



| IBM Software Group

# Achieve Successful Software Delivery in IT Outsourcing – Outsourcer View

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Rational Brand Specialist  
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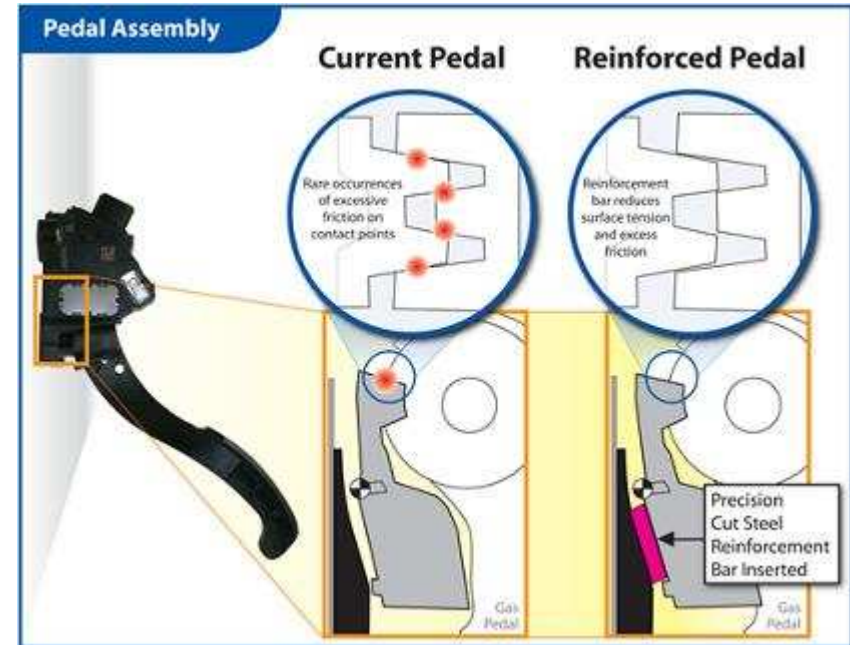
A horizontal decorative banner with a cyan background, featuring a series of small, colorful icons including a person, a globe, a network diagram, and a refresh symbol.

**ON DEMAND BUSINESS™**

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## TOYOTA Floor Mat Recall History

- 7/21/06**  
Japan scolds Toyota for bad recall practices related to a truck issue in that country (www.msnbc.msn.com) *so sorry!*
- 4/07/2008**  
NHTSA opens investigation of Tacoma sudden acceleration problems (Detroit Free Press)
- 4/21/09**  
Toyota Spokesman blames consumers saying: "People are so under stress right now, people have so much on their minds. With pagers and cell phones and IM, people are just so busy with kids and family and boyfriends and girlfriends. So, you're driving along and the next thing you know you're two miles down the road and you don't remember driving, because you're thinking about something else." (www.houstonpress.com)
- 8/28/09**  
CHP Officer And Family Killed In Toyota Prius
- 8/28/09**  
Former Toyota attorney files suit against Toyota claiming company withheld/destroyed vehicle problem information related to structural weakness in trucks (www.cbsnews.com)
- 9/29/09**  
Feds call for a recall of 3.8 million vehicles (www.jalopnik.com) *omg no*
- 9/30/09**  
TOYOTA RECALL: Temporary floor mat triggered fiery death avoidance strategy (www.jalopnik.com)
- 10/08/09**  
It's discovered that Toyota's dealer repairs involve zip-tied floor mats (www.jalopnik.com)
- 11/26/09**  
Toyota Recalls 4.26 million vehicles to fix/replace accelerator pedal in largest recall ever for company (TOYOTA)



# How's Information Transform .....



**How the customer explained it**



**How the project leader understood it**



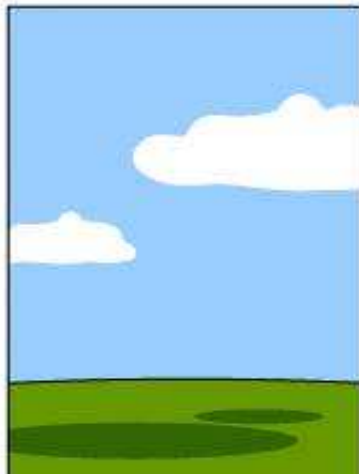
**How the analyst designed it**



**How the programmer wrote it**



**How the business consultant described it**



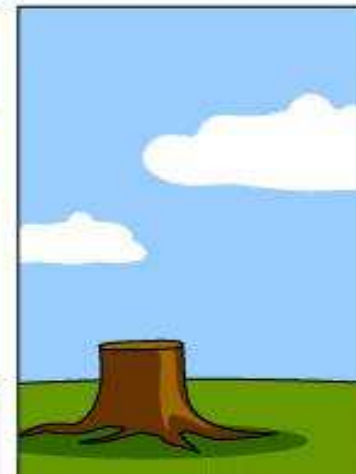
**How the project was documented**



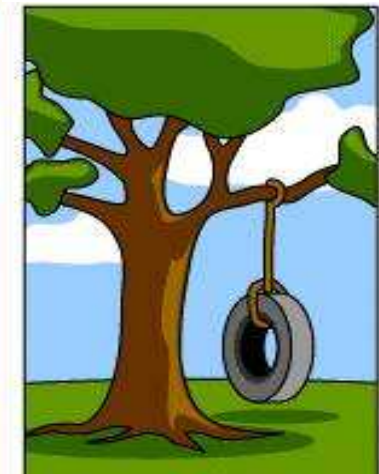
**What operations installed**



**How the customer was billed**

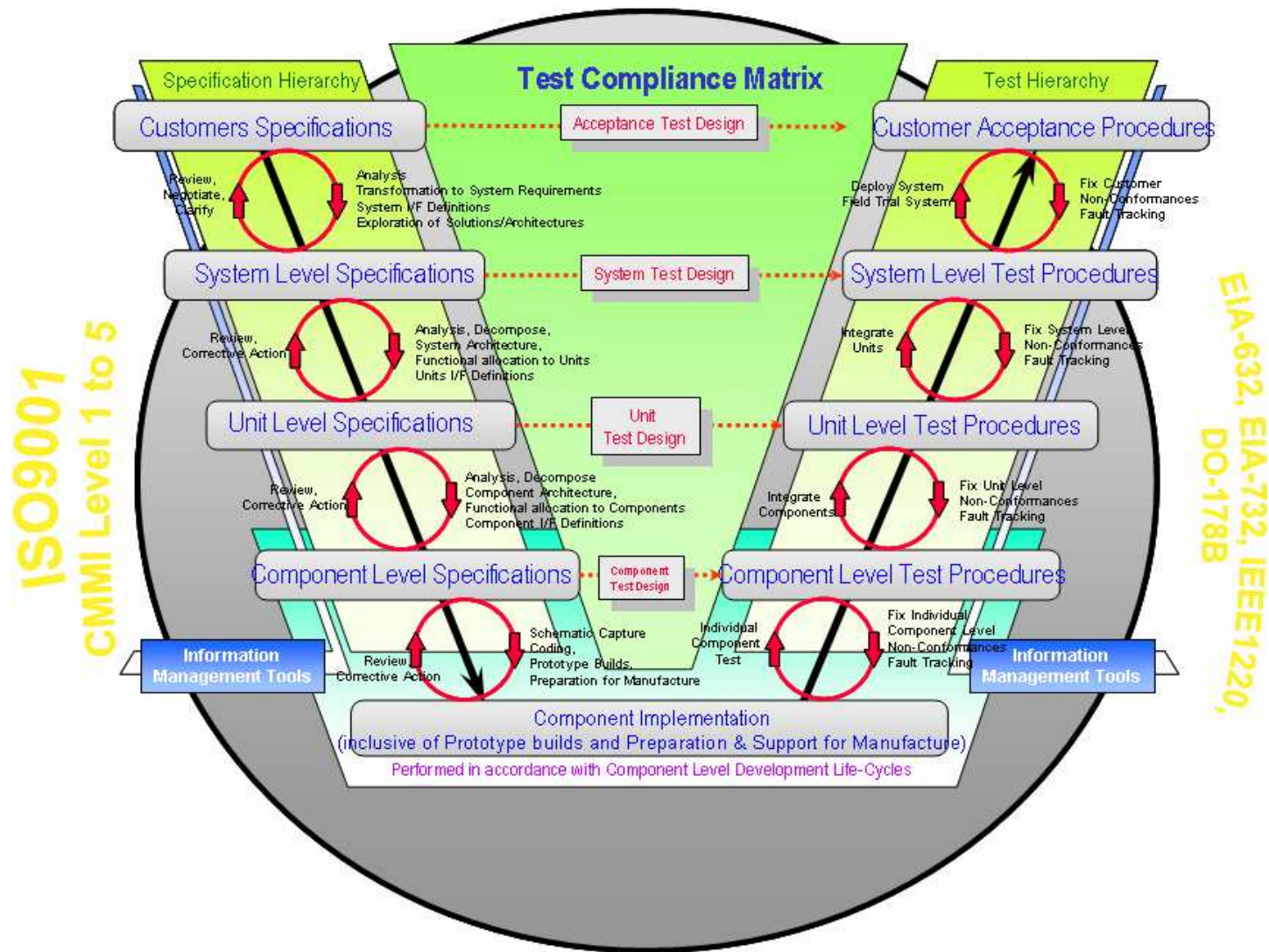


**How it was supported**



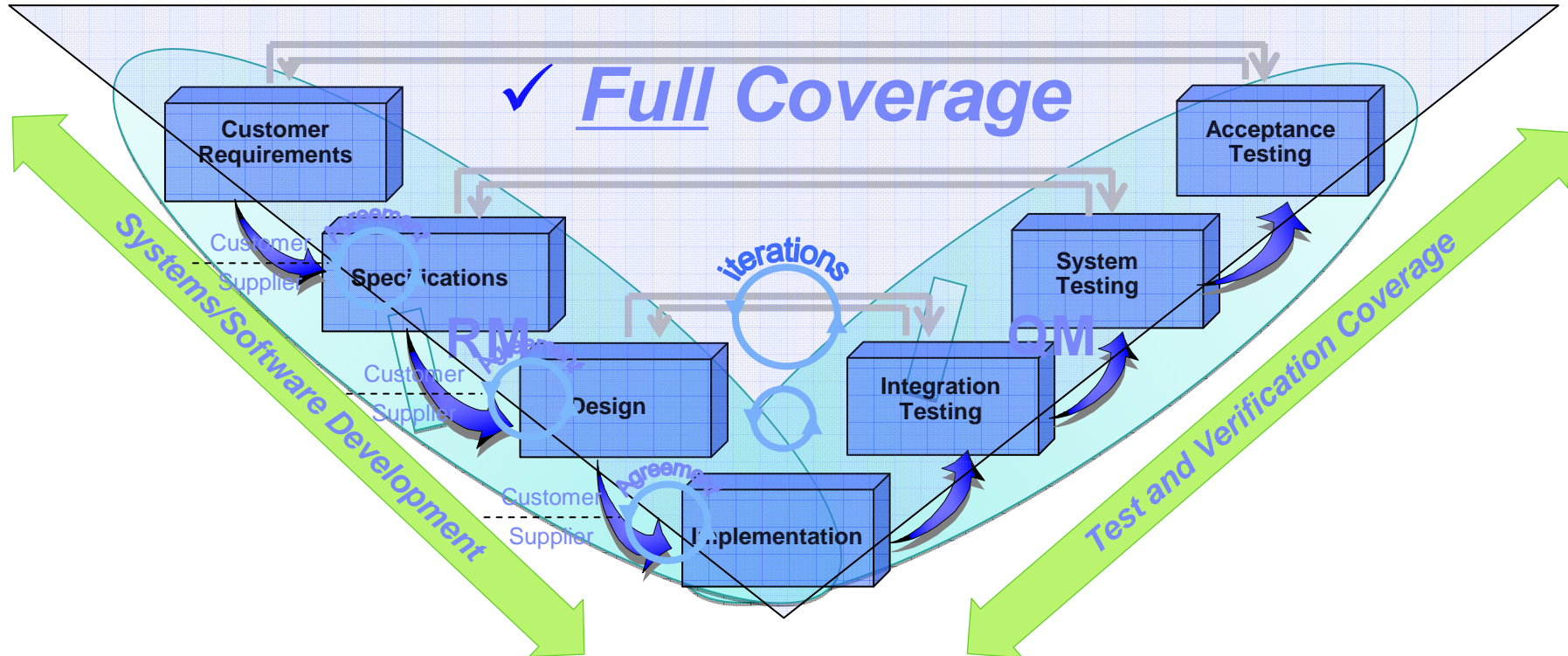
**What the customer really needed**

# IBM Rational Requirement Driven Quality Management Best Practice Process Model



# IBM Offers A Unique Solution

## *That Ensures Entire Lifecycle Collaboration and Traceability*

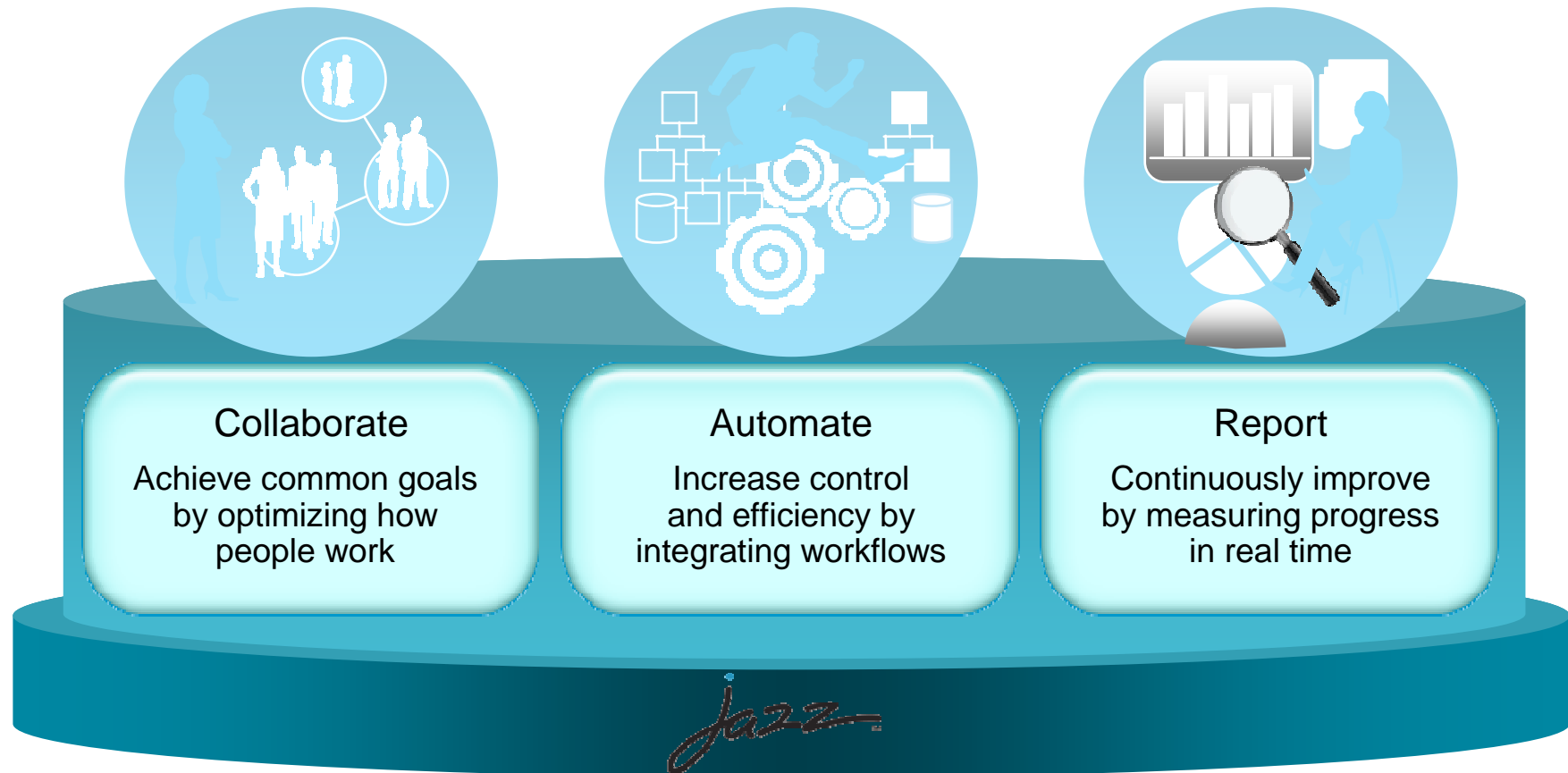


*IBM's full life cycle coverage and traceability addresses*

- ✓ No common set of clear requirements shared by team
  - ✓ Risk of missing critical requirements
- ✓ Limited ability to assess requirements change impact
- ✓ Limited ability to identify most critical requirements to test
  - ✓ Difficult to prove compliance (auditability)

# IBM Rational raises the bar for Quality management

*Predictability, consistency & efficiency in software delivery*



Improve knowledge and practice maturity with an environment that develops individual and team talent.

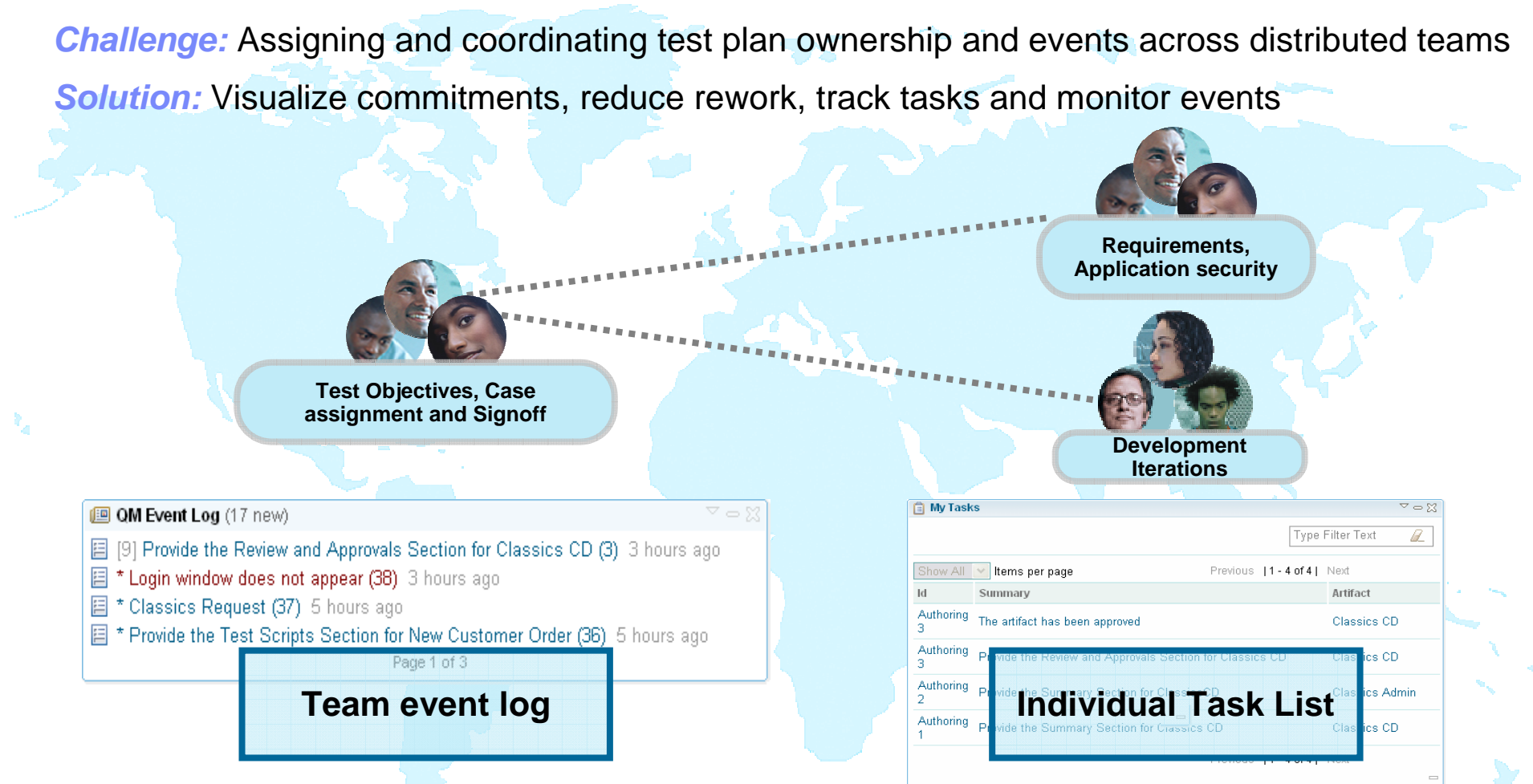


# Up-to-date work progress information

## 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



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

# 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

Project A



Analyst

Requirements Signoff

Project B



Project Manager

Quality Certification

Project C



QA Manager

Ready for Release

## Artifact Reviews and Approvals

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



## Artifact Versioning

Type	Revision	Name	Date	Originator	Detail
	1	Draft version	1 minute ago	ADMIN	



# Requirements driven testing

## *Knowing what to test*

View Requirements <sup>?</sup>

View Builder  
Show Requirements that match the attributes in the View Builder:

Group by: Ungrouped

10 Items per page Previous | 1 - 10 of 14 | Next

<input type="checkbox"/>	Status	ID	Risk	Name	Description	Owner
<input type="checkbox"/>		5	●●○○○	Data entry - change customer details	Confidential information for an existing account sha...	Coral Chen
<input type="checkbox"/>		2	●●○○○	Data entry - customer details	The system shall accurately capture basic custome...	Coral Chen
<input type="checkbox"/>	updated		●●○○○	Process mortgage increase - main path	The system shall process a valid mortgage increase...	Amber Alvarez
<input type="checkbox"/>		7	●●○○○	Forward mortgage to secondary approver	Ownership transfer of a mortgage increase request...	Dusty Dixon
<input type="checkbox"/>		9	●●○○○	View status of mortgage increase request	The system shall promptly and accurately display th...	Fern Farlow
<input type="checkbox"/>		6	○○○○○	Update mortgage application status	The system shall correctly update the status of a m...	Bridget Blue
<input type="checkbox"/>		4	●●○○○	Cancel an application	The system shall reliably cancel and archive a suspen...	Eliot Eggplant
<input type="checkbox"/>		15	●●○○○	Spelling accuracy and professionalism	Basic banking words like "amortization" shall be spelle...	Amber Alvarez
<input type="checkbox"/>		10	●●○○○	Display customer information	The system shall correctly display all customer acco...	Helen Hughes
<input type="checkbox"/>		13	●●○○○	Process mortgage request - nonexistent record	The system must reject an increase request that re...	Amber Alvarez

Previous | 1 - 10 of 14 | Next

- Requirements tracking built into the test management tooling
- Customizable attributes enable you to track what is important to your team
- Real-time impact analysis of requirements changes
- Traceability of test results to user needs

Know you are testing the right things

# Collaborative risk based testing

## *Risk management and prioritization*

The screenshot displays the 'Classics Java Test Plan' interface. It includes a 'Test Cases' table with columns for ID, Risk Assessment, and Suspect. A 'Risk Assessment' panel shows a 'My Risk' section with a 'Rate this' scale from very high to very low, and a 'Community Risk' section with a bar chart showing 'Very low' at 1 (100%) and other categories at 0 (0%). A 'Work Item' panel is also visible on the right.

ID	Risk Assessment	Suspect
12	○○○○○	vsme
15	○○○○○	/
16	○○○○○	S
17	○○○○○	/
18	○○○○○	A
19	○○○○○	S

Very high:	0	(0%)
High:	0	(0%)
Neutral:	0	(0%)
Low:	0	(0%)
Very low:	1	(100%)
average	○○○○○	very low

Functiona...	Theme	Weight	Modified
Functiona...	Functiona...	20	1 minu...
Functiona...	Functiona...	100	1 minu...
Functiona...	Functiona...	100	1 minu...
Functiona...	Functiona...	100	1 minu...
Functiona...	Functiona...	100	1 minu...
Functiona...	Functiona...	100	1 minu...

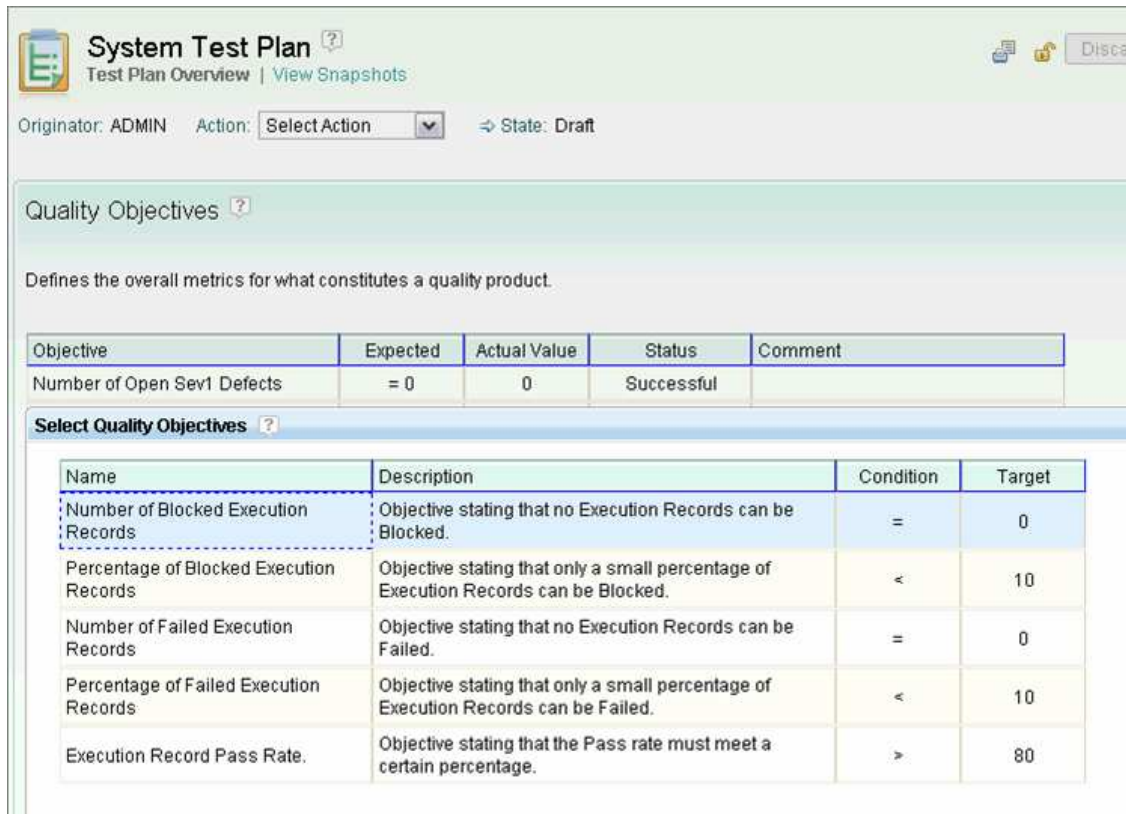
- Risk assessments captured in Test Plan and Test Cases
- Collaboration planning of risk mitigation strategy
- Test Case will contain a risk failure score and a risk priority score
- Documented risk related decisions

Base project decisions on qualitative risk analysis

# Organizational Policies

**Challenge:** Multiple distributed project teams are competing for test lab assets

**Solution:** Plan and track quality management objectives against business objectives



**System Test Plan**  
Test Plan Overview | View Snapshots

Originator: ADMIN Action:  State: Draft

**Quality Objectives**  
Defines the overall metrics for what constitutes a quality product.

Objective	Expected	Actual Value	Status	Comment
Number of Open Sev1 Defects	= 0	0	Successful	

**Select Quality Objectives**

Name	Description	Condition	Target
Number of Blocked Execution Records	Objective stating that no Execution Records can be Blocked.	=	0
Percentage of Blocked Execution Records	Objective stating that only a small percentage of Execution Records can be Blocked.	<	10
Number of Failed Execution Records	Objective stating that no Execution Records can be Failed.	=	0
Percentage of Failed Execution Records	Objective stating that only a small percentage of Execution Records can be Failed.	<	10
Execution Record Pass Rate.	Objective stating that the Pass rate must meet a certain percentage.	>	80

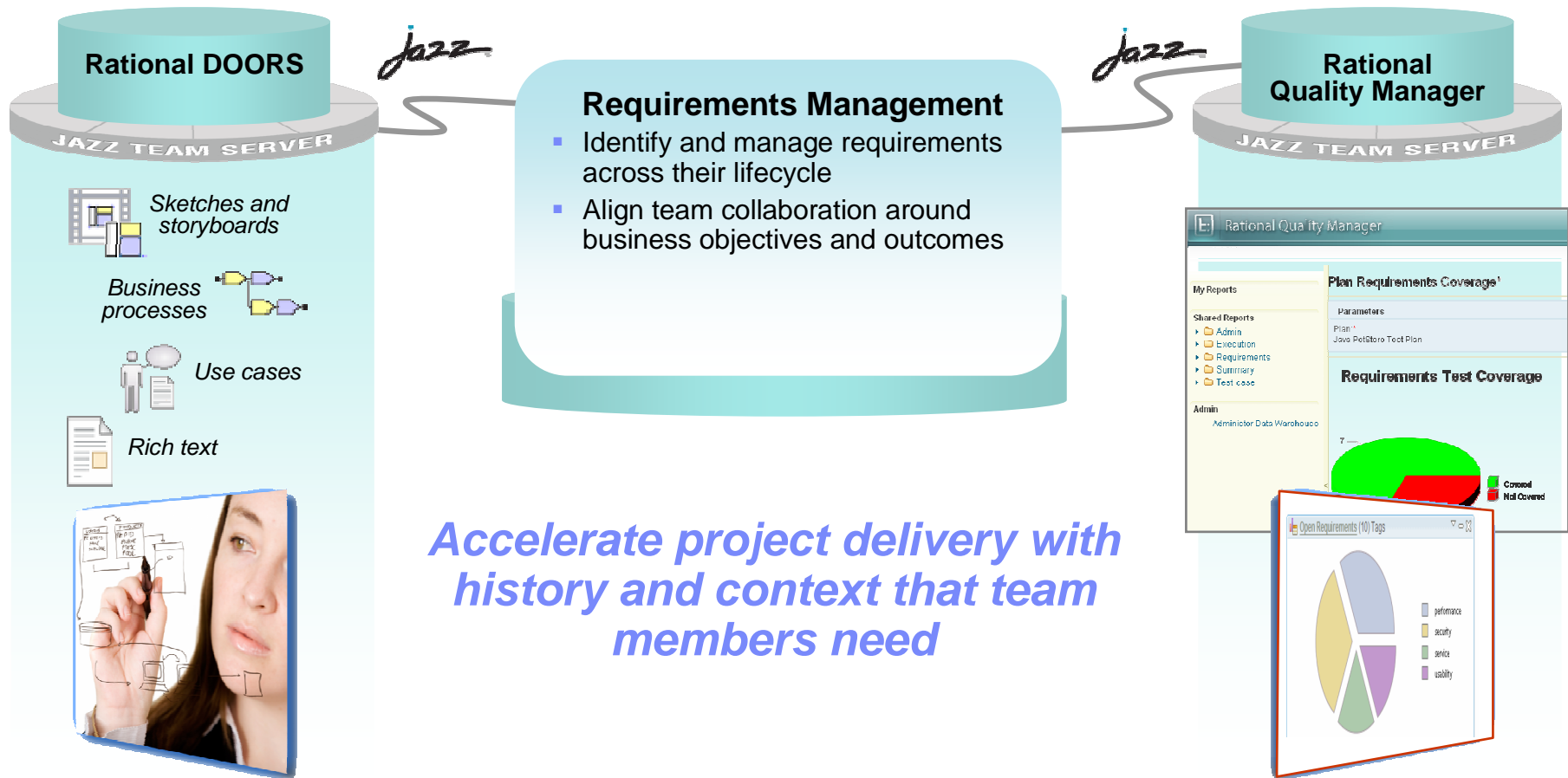
- Assessing status
  - ▶ Standard Objectives
  - ▶ Reuse across Test Plans
  - ▶ All working toward same objectives
  - ▶ Measures against objectives

*Drive continuous and measured improvement*

# Traceable requirements definition and management

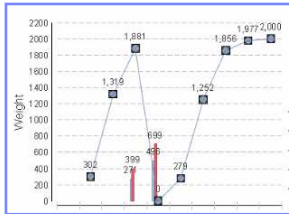
**Challenge:** Managing a shared understanding of requirements, business and delivery risks

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



# Test productivity with constant access to quality metrics

## *Lifecycle quality perspective to proactively manage risk*



*Tracks software delivery through reports*



*Performance risks are always visible and quickly resolved*

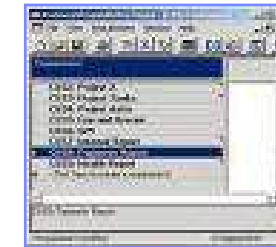


*Security risks are monitored continuously to ensure business continuity*

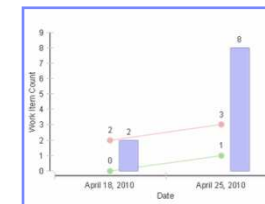
## Quality Manager Dashboard



*Tracks real-time execution status*

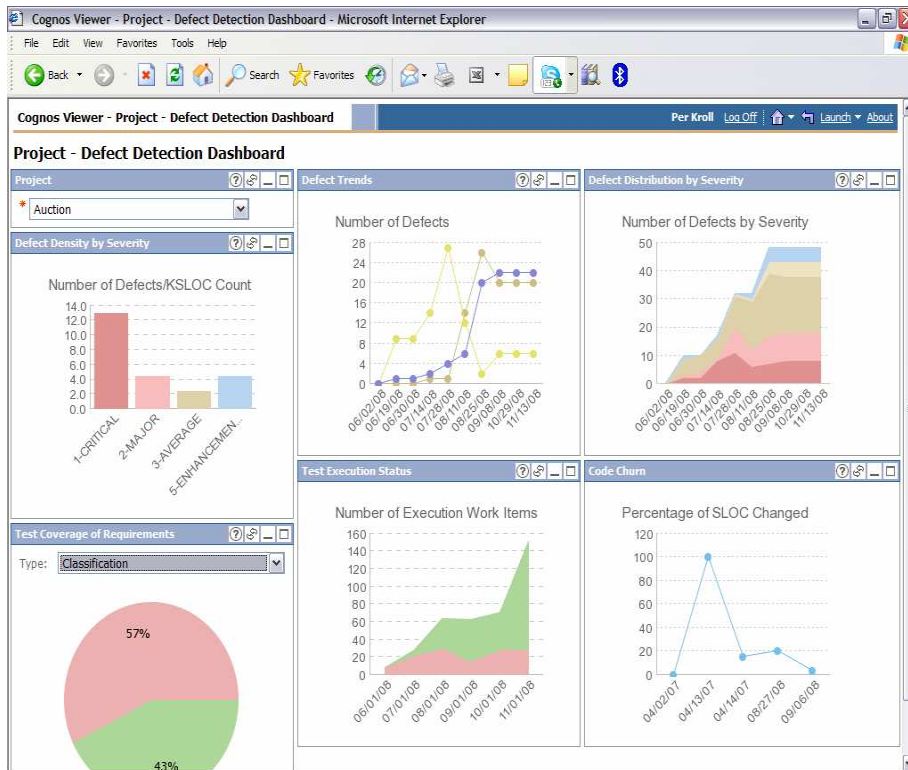


*Testing of requirements can be tracked to assure business needs are realized*



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

# Continuously Improve Your Process

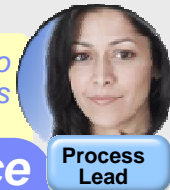


*Make timely and better informed decisions to achieve business objectives*

## Executive Dashboards

*Measure effectiveness of processes and practices to improve organizational outcomes*

## Quality & Performance Dashboards



*Gain insight into projects that span geographical and organizational boundaries*

## Project Level Dashboards

*You cannot Improve what you cannot Measure*



# IBM Rational Quality Manager

## *A central hub for business-driven software quality*

### Mitigate business risk with collaboration

- ✓ Stakeholder and team coordination reduces mistakes
- ✓ Risk identification and management leads to educated prioritization decisions
- ✓ Test traceability linked to business requirements improves customer satisfaction

### Improve operational efficiency with automation

- ✓ Running tests earlier leads to reduced repair costs
- ✓ Running more tests in less time improves coverage
- ✓ Reducing manual labor leads to fewer testing errors
- ✓ Lab configuration automation improves efficiency and asset utilization

### Make confident decisions with effortless reporting

- ✓ Real-time dashboards enable proactive risk management
- ✓ Customizable reports facilitate ongoing process improvement



Quality Assurance is nothing but  
**DO THE THING RIGHT!**

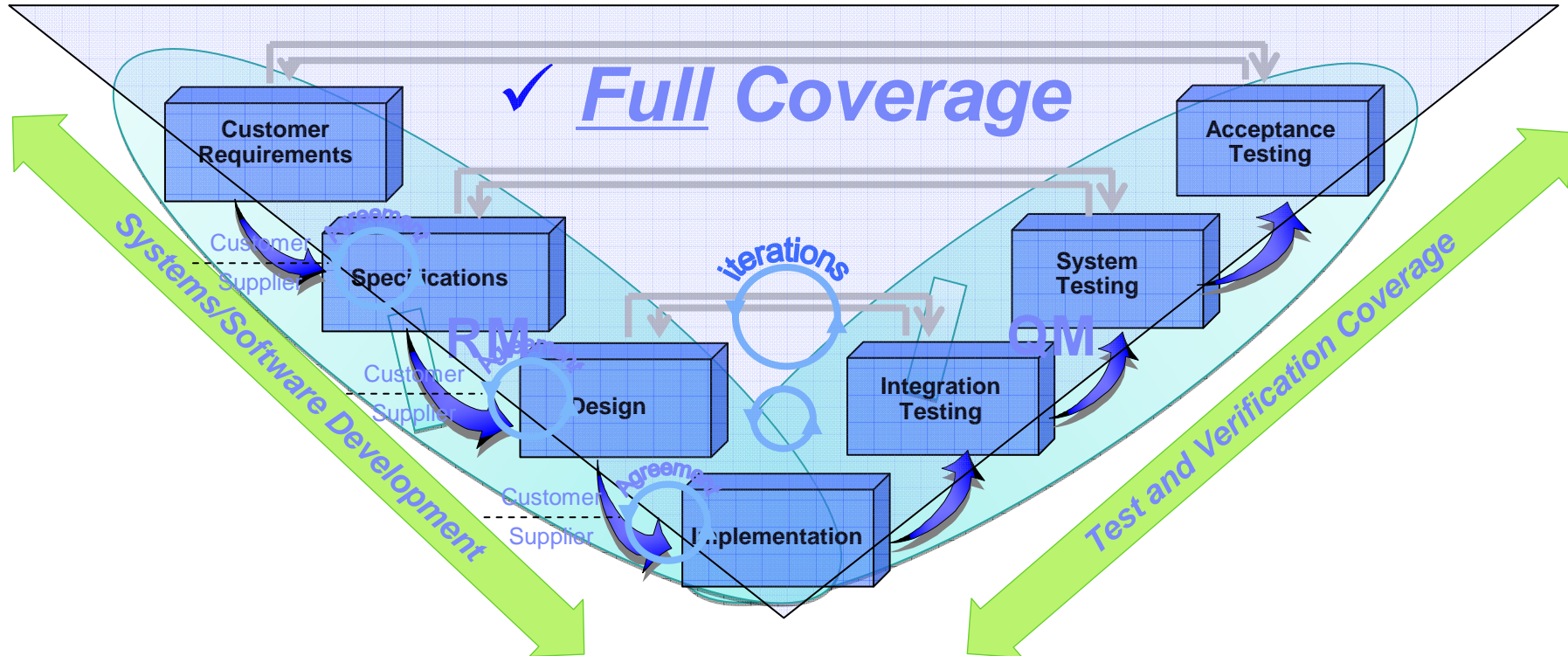
But, how about .....  
**DO THE RIGHT THING?**





# IBM Offers A Unique Solution

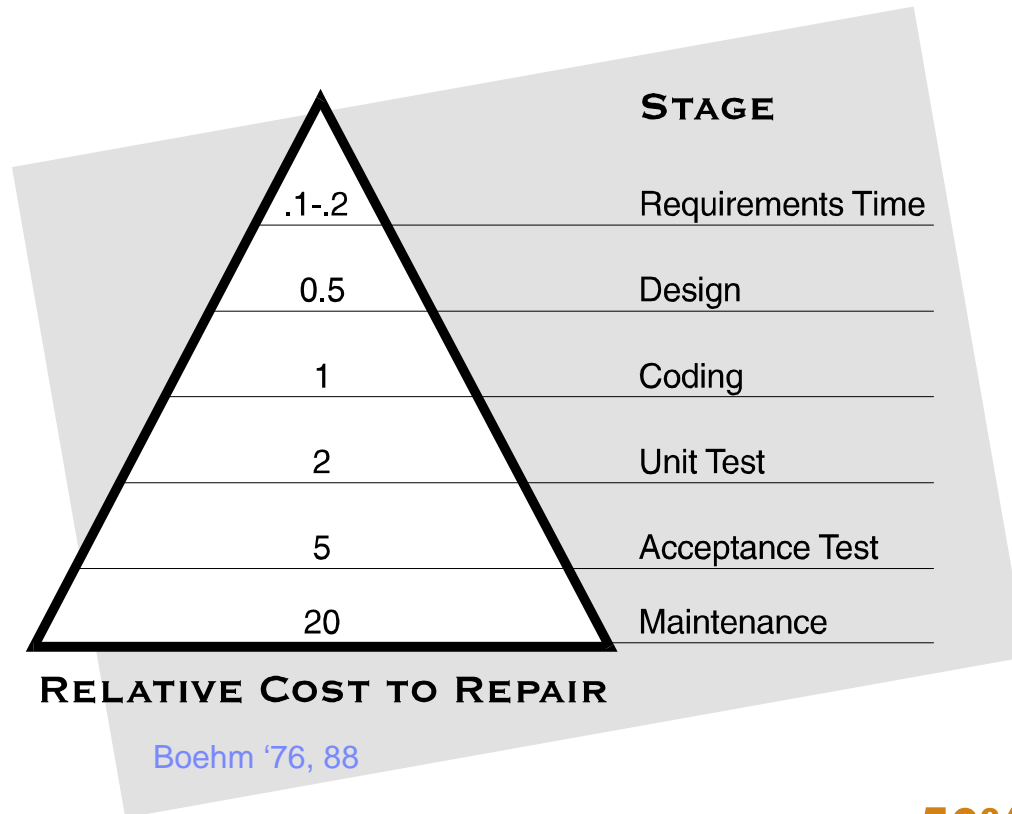
## *That Ensures Entire Lifecycle Collaboration and Traceability*



*IBM's full life cycle coverage and traceability addresses*

- ✓ No common set of clear requirements shared by team
  - ✓ Risk of missing critical requirements
- ✓ Limited ability to assess requirements change impact
- ✓ Limited ability to identify most critical requirements to test
  - ✓ Difficult to prove compliance (auditability)

# The Case for Requirements Management: Quality Improvement and Cost Savings



*As much as a 200:1 cost savings results from finding errors in the requirements stage versus finding errors in the maintenance stage of the software lifecycle.*

**56% of all bugs can be traced to errors made during the requirements stage**

Google™ save money effective requirement practices



# Traceability in DOORS - drag-and-drop linking

'01 - Statement of Need' current 0.3 in /Ticket Machine (Formal module) - DOORS

File Edit View Insert Link Analysis Table Tools User DocExpress TraceLine Analyst Help

View Document All levels

**2 Overall Objectives**

**2.1 Multiple transport-mode capability**  
 The ticket dispensing facility shall be able to handle tickets for all transport services controlled by the authority. Initially this is likely to be limited to rail and bus transport, but the system must be capable of expansion to cover trams, other subway systems and parking tickets.

**2.2 Accessible Payments**  
 The ticket dispensing facility will be the default means by which travellers obtain tickets, therefore it is most important that all ticket types and payment methods can be handled.

**2.3 Improved efficiency / ease of use**  
 It is anticipated that the number of tickets dispensed by automated means will increase significantly year on year, therefore the average time to dispense a ticket should be as fast as existing automated facilities.

**2.4 Remote management**  
 The ticket dispensing facility will support the achievement of maintenance requirements across the network.

Username: Administrator Exclusive edit mode

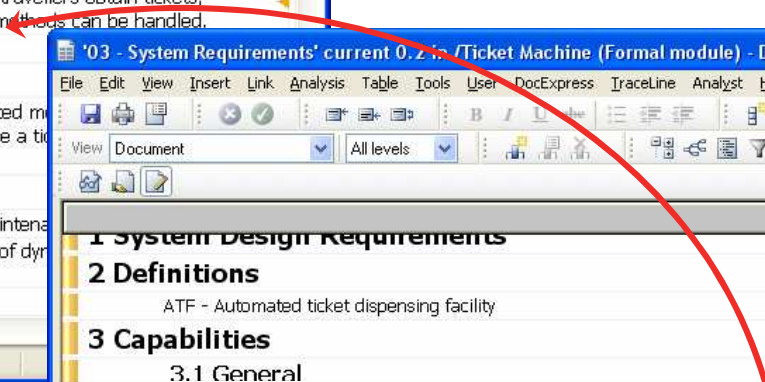
'03 - System Requirements' current 0.2 in /Ticket Machine (Formal module) - DOORS

File Edit View Insert Link Analysis Table Tools User DocExpress TraceLine Analyst Help

View Document All levels

	Last Modified On	Last Modified By
<b>1 System Design Requirements</b>		
<b>2 Definitions</b>	Thursday, 25 January 2007	dctd
ATF - Automated ticket dispensing facility	Thursday, 25 January 2007	dctd
<b>3 Capabilities</b>	Thursday, 25 January 2007	dctd
<b>3.1 General</b>	Thursday, 25 January 2007	dctd
The ATF shall provide a walk-up facility for travellers to buy transportation tickets.	Thursday, 25 January 2007	dctd
The ATF shall have a flexible interface to display information to the user and obtain inputs from the user.	Wednesday, 21 May 2008	Administrator
The ATF shall be capable of dispensing ISF-2 and ISF-4 style ticket	Thursday, 25 January 2007	dctd
<b>3.2 Ticket types</b>	Thursday, 25 January 2007	dctd
<b>3.2.1 Rail tickets</b>	Thursday, 25 January 2007	dctd
The ATF shall dispense rail all tickets	Thursday, 28 June 2007	demo

Username: Administrator Exclusive edit mode



# Traceability view

User Reqts

Technical Reqts

Design

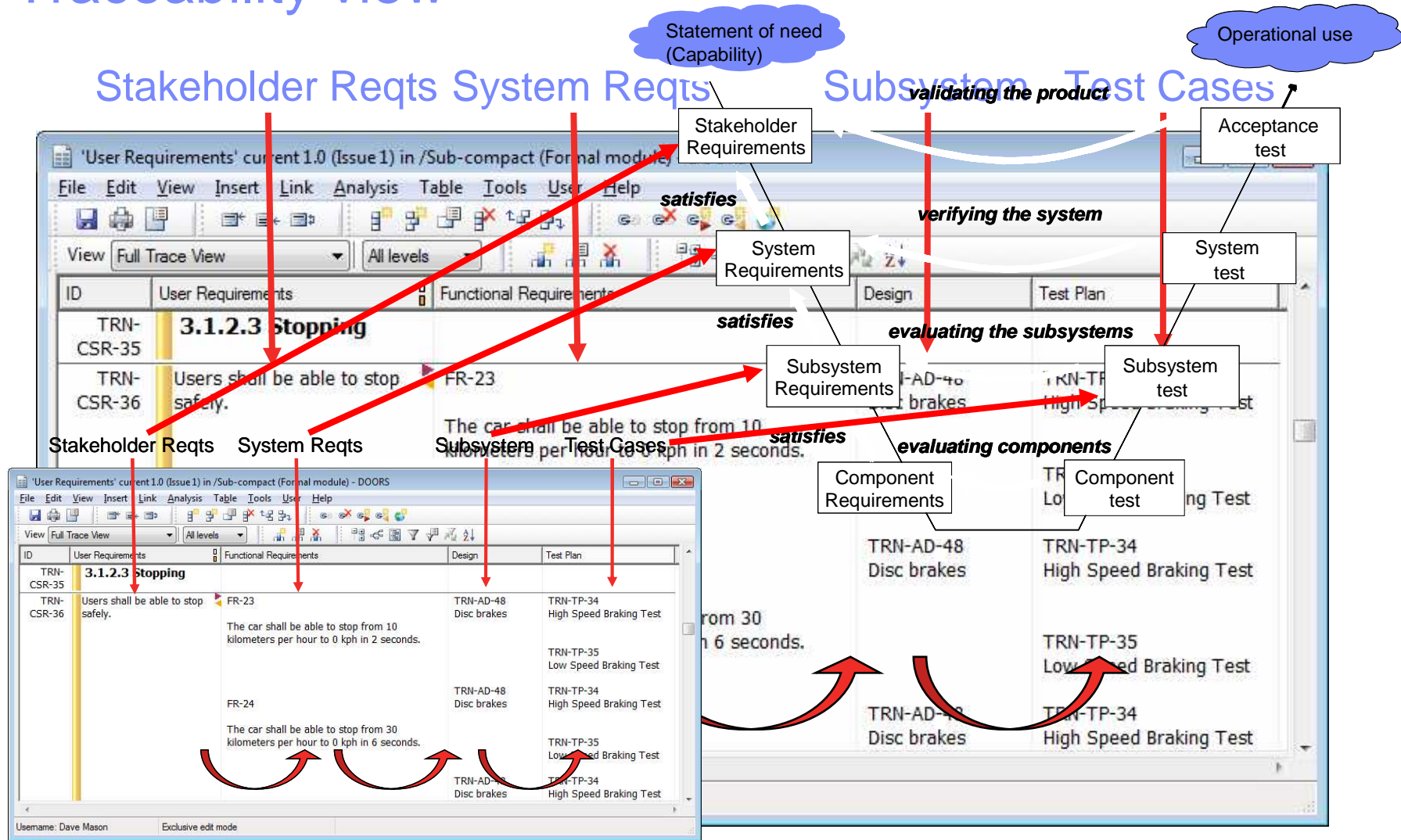
Test Cases

ID	User Requirements	Functional Requirements	Design	Test Plan
TRN-CSR-35	<b>3.1.2.3 Stopping</b>			
TRN-CSR-36	Users shall be able to stop safely.	<p>FR-23</p> <p>The car shall be able to stop from 10 kilometers per hour to 0 kph in 2 seconds.</p> <p>FR-24</p> <p>The car shall be able to stop from 30 kilometers per hour to 0 kph in 6 seconds.</p>	<p>TRN-AD-48</p> <p>Disc brakes</p> <p>TRN-AD-48</p> <p>Disc brakes</p> <p>TRN-AD-48</p> <p>Disc brakes</p>	<p>TRN-TP-34</p> <p>High Speed Braking Test</p> <p>TRN-TP-35</p> <p>Low Speed Braking Test</p> <p>TRN-TP-34</p> <p>High Speed Braking Test</p> <p>TRN-TP-35</p> <p>Low Speed Braking Test</p> <p>TRN-TP-34</p> <p>High Speed Braking Test</p>

*“End-to-end visual validation in a single view”*



# Traceability view



*“End-to-end visual validation in a single view”*



# Multiple Document Views

Simple document view of a database; or more complex for different role

The screenshot shows a software interface with a hierarchical tree view on the left and a table view on the right. The tree view shows a structure of requirements, including sections for Introduction, User types, Target Users, and Requirements. The table view displays requirements for SUV 4x2 with columns for Object Identifier, User requirements, Allocated Budget, Spent, Remaining, and Risk.

Object Identifier	User requirements for SUV 4x2	Allocated Budget	Spent	Remaining	Risk
SOW 37	<b>4.1.4 Fuel economy</b>	146	0	146	
SOW 38	Users shall be able to obtain fuel consumption better than that provided by the 95% of cars built in 1996.	67	0	67	High
SOW 39	Users shall be able to accelerate from 0 to 100 Kilometers per hour in 10 seconds.	79	0	79	Medium
SOW 364	Users shall be able to accelerate from 0 to 100 Kilometers per hour in 8 seconds.	79	0	79	High
SOW 40	<b>4.1.5 Safety</b>	20	0	20	
SOW 41	Users shall be able to travel in safety in accordance with the Road Research Laboratories Safety standards dated 1 January 2005.	0	0	0	Medium
SOW 42	Users shall be able to travel at the same level of safety as provided by the best 10% of cars being developed to be built in 2008.	20	0	20	Medium
SOW 43	<b>4.1.6 Noise levels</b>	95	0	95	
SOW 44	<b>4.1.6.1 Interior</b>	81	0	81	
SOW 45	Users shall be able to hear only a very low level of noise inside the car.	81	0	81	Low
SOW 46	<b>4.1.6.2 Exterior</b>	14	0	14	
SOW 47	Users shall be able to cause only a very low level of external noise with the car.	14	0	14	
SOW 48	<b>4.1.7 Ease of Access</b>	475	0	475	

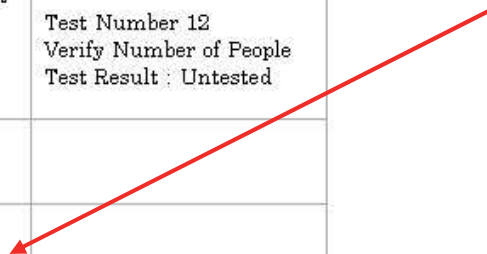
*See multiple requirements logically*

# Traceability verification or “completeness”

Increases customer confidence,  
validates alignment

<b>3 Requirements</b>		
This section contains the user requirements.		
<b>3.1 Capability Requirements</b>		
<b>3.1.1 Carrying Capacity</b>		
<b>3.1.1.1 Number of People</b>		
Four average size adults shall be able to travel in comfort for a period of 3 hours. This level of comfort is defined as being equivalent to the standard of comfort provided by the top 40% of cars produced in 1999.	FR-104 2.14.1.0-1 from Functional Requirements The car shall be able to carry 4 average size adults in average comfort for a period of 3 hours. Last modified 11 February 1997	Test Number 18 Market Research Test Result : Passed  Test Number 12 Verify Number of People Test Result : Untested
The top level of cars are those in the price range \$20,000 to \$40,000 at 1999 prices.		
Five average size adults shall be able to travel in comfort for a period of 3 hours.		
Users shall have easy entry and exit.	FR-121 2.14.7.2.0-1 from Functional Requirements The car shall be able to accommodate the internal lighting system Last modified 11 February 1997	Test Number 6 Verify support for Customers Test Result : Untested

Orphan reports  
& traceability reports  
show “missing” links

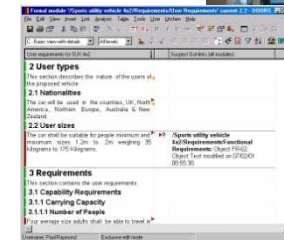


# What are Suspect Links?

*If documents are linked ...*



*... a change by this user here...*



*... shows up as a warning flag to this user here.*





# “How are changes communicated?”

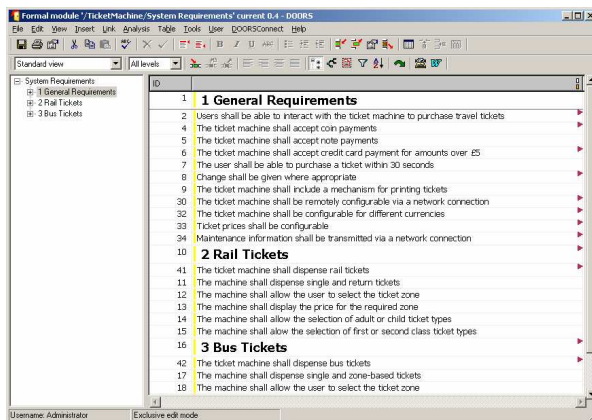
Suspect links are visible directly in the document -  
as indicators or as a full description

The screenshot displays a software interface for editing a document titled "Formal module '/Sports utility vehicle 4x2/Requirements/User Requirements' current 2.1 (1998) - DO...". The document content includes sections for "2 User types", "2.1 Nationalities", "2.2 User sizes", and "3 Target Users". A suspect link is highlighted in the "2.2 User sizes" section, with a red arrow pointing to a context menu. The context menu includes options: Insert, Link, Cut, Copy, Paste, Delete, Properties..., Lock, Unlock, and Clear Suspicion... (highlighted with a red arrow). The status bar at the bottom shows "Username: Paul Raymond" and "Exclusive edit mode".

*Never miss a change again*

# DOORS - Test Integration

- Test against requirements rather than what is built
- Integration with Rational Quality Manager



Rational Quality Manager

ADMIN | Log Out  
Your Trial License expires in 60 days

Home

ADMIN's Dashboard

General Add New Tab

Welcome

Welcome to IBM Rational Quality Manager

IBM Rational Quality Manager is a collaborative, web-based, quality management solution that offers comprehensive test planning and project management for the full software lifecycle.

Announcements

Join us on the [Rational Quality Manager blog](#) where you can have your questions answered and share your thoughts about Rational Quality Manager.

Getting started

Take a few minutes to become familiar with some of the key product features.

- [Product overview](#)
- [Planning the test effort](#)
- [Developing test scripts](#)
- [Running your tests](#)
- [Managing lab machines](#)
- [Working with lab requests](#)
- [Evaluating tests results](#)

Tutorials

My Tasks

Execution Status

Java PetStore Test Plan

Test Plan

TER Count

State

- Blocked
- Failed
- Not Run
- Passed

September 15, 2008 9:59:38 AM

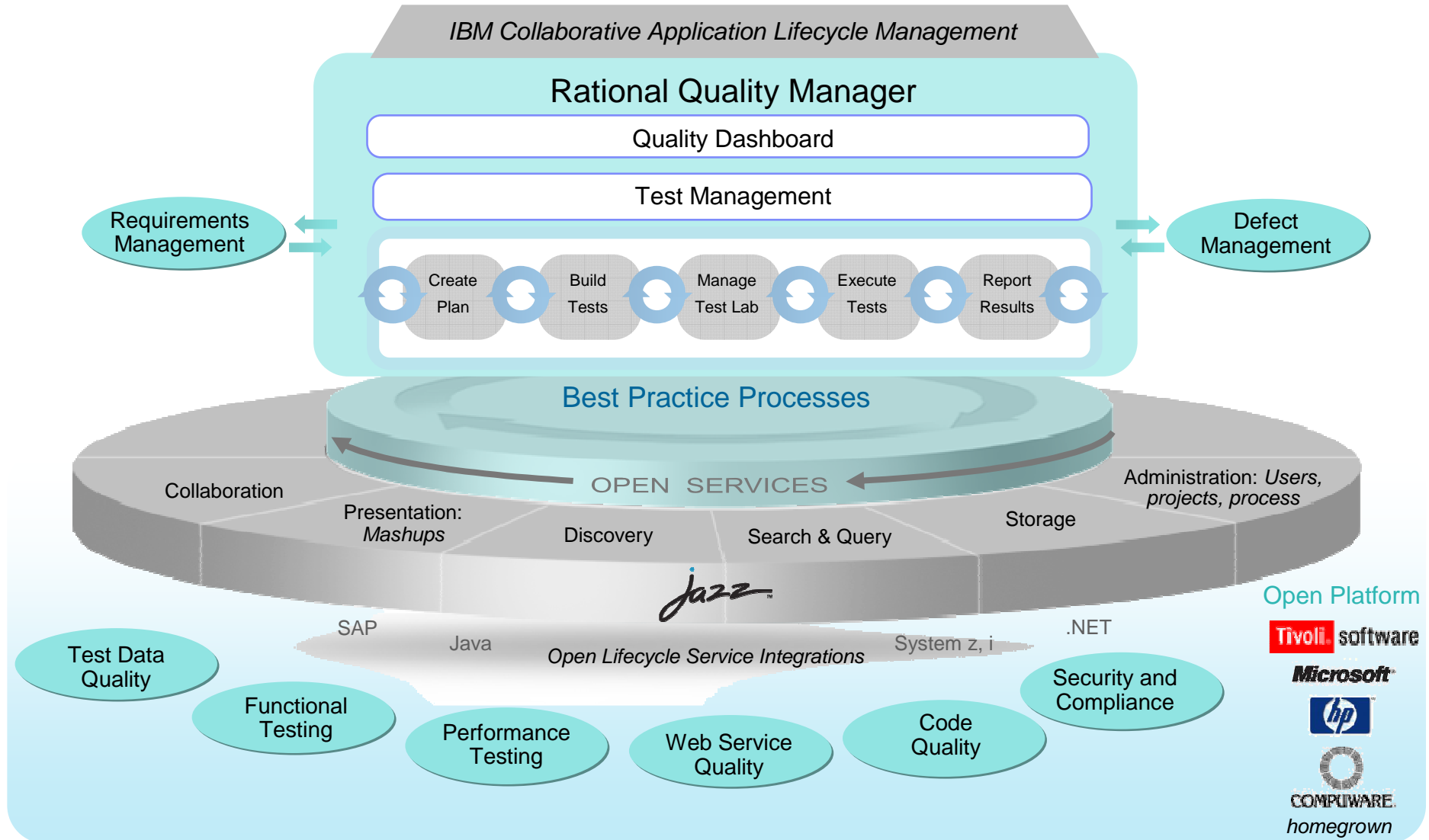
Execution Trend Report

246 357 448 509 543 561 571 575 576

ID	Summary	Artifact	State
1			



# Centralized test management hub allowing full lifecycle support across all types of testing and platforms





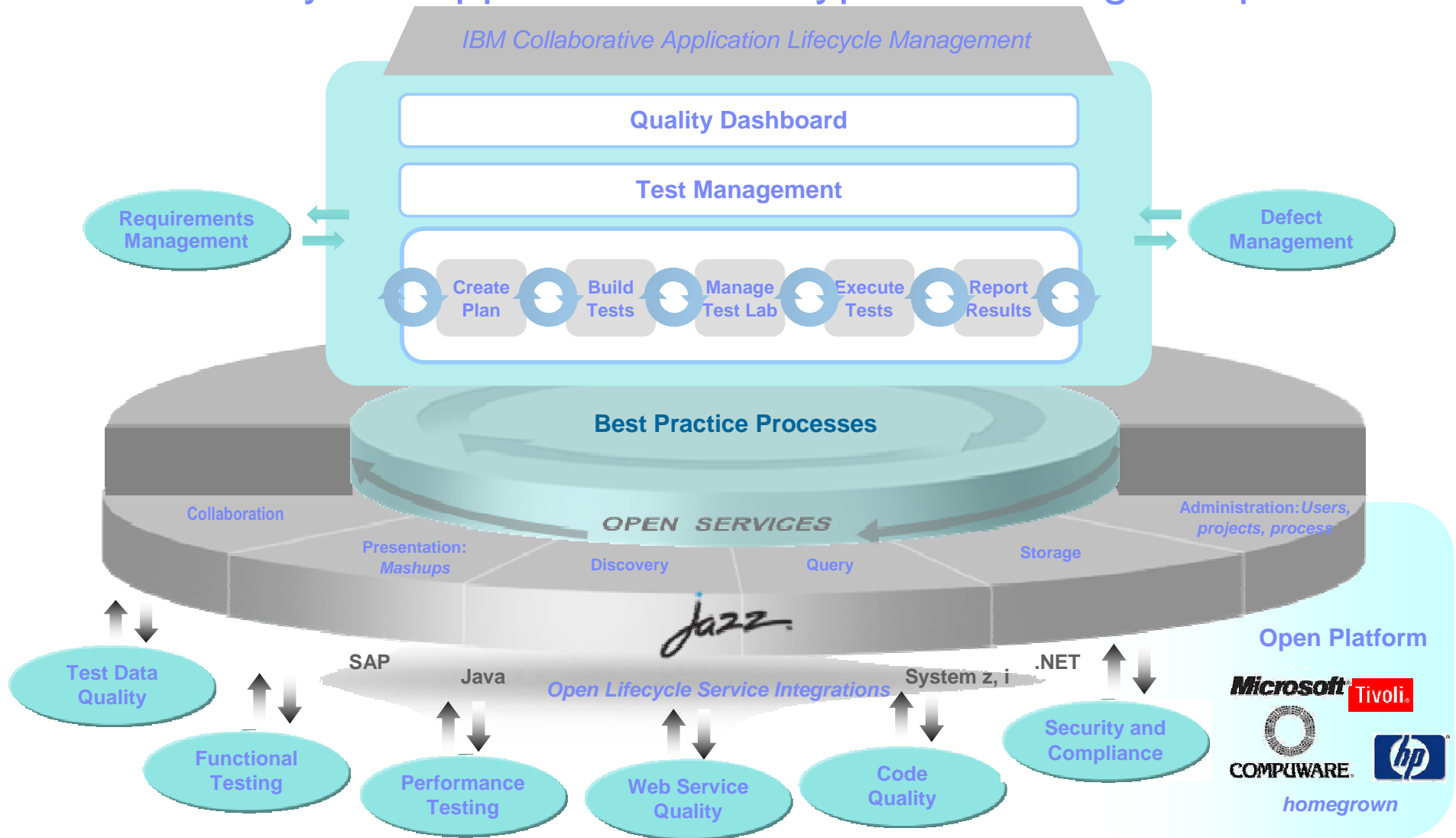
Learn more at:

- [IBM Rational software](#)
- [Rational launch announcements](#)
- [Rational Software Delivery Platform](#)
  - [Accelerate change & delivery](#)
  - [Deliver enduring quality](#)
- [Enable enterprise modernization](#)
- [Ensure Web security & compliance](#)
- [Improve project success](#)
  - [Manage architecture](#)
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# Quality Management offers a centralized test management hub and full lifecycle support across all types of testing and platforms



# Unify the team through real-time, in-context collaboration

*A single, dynamic quality contract provides clear and accountable direction*

- Unify the entire team with a shared view of quality assets
  - ▶ Central location for assets (e.g., business objectives requirements, resources, platform, exit criteria)
- Comprehensive dynamic planning and updates
  - ▶ Integrated process workflow, not artifacts drives team activities, hand-offs, reviews/approvals and sign-offs
- Know what others are doing and what others expect of you
  - ▶ Task management for individuals and team

