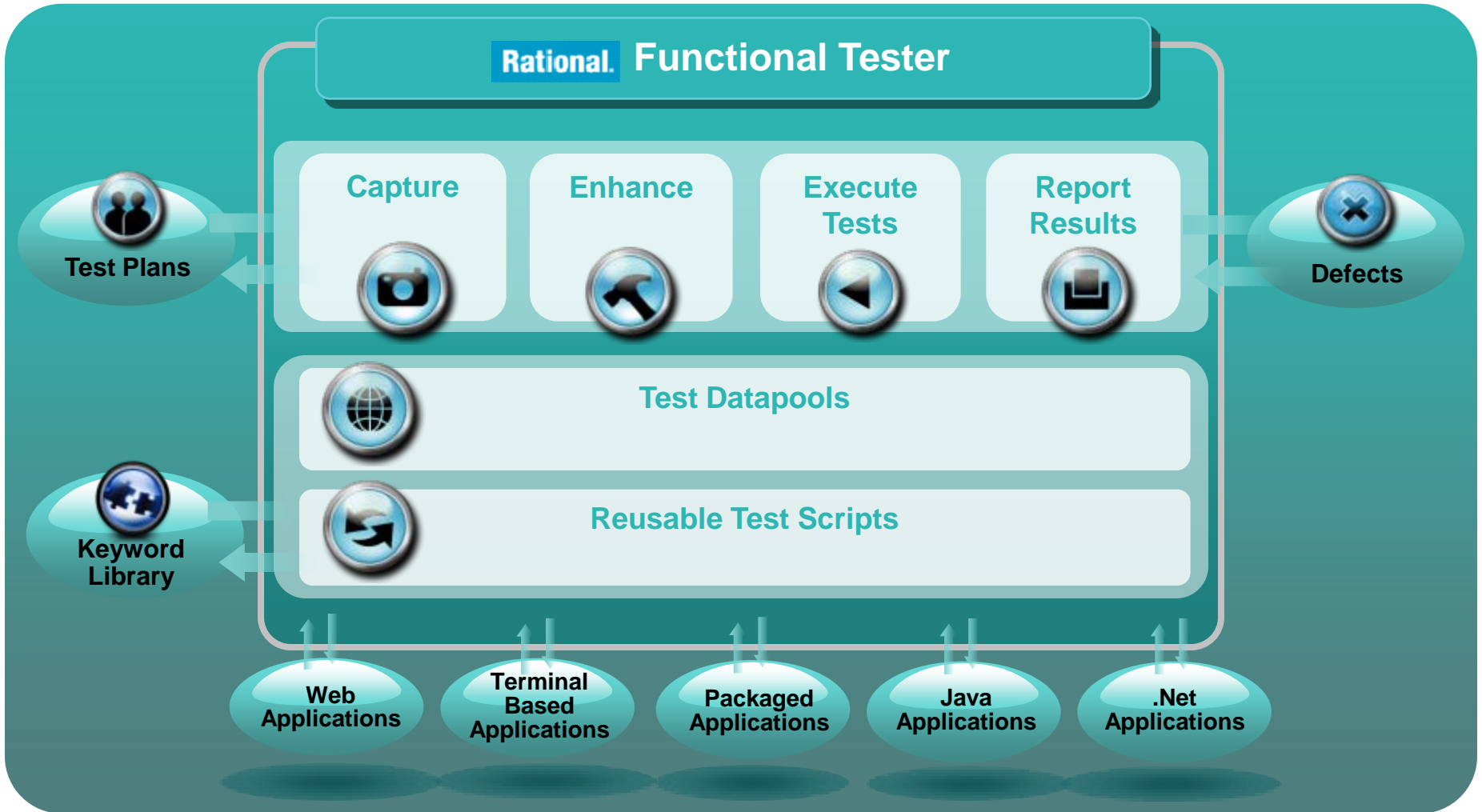 - ‣ Ability to support custom controls

System z

System i

Rational Functional Tester 8.2

Rational. **Functional Tester**

| Capture | Enhance | Execute Tests | Report Results |

Test Datapools

Reusable Test Scripts

Test Plans

Defects

Keyword Library

Web Applications

Terminal Based Applications

Packaged Applications

Java Applications

.Net Applications

18

Built-in guidance to accelerate time to value
Tool mentors and process advisors speed on-boarding

- Context sensitive Process Guidance and Tool Mentors

- Process Browser and Process Advisor accessible right from the testing environment
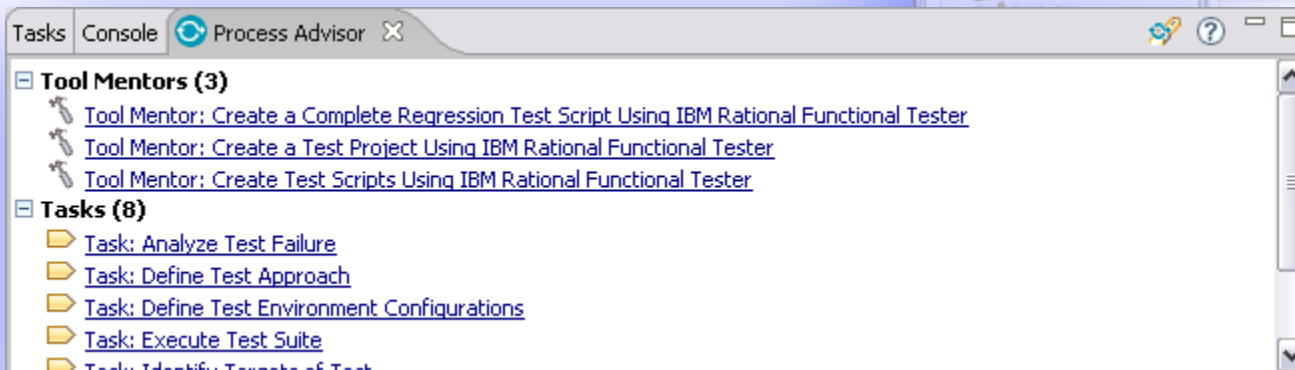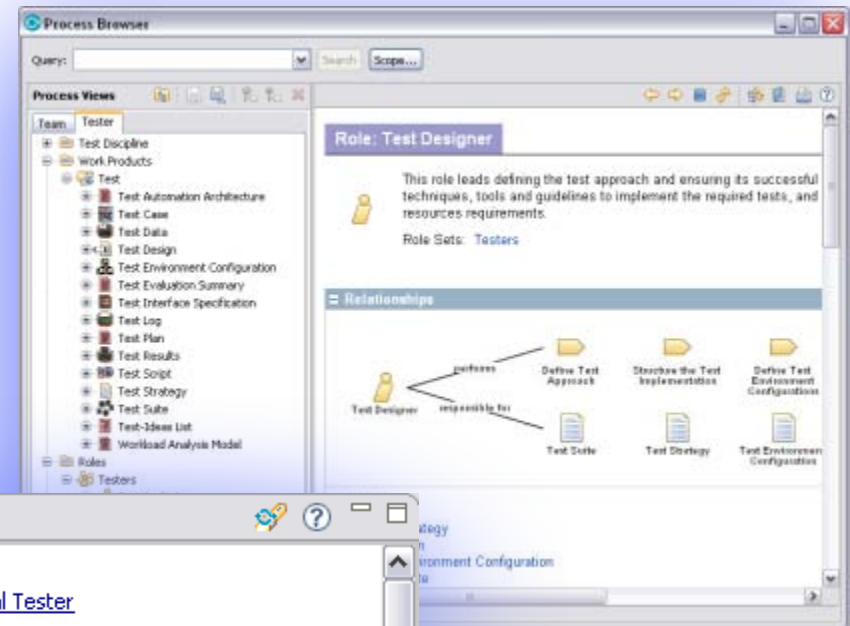
Enhancing Scripts
Storyboard testing simplification

- **Enable novice and professional testers alike to easily understand and communicate test flows**

- **Natural language script view**

- **Storyboard test visualization**
  - ▸ Application snapshots are captured and displayed as thumbnails
  - ▸ Insert verification points
  - ▸ Maintain test datapools

Keyword libraries bring the test team together

Keywords defined by manual testers are available in Functional Tester

Manual Testing

Keyword Libraries

ERP

Store

Finance

DW/BI

Automated Testing

Acceptance Testing

- **Reduce rework and redundancy**

- **Reuse test assets**

- **Accelerate test automation**
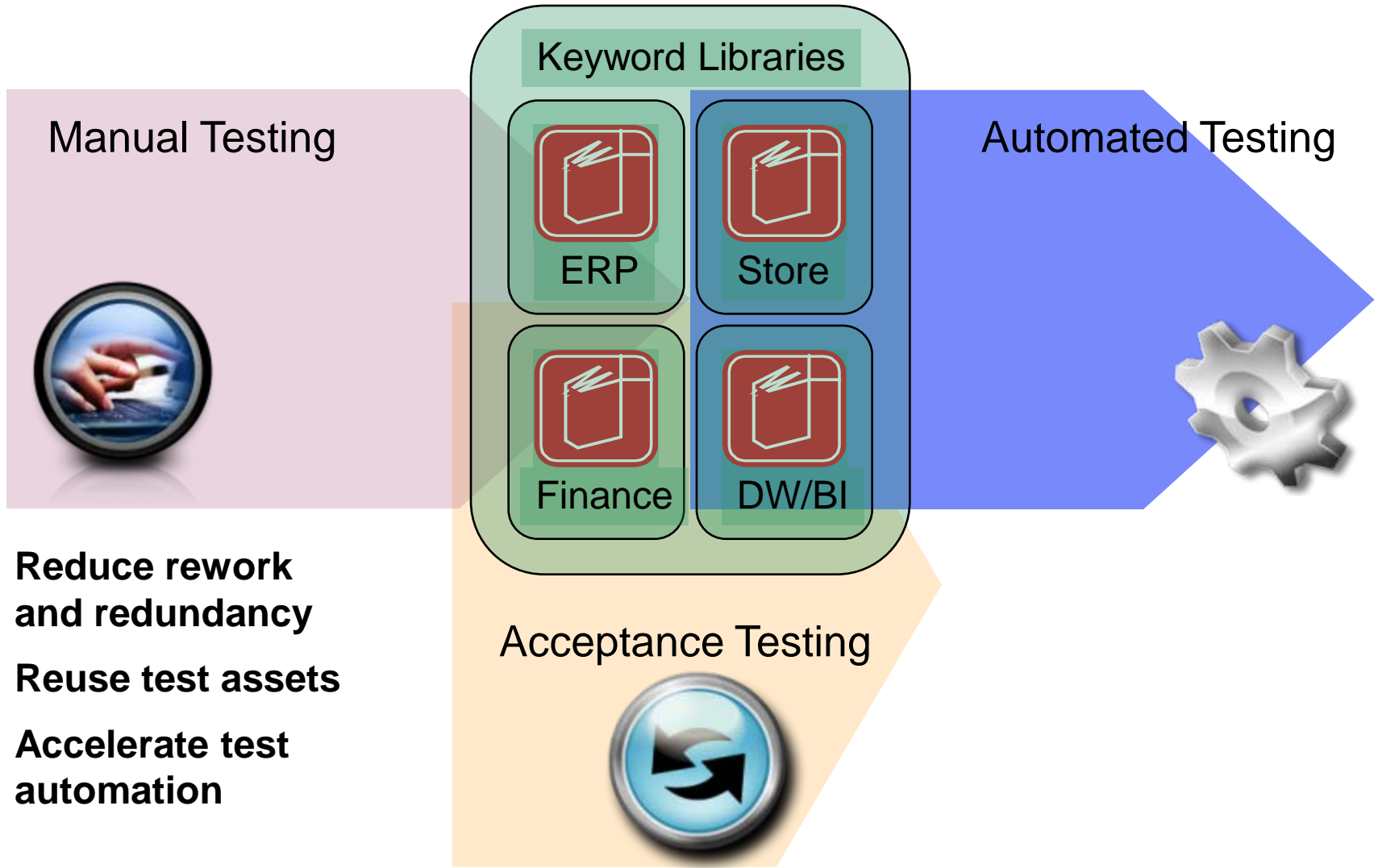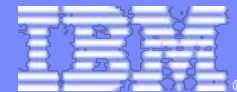
Introduction to IBM Rational Performance Tester
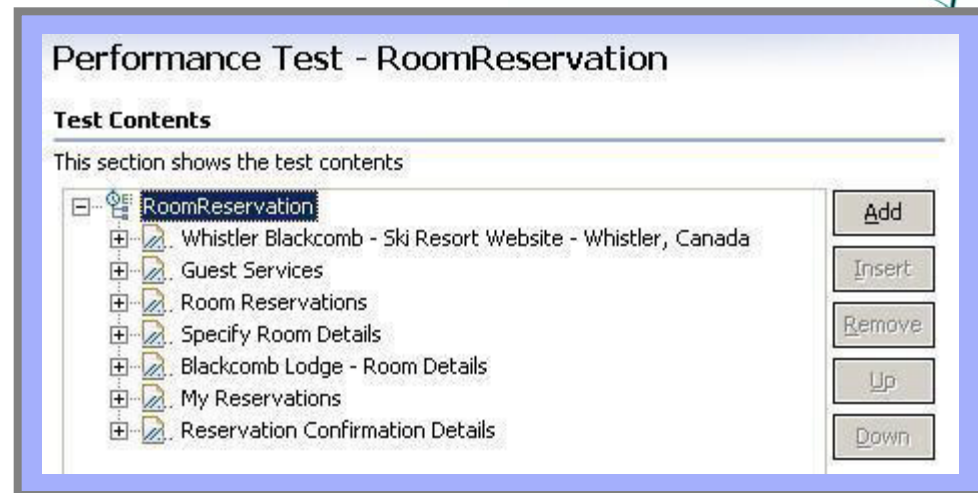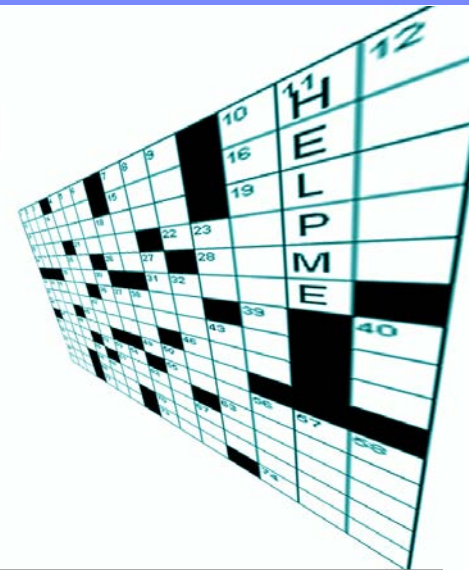
Rational software

Benefit 1: No in-house experience needed

- **Need**
  - ‣ Tool complexity and lack of experience intimidates many first time users

- **Resolution**
  - ‣ Represent tests as a tree view of sequential flow through application

  - ‣ Simplify test editing with wizards
    - ▪ Looping
    - ▪ Conditional events
    - ▪ Data validation

  - ‣ Integrate Java code to handle unique performance challenges

Performance Test - RoomReservation

Test Contents

This section shows the test contents

- RoomReservation
  - Whistler Blackcomb - Ski Resort Website - Whistler, Canada
  - Guest Services
  - Room Reservations
  - Specify Room Details
  - Blackcomb Lodge - Room Details
  - My Reservations
  - Reservation Confirmation Details

Add
Insert
Remove
Up
Down

Benefit 2: Complexity of System Under Test

- **Need**
  - ▸ Complexity of system under test prohibits simple record and playback

- **Resolution**
  - ▸ Integrate data pooling technology to ensure each unique data for each user

  - ▸ Identify data relationships to dynamically reference server generated data during playback

  - ▸ Utilize unique TCP/IP addresses for each user to ensure realistic load

Test Data

Name	Value	Substituted with
orderId	AB-j2ee-11509...	"AB-j2ee-1150908052125" - Content
start_month	6	"start_month" variable, of start_month datapool
start_day	21	"start_day" variable, of start_day datapool

Data Referencing
Data value used during playback will be dynamically linked to previous server response

Data Pooling
Data value used during playback will be unique value for each user read from datapool

Benefit 3: Root Cause Analysis

- **Need**
  - ▸ Tool can find the problem, but not diagnose the root cause

- **Resolution**
  - ▸ Root Cause Analysis features provide additional insight to diagnose the cause of a bottleneck

  - ▸ Resource Monitoring data monitors hardware during test

  - ▸ Response Time Breakdown report breaks down response times into granular components

Page Performance > Response Time Breakdown Statistics

demo:9080/ab/checkout.do

Component	Base Time (seconds)
⊟ 🖥 CASPIAN	311.512
⊟ 🗔 IBM Rational Performance Test	311.512
⊞ 🔓 Delivery Time	26.500
⊞ 🔓 Response time	208.748
⊞ 🔓 text/html;charset=ISO-8859-1	76.264
⊟ 🖥 demo	2,109.879
⊟ 🗔 J2EE/WebSphere/6.0.0.1/demoNode01	2,109.879
⊞ 🔓 Filter	39.632
⊞ 🔓 JDBC	1,673.199
⊞ 🔓 JSP	33.572
⊞ 🔓 RMI-IIOP	5.280
⊞ 🔓 Servlet	26.112
⊞ 🔓 Session EJB	160.628
⊞ 🔓 Web Services Provider	2.840
⊞ 🔓 Web Services Requestor	168.616

Validate Performance with IBM Rational Performance Tester

Is your application ready for production deployment?

1. Create realistic user scenarios that exercise key business transactions

Load Generators

Test Authoring and Control

System Under Test
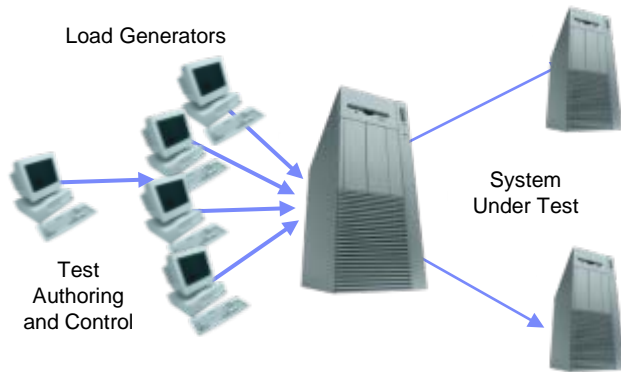
2. Identify the root cause of problems

Powerful workload scheduler simplifies the creation of realistic user workloads

Advanced Data Correlation features significantly reduce test development effort

Easily identify parameters and enable scenarios for data-driven testing

Quickly identify poor-performing transactions

Breakdown response times across application tiers and drill down to source

Correlate response times with system resource measurements

IBM Rational Performance Tester
Create realistic user scenarios that exercise key business transactions

- **No-Code Test creation**

- **Parameterized data-driven tests and results**

- **Simple yet powerful scheduler**

- **Live Browser Rendering**

Load Generators

Test Authoring and Control

System Under Test

Powerful workload scheduler simplifies the creation of realistic user workloads

Advanced Data Correlation features significantly reduce test development effort
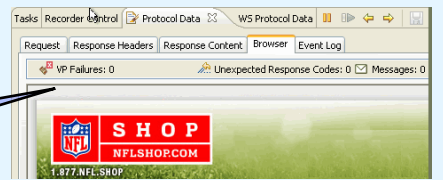
Easily identify parameters and enable scenarios for data-driven testing

Live browser rendering for simplified debugging

Perform Data Driven performance testing

- RPT identifies automatic data correlation variables.

- All other variables in the application are considered automatically for datapooling

Performance Problem Identification During Test

Page Performance

Average Page Response Time for Run (Filter applied: Count Filter: 10 highest)

Page Performance Report
Shows average response time
per page.

Highest bar = Performance Problem

Legend:
- Available Adventure Packages
- Adventure Package
- Welcome to the Adventure Builder Reference application
- Enter Adventure Package Details
- Adventure Package Details
- Sign On
- Enter Adventure Package Options
- Checkout

Values: 1,730 | 1,940.08 | 824.46 | 565.15 | 1,338.08 | 615.46 | 3,437.5 | 15,527.5

- **Performance Testing finds bottlenecks**
  - ▸ Next logical question is Why?
  - ▸ Root Cause Analysis provides to tools to answer this question

Performance & Resource Statistic Report Overlay
Identifying hardware related performance problems

- Data from resource monitoring can be displayed on same graph as response time data

- Single view to visually correlate system resource and system response data for faster problem solving
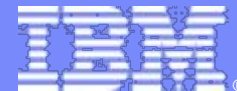
Protect your Web Applications with IBM Rational AppScan Solution

Rational software

How easy is this ?!!

The Myth: "Our Site Is Safe"

We Have Firewalls and IPS in Place
Port 80 & 443 are open for the right reasons

We Audit It Once a Quarter with Pen Testers
Applications are constantly changing

We Use Network Vulnerability Scanners
Neglect the security of the software on the network/web server

We Use SSL Encryption
Only protects data between site and user not the web application itself

Understanding the Problem

Info Security Landscape

Desktop	Transport	Network	Web Applications
Antivirus Protection	**Encryption (SSL)**	**Firewalls / IDS / IPS**	Legit Network-level user

Internet

Port 80 & 443

Firewall

Web Servers

Application Servers

Databases

Backend Server
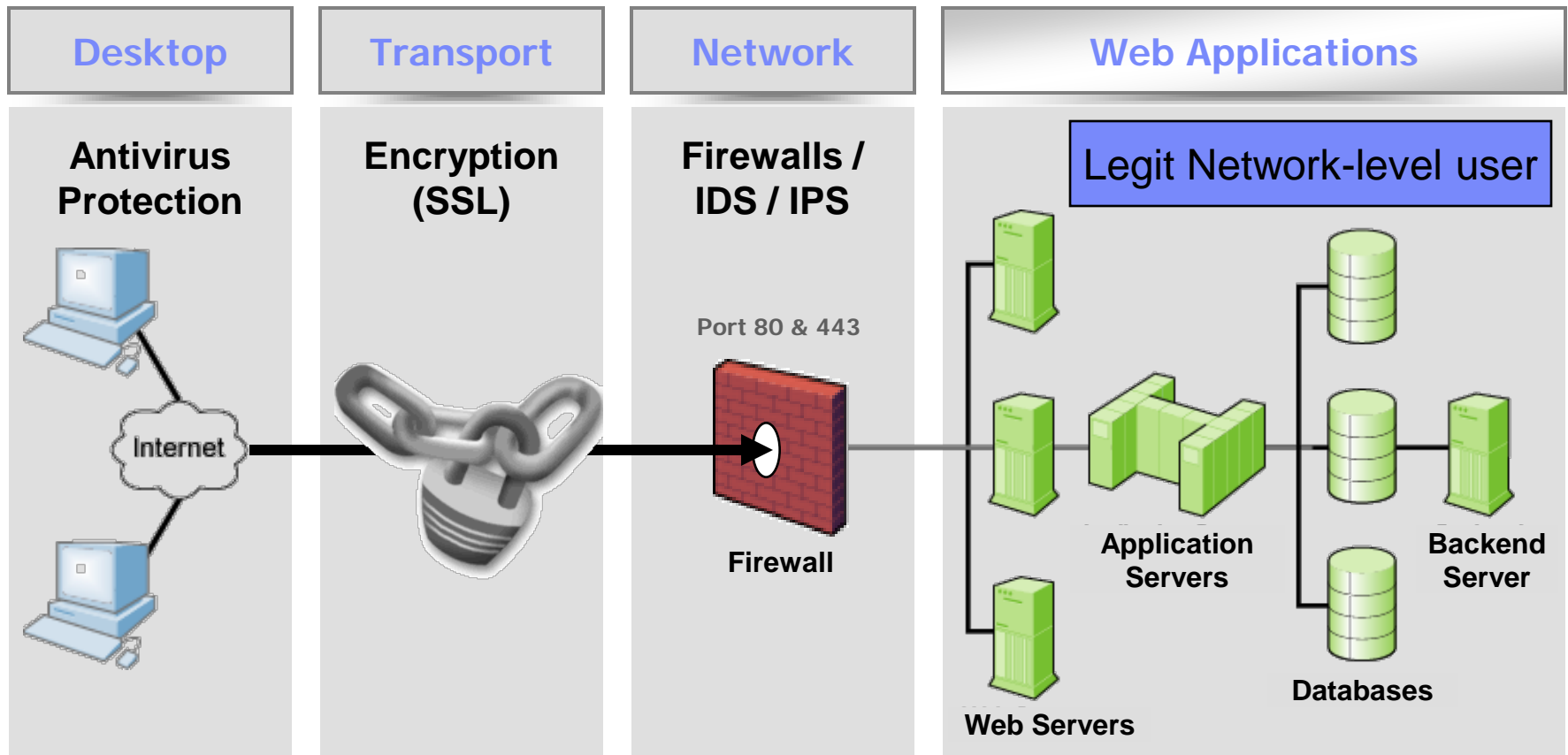
Current Market Drivers

- **Increase in vulnerabilities / disclosures**

  ▸ Application security has become the top threat

- **Regulatory Compliance**

  ▸ Requirements such as PCI, HIPAA, GLBA, etc

- **User demand**

  ▸ For rich applications is pushing development to advanced code techniques – Web 2.0 introducing more risks to threats

- **Enterprise Modernization**

  ▸ Driving traditional applications to online world (SOA), increasing corporate risk

- **Cost cutting in current economic climate**

  ▸ Demands increased efficiencies

LexisNexis Data Breach
–*Washington Post Feb 17, 2008*

IndiaTimes.com Malware
–*InformationWeek Feb 17,2008*

Hacker breaks into Ecuador's presidential website
— *Thaindian, Feb 11, 2008*

Web Vulnerability Disclosures
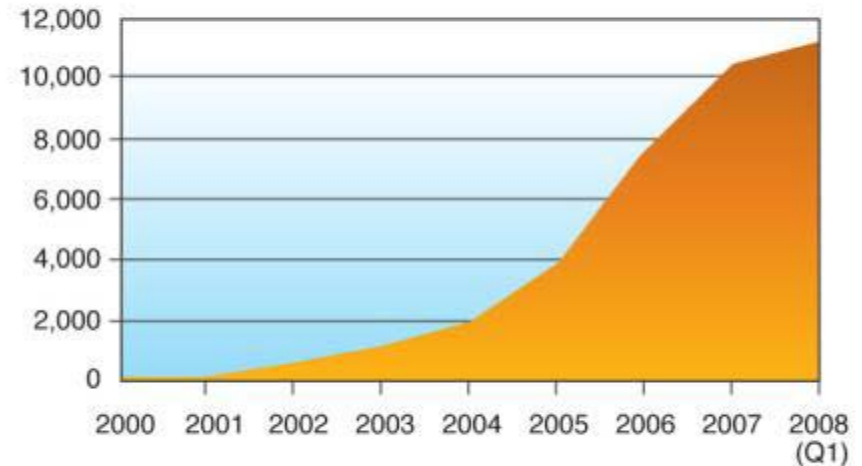
SQL Injection, XSS and PHP Vulnerability

Source: IBM ISS Threat Report

Security Testing Technologies...
Combination Delivers a Comprehensive Solution

Static Code Analysis = Whitebox

▪ *Scanning source code for security issues*
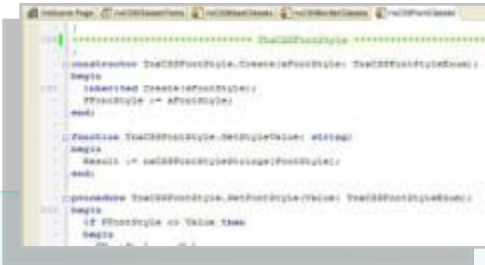
Dynamic Analysis = Blackbox

▪ *Performing security analysis of a compiled application*

Total Potential Security Issues

Static Analysis

Best Coverage

Dynamic Analysis
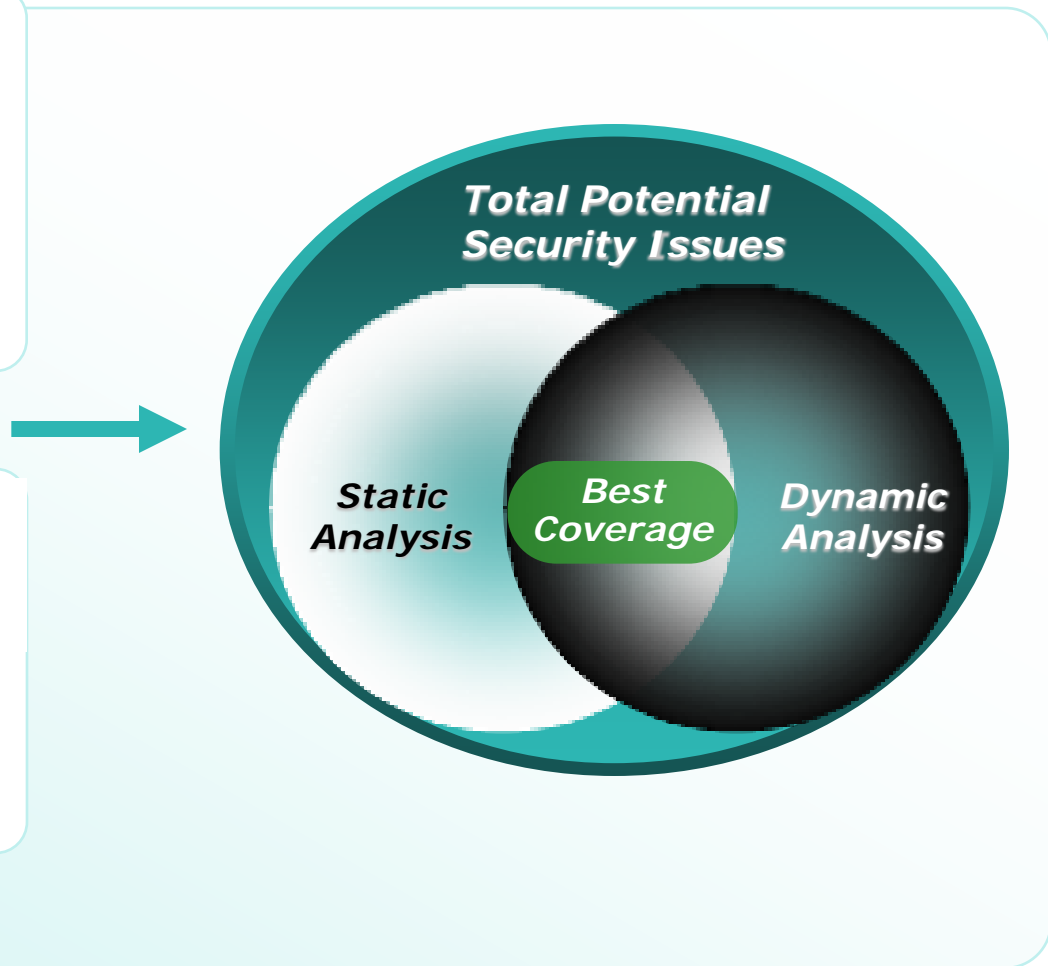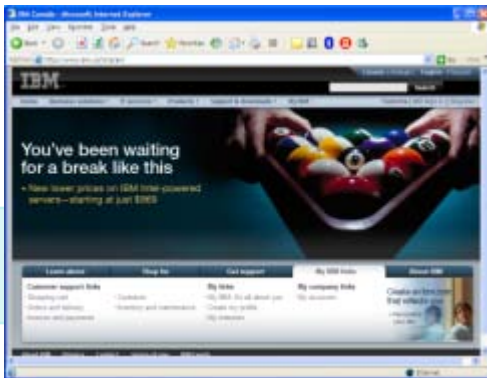
How does Application Security Testing work?

1 Explore source code and/or web site to detect structure

2 Identify Vulnerabilities ranked after severity and show how it was identified

Virtual-SOC Portal

3 Advanced remediation, fix recommendations and security enablement

PATCH

IBM Rational AppScan Ecosystem

Rational. ***AppScan Enterprise / Reporting Console / Source Ed Core***

AppScan Source Ed for Developer / Remediation

AppScan Ent. QuickScan (web client)

AppScan Source Ed for Automation

(scanning agent) **(QA clients)**

AppScan Tester Ed

AppScan Enterprise user (web client)

AppScan Standard Ed (desktop)

AppScan Source Ed for Security

Rational Application Developer

Rational Software Analyzer

Rational ClearCase

Rational Build Forge

Rational Quality Manager

Rational ClearQuest / Issue Management

CODE

Build security testing into the IDE*

BUILD

Automate Security / Compliance testing in the Build Process

QA

Security / compliance testing incorporated into testing & remediation workflows

SECURITY

Security & Compliance Testing, oversight, control, policy, audits

IBM Rational Web Based Training for AppScan

Business Analyst

Web Access

Dev Teams

Development Environment

Requirement Management

Change Request Management

Rational Team Concert

Lifecycle Integrations

Quality Management

Functional Testing

Performance Testing

Security Testing

Software Tester / Test manager

Rational Quality manager

Requirements

Test Plans

Defects

Test Logs

Test Lab mgmt

Work items

Web Access

Thank you!

"If it's so efficient, why doesn't it fix itself!"