

Rational Quality Manager Customization *Lessons learned from a large project*

Ashish K Mathur
Architect, Rational Automated Software Quality
ashishmathur@in.ibm.com

Pramod K Chandoria
Advisory Software Engineer, Rational Quality Manager
pchandor@in.ibm.com

IBM Software

Innovate2011

The Premier Event for Software and Systems Innovation



Aug 9–11 Bangalore, India



Agenda

- RQM customization areas
- Test elements customization
- Work item customization
- Jazz process template
- The Blue Harmony project
- Lesson learned
- Demo
- Q/A

RQM Customization areas

Test Elements

- Manage Sections
- Define Categories
- Setting Execution states
- Visualization of UI
- Manage Risk

Process

- Assign Work
- Review and Approve
- State transition
- Execution block/unblock

Work Items

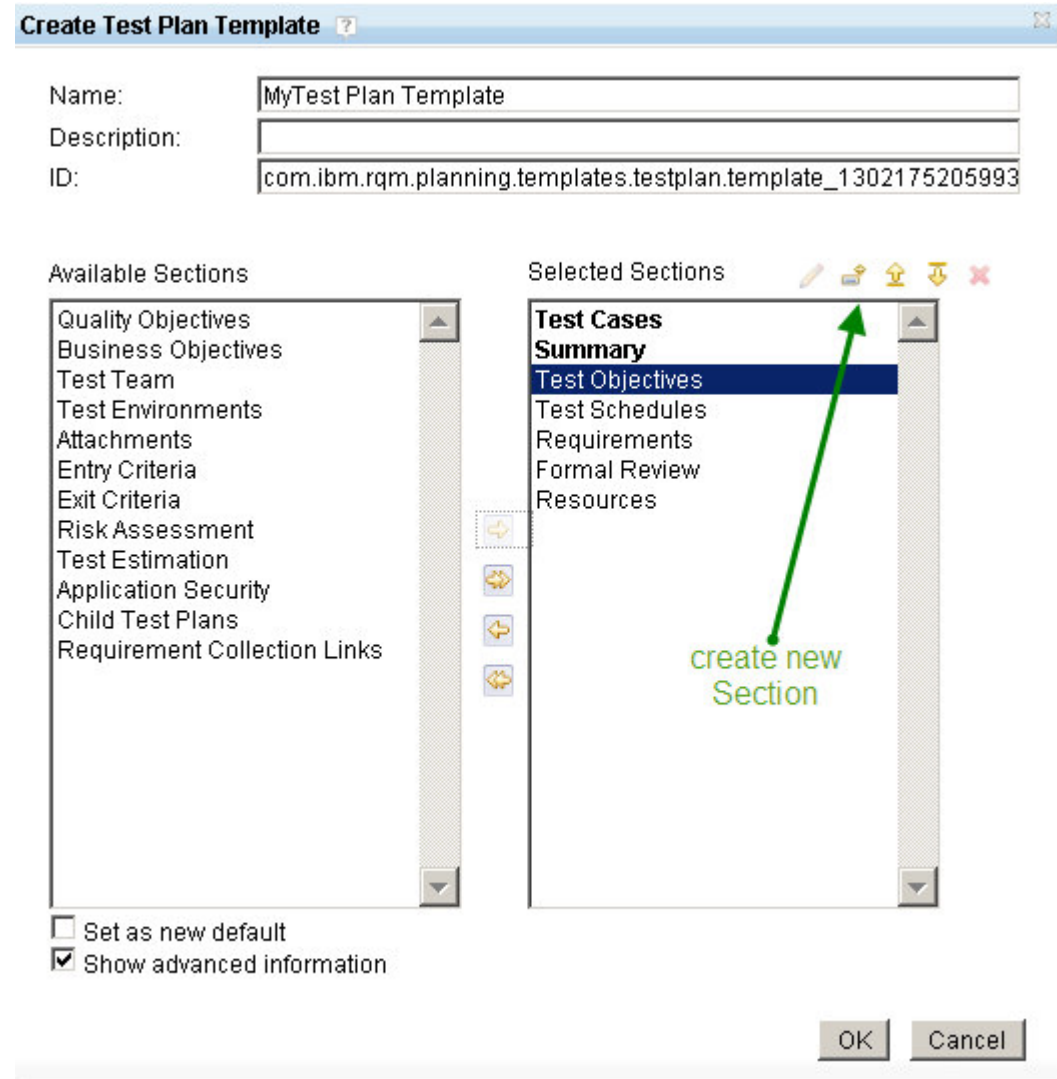
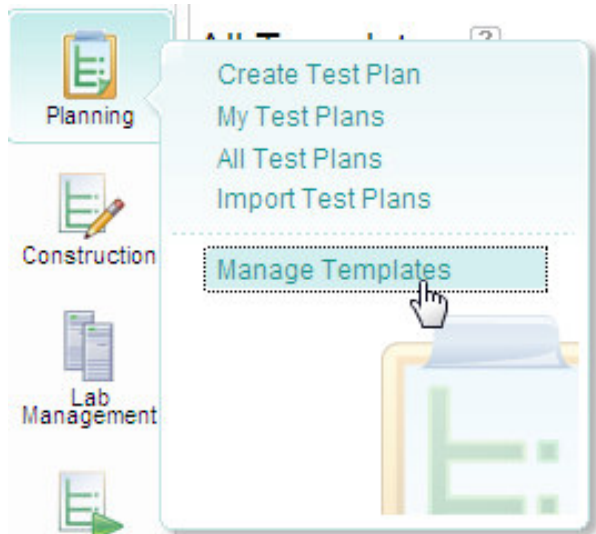
- Work item type
- Attributes
- Workflow
- Presentations
- And more ...

Test Elements - Sections

- The following test objects have sections:
 - ▶ Test Plan
 - ▶ Test Case
 - ▶ Test Suite
- Each section defines what data will be entered for each test object
- You can create new sections
- A template is a collection of sections

The screenshot shows the Rational Quality Manager interface. At the top, there's a navigation bar with 'Dashboards', 'Manage Templates', 'View Test Cases', 'Purchase', and 'Create Test Plan'. The main area is titled '< Enter New Test Plan Name >' and includes fields for 'Originator: ADMIN', 'Action: Select Action', and 'State: Draft'. A 'Template:' dropdown menu is open, showing options like 'Default Test Plan Template' and 'Basic Test Plan Template'. Below this, there's a 'Description:' field and a 'Summary' section with an 'Overview of the test plan.' and 'Categories' section with dropdowns for 'Product', 'Release', and 'Test Phase', all currently set to 'Unassigned'. On the left, a sidebar contains icons for 'Requirements', 'Planning', 'Construction', 'Lab Management', 'Builds', 'Execution', 'Reports', and 'Defects'. A 'Table Of Contents' panel is also visible, listing sections such as 'Summary', 'Business Objectives', 'Test Objectives', 'Formal Review', 'Requirements', 'Risk Assessment', 'Test Schedules', 'Test Estimation', 'Test Environments', 'Test Team', 'Quality Objectives', 'Entry Criteria', 'Exit Criteria', 'Test Cases', 'Resources', and 'Attachments'. A 'Show All Sections' checkbox is at the bottom of this list.

Sections and Templates



Create new template

Create new section

Move up/down

Set default

Categories

- Categories are additional attributes to classify the test object
- Applied to test case and test plan and test suite (in the same way)
- Set by admin (project properties) or by user in the Summary section of the test artifact
- Support for hierarchical categories

Manage Test Plan Categories ?

◀ Previous Next ▶

Categories	+	Release	+
Product	▶		
Release	▶		
Test Phase	▶		

Create Category Value [X]

Value	<input type="text" value="1.0"/>	Owner	<input type="text" value="Bob"/>	
Value	<input type="text" value="1.1"/>	Owner	<input type="text" value="bashansh"/>	✖
Value	<input type="text" value="1.2"/>	Owner	<input type="text" value="Unassigned"/>	✖

+

OK Cancel

Categories	+	Release	+
Product	▶	1.0	
Release	▶	1.1	
Test Phase			

- Edit
- Create Subcategory
- Define as Required
- Define as Multivalued
- Delete

Execution States

- Admin can change the state name (but can't add states)
- Admin can enable/disable state
- User will see only the enabled states

Administration Discard Changes Save

- RequisitePro Host Properties
- Shared Resource Locations
- Report Properties
- Global CPU Limitation
- Artifact State Transition Constraints
- Execution States
- Test Plan Categories
- Test Case Categories
- Related Sites

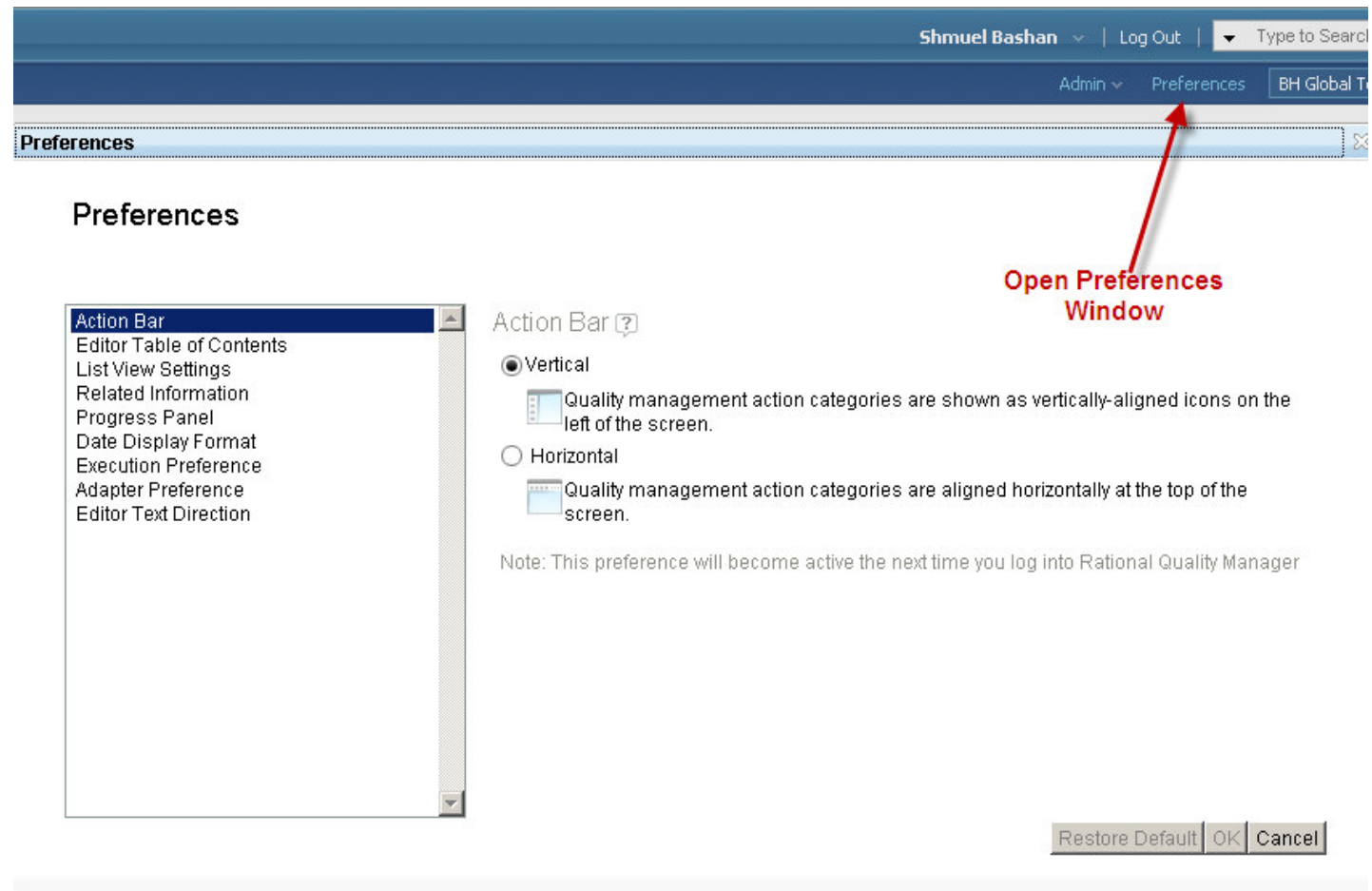
Execution States

Manage Execution States. Note: Changes will be automatically saved. [?](#)

Name	Enabled
<input checked="" type="checkbox"/> Passed & Complete	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Incomplete	<input checked="" type="checkbox"/>
<input type="checkbox"/> Inconclusive	<input checked="" type="checkbox"/>
<input type="checkbox"/> Partially Blocked	<input checked="" type="checkbox"/>
<input type="checkbox"/> Failed	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Error	<input checked="" type="checkbox"/>
<input type="checkbox"/> Blocked	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> PermFailed	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Deferred	<input checked="" type="checkbox"/>

Visualization of UI - Preferences

- Action Bar – Vertical (icons) / Horizontal (menu)
- List View – Table / Tree / Explorer
- More...



Test Element - Risks

- ▶ Administrator can define list of risks
- ▶ Administrator can define risk profiles
- ▶ To each profile add risks and define the importance value
- ▶ These values are used in the 'Risk Assessment' section of test case and test plan

- Artifact Options
- Build Provider
- RequisitePro Host Properties
- Shared Resource Locations
- Report Properties
- Custom Reporting Host Propert
- Global CPU Limitation
- Artifact State Transition Constrai
- Execution States
- Quality Objectives
- Test Plan Categories
- Test Case Categories
- Test Suite Categories
- Lab Resource Properties
- Test Plan's Environment Types
- Execution Preferences
- Manual script dictionary
- Related Sites
- Risk Profiles**
- Risks
- Test Case Preferences

Risk Profiles

Manage risk profiles.

Show All Items per page « Previous | 1 - 3 of 3 | Next » + x

	Artifact Type	Profile Name	Description	Default
<input checked="" type="checkbox"/>	Test Plan	TestPlan predefined risk profile	This is a predefined risk profile for test plan	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Test Case	TestCase predefined risk profile	This is a predefined risk profile for test case	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Requirement	Requirement predefined risk profile	This is a predefined risk profile for requirement	<input checked="" type="checkbox"/>

« Previous | 1 - 3 of 3 | Next »

Risks for 'TestPlan predefined risk profile':

Show All Items per page « Previous | 1 - 3 of 3 | Next » + x

	Risk	Assessment	Importance
<input type="checkbox"/>	Insufficient test resources	Likelihood: Medium Impact: Medium	
<input type="checkbox"/>	Insufficient test configurations	Likelihood: Medium Impact: Medium	
<input type="checkbox"/>	Insufficient static review in design	Likelihood: Medium Impact: Medium	

Process – Assign Work

- To complete a section - Create work item (Task-Quality) and set owner
- To Review - Create work item (Task-Review) and select reviewer
- To Approve - Create work item (Task-Review) and set approver

The screenshot shows the Rational Quality Manager interface for a test case titled 'WDD-WW-FINTS0004'. The 'Requirements' and 'Defects' menu items in the top navigation bar are circled in red. The 'Formal Review' section is active, displaying a table with columns for 'Review Type', 'Name', 'Status', 'Comments', and 'Due Date'. Two red arrows point to the 'Create' button in the 'Work Item' section and the '+' icon in the table header, with text annotations: 'Create work item of type Task-Quality' and 'Create work item of type Task-Review (or Approve)'. The table currently shows 'No items found.'

Process - States in test objects

Test Plan, Test Case, Test Suite and Test Script have the following states:

Draft >> Under Review >> Approved

Purchase full [?]
Test Suite

Originator: ADMIN Owner: Action: ⇒ State: Under Review

Description: < Click here to enter a description >

Summary [?]

Action Reject transitions the record back to state Draft

Process – State transitions

- Enable/Disable predefined states transition constraints

The screenshot shows the 'Administration' page for 'Artifact State Transition Constraints'. The left sidebar lists various properties, with 'Artifact State Transition Constraints' selected. The main content area includes a title 'Administration', a subtitle 'Artifact State Transition Constraints', and a description 'Set artifact state transition constraints'. There are 'Discard Changes' and 'Save' buttons, with a yellow warning box indicating 'Contains Unsaved Changes'. A search filter 'Type Filter Text' is present. Below the filter is a table with 7 rows of constraints and their 'Enabled' status.

Constraint	Enabled
Do not allow saving of an "Approved" or "Retired" artifact	<input checked="" type="checkbox"/>
Only allow transition to Under Review when all associated Task-Quality work items have been ...	<input checked="" type="checkbox"/>
Approve only when all approvals associated with the artifact have been received.	<input checked="" type="checkbox"/>
Approve Test Plans only when all referenced Test Cases are approved.	<input type="checkbox"/>
Approve Test Cases only when all referenced Test Scripts are approved.	<input type="checkbox"/>
Execute approved Test Cases only	<input type="checkbox"/>
Execute approved Test Suites only	<input type="checkbox"/>

Process – Execution Unblock

- Set the unblocking preferences

The screenshot shows the IBM Rational Quality Manager Administration console. The top navigation bar includes tabs for Requirements, Planning, Construction, Lab Management, Builds, Execution, Reports, and Defects. The main content area is titled "Administration" and displays "Execution Preferences" with a help icon. A left-hand navigation pane lists various properties, with "Execution Preferences" selected. The preferences list includes:

- Disable Apply All functionality for Manual test.
- Unblock the Test Execution Record on closing all the associated defects.
- Unblock the Test Execution Record on closing all the associated plan items.
- Unblock the Test Execution Record on availability of a build containing workitem fixes.

At the top right of the Administration section, there are "Discard Changes" and "Save" buttons, with a yellow warning box below them stating "Contains Unsaved Changes". A similar set of buttons and warning box is located at the bottom right of the Execution Preferences section.

Work Items Customization

- How work items are used in RQM
- What can be customized
 - ▶ Types
 - ▶ Attributes (types, validations..)
 - ▶ Workflow (states & actions)
 - ▶ Roles
 - ▶ Behavior
 - ▶ Pick lists
 - ▶ Presentations UI (Editors)
- How it is customized
 - ▶ RTC client
 - ▶ V3.0 – also web client

Work Item types - how work items are used in RQM

- Defects : Independent work item creation or from test execution
- Requirements : Linked to test plan and/or test case
- Task-Quality : assign task (for each section in test artifact)
- Task-Review : assign review task or approve task

Rational Quality Manager | Shmuel Bashan | Log Out

Dashboards | **Requirements** | Planning | Construction | Lab Management | Builds | Execution | Reports | **Defects** | Admin | Pref

Dashboards | View Test Cases | **WDD-WW-FINTS0004**

Manage Sections

Table Of Contents

- Summary
- Test Case Design
- Formal Review**
- Requirements
- Risk Assessment
- Pre-Condition
- Post-Condition
- Expected Results
- Test Scripts
- Test Execution
- Records
- Attachments
- Show All Sections

WDD-WW-FINTS0004 | Test Case Overview | View Snapshots

Originator: BHCQConnector BHCQConnector | Action: Select Action | State: Draft

Description: SAP_Requirement_Id=00000000000000000000000000000000
 SAP_Project_Object_Id=4947E42380A300ABE1008000099A6529
 Z_BLUEH_ERP

Formal Review

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 | 0 - 0 of 0 | Next

<input type="checkbox"/> Review Type	Name	Status	Comments	Due Date
No items found.				

Previous | 0 - 0 of 0 | Next

Note:
 In RQM 3.x
 requirements
 are links to
 RRC

Work Item Attributes

- Customized in the project area process configuration
- Attributes are fields of various types.

Notes:
 Screenshot of
 RTC Eclipse
 Client-
 In V3.x Web
 client
 customization
 is supported.

The screenshot displays the 'Types and Attributes' configuration interface. On the left, a tree view under 'Configuration' shows 'Work Items' and 'Types and Attributes' selected. The main panel is titled 'Types and Attributes' and includes a 'Final' checkbox, a dropdown for 'Plan Editor Preview', and a 'Workflow' dropdown set to 'Defect Workflow'. Below these is an 'Attributes' section with a table of existing attributes and an 'Add...' button. Red arrows point to the 'Bind Workflow' button and the 'Add new attribute' button.

Name	Type	Default Value	Calculated Value	Value Set	Dependenc
Risk	Severity (Ename...				
Archived	Boolean				
Comments	Comments				
Corrected Estimate	Duration				
Created By	Contributor				
Creation Date	Timestamp				
Description	Large HTML				
Due Date	Timestamp				
Estimate	Duration				
Filed Against	Category				

Editor Presentation

- Presentations are forms that presents the attributes and allow user interaction

- Special GUI control for each attribute type
- Tab contains Sections
- Section contains Attributes

The screenshot shows the configuration tool interface. On the left, a tree view under 'Configuration' has 'Editor Presentations' circled in red. The main area, titled 'Editor Presentations', contains a description and a dropdown menu set to 'com.ibm.team.workitem.editor.default'. Below this is the 'Editor Presentation' tree view, which is also circled in red. Red arrows point to 'Editor Header' (labeled 'Tab'), 'Header Section' (labeled 'Section'), and 'Workflow Resolution' (labeled 'Attribute'). The toolbar on the right includes buttons for 'Edit...', 'Add Presentation...', 'Add Section...', 'Add Tab...', 'Duplicate...', 'Remove', 'Move Up', and 'Move Down'. A 'Show IDs' checkbox is also present.

Workflow

Workflow consists of states and actions

The allowed transitions from one state to another are defined in the transition matrix

Workflow is bound to work item type.

The screenshot shows a configuration interface for a workflow. On the left is a navigation tree with categories like Configuration Data, Dashboards, Planning, Work Items, and Team Configuration. The 'Workflows' item under 'Work Items' is selected.

The main configuration area is titled 'Defect Workflow' and includes the following elements:

- Buttons: Add..., Duplicate..., Remove...
- Link: [Check usages of this workflow in the repository](#)
- Workflow Name: Defect Workflow
- Description: This workflow is appropriate for defects.
- Start action: Initialize
- Resolve action: Resolve
- Reopen action: Reopen

The 'Transitions' section contains a matrix defining allowed transitions between states:

From	To	In Progress	New	Reopened	Resolved	Verified
In Progress	<None>	<None>	Stop Working	None	Resolve	None
New	Start Working	<None>	<None>	None	Resolve	None
Reopened	Start Working	None	None	<None>	Resolve	None
Resolved	None	None	None	Reopen	<None>	Verify
Verified	None	None	None	Reopen	Set Resolved	<None>

Behaviors

Process behavior defines preconditions and follow-up actions for individual operations

Precondition example: require fields data before save

- Select Operation
- Select Role
- Add Precondition
- Select Type
- Select Attribute(s)

The screenshot shows the configuration interface for an operation. On the left is a tree view with 'Operation Behavior' selected. The main area shows a table of operations, with 'Save Work Item (server)' selected and circled in red. Below the table, the configuration for this operation is shown, including a checked box for 'Preconditions and follow-up actions are configured for this operation', a 'Name' field with 'Required Properties', and a 'Description' field with the text: 'Work items must be Filed Against a specific category and a Summary must be provided so that the team can quickly evaluate who is responsible for the issue.' Below the description is a table of attributes, with 'Filed Against, Summar' selected and circled in red. The bottom of the interface shows a navigation bar with tabs like 'Overview', 'Links', 'Process Configuration', etc.

Operations	Everyone (...)	Product ...	Scrum M...	Team Me...	Stakehol...
Deploy Report (server)					
Deploy Report Template (server)					
Display Report (server)					
Manage Report Folder (server)					
Source Control					
Deliver (client)					
Deliver (server)					
Deliver Phase 2 (server)					
Save Change Set Links and Comments (server)					
Work Items					
Save Work Item (server)					

The Save Work Item operation is executed whenever a work item is saved in the repository.

Preconditions and follow-up actions are configured for this operation
 Final (ignore customization of this operation in child areas)

Preconditions (12 available):

Add...	Required Properties
Remove	
Up	
Down	

Follow-up actions (0 available):

Name: Required Properties Fail if not installed

Description:
 Work items must be Filed Against a specific category and a Summary must be provided so that the team can quickly evaluate who is responsible for the issue.

Category or Type	Attributes	Edit
com.ibm.team.workitem.workItemType	Filed Against, Summar	Edit
com.ibm.team.workitem.workItemType.task	Filed Against, Summar	

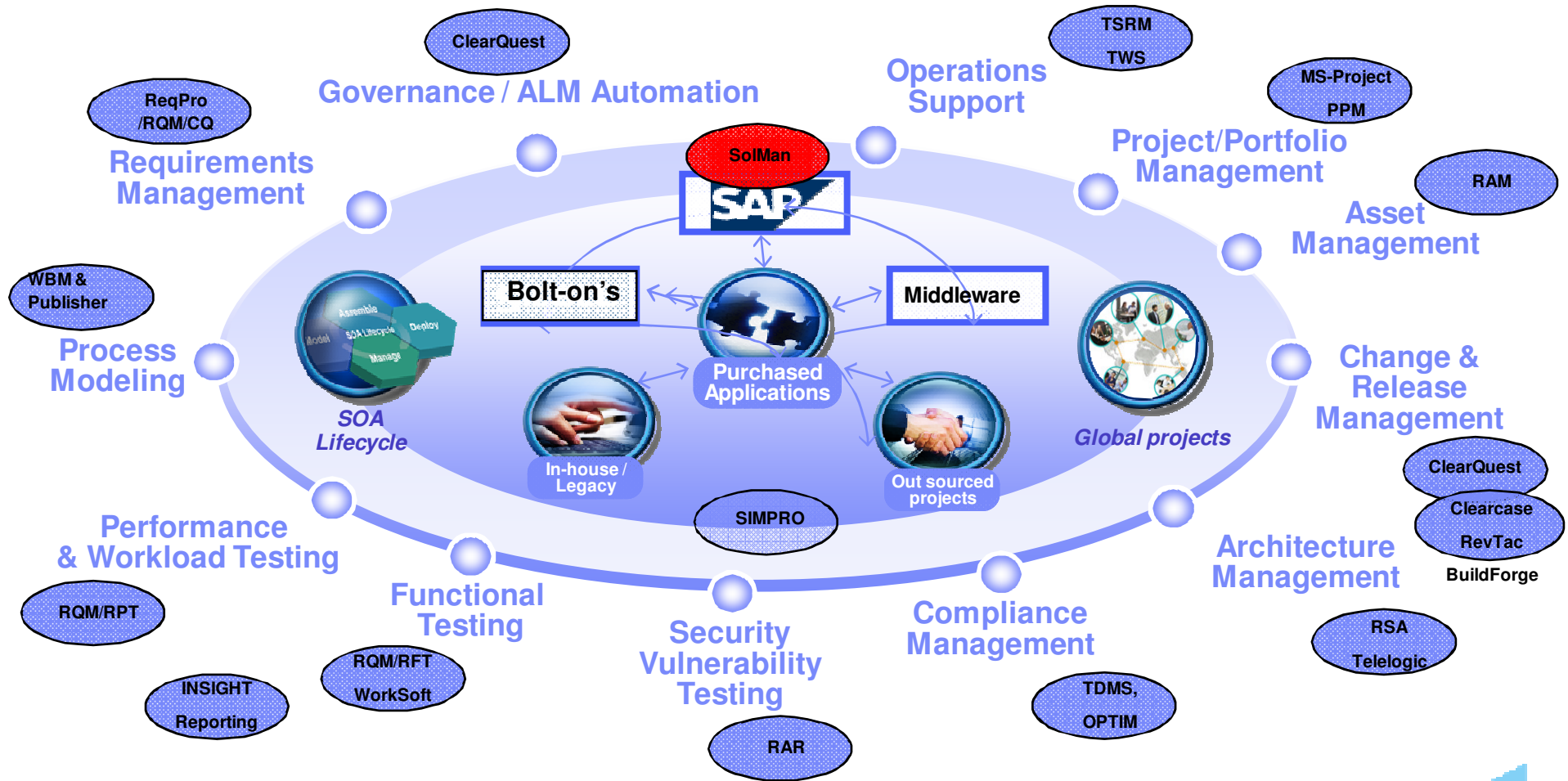
Jazz Process Template

- Process templates provide a starting point and definition for a project area process configuration.
- Process Template can be exported and imported
- The exported process template includes all the customizations
- When creating new project area use the exported process template to include customizations in the new project area



- Description
 - ▶ IBM's major transformation program to radically simplify the design and operation of three Globally Integrated Support Processes - Finance, Opportunity To Order, and Order To Cash.
 - ▶ Mostly SAP.
- Tools used
 - ▶ RQM, CQ, CC, Insight, BF, RFT, RPT
 - ▶ WBM, TSRM
 - ▶ Worksoft Certify, RevTrac
- RQM users
 - ▶ 500 + testers
 - ▶ 2000+ users

Process Driven Strategic Lifecycle Management Approach & Tools



Categories in test case

- Test case and categories are populated automatically by the BH SAP Solution Manager connector

The screenshot shows the SAP Solution Manager interface for a test case. The left sidebar contains navigation icons for Requirements, Planning, Construction, Lab Management, Builds, Execution, Reports, and Defects. The main content area is titled 'AB08 Reverse Line Items' and includes a 'Table Of Contents' sidebar with items like Summary, Test Case Design, Formal Review, etc. The 'Summary' section is highlighted and contains the following details:

- Originator: BHCQConnector BHCQConnector
- Action: Select Action
- State: Approved
- Description: SAP_Requirement_Id=00000000000000000000000000000000
SAP_Project_Object_Id=4861E167AA16013BE1008000099A6529
Z_BLUEH_ERP
- Business Process: 11.50.05 Asset Capitalization
- Business Scenario: 11.50 FIN - Manage Fixed Assets
- Functional Area: OTC
- Organizational Unit: Unassigned
- Process Step: Unassigned
- SolMan Project: ZBLUEH_GT
- SolMan SystemID: BST
- Test Component: Z_BLUEH_ERP
- Test Object: AB08
- Test Phase: REL 0.5 MTP
- Weight: 10 Points

Use of Categories in View Test Suites

- Easily focus search list by selecting Categories

Type Filter Text

◀ Previous | 1,2,3,4,5,6,7... | Next ▶

	1-Release	2-Test Phase	3-Test Sub-Phase	4-Owning Country	5-Domain/Subteam	6-Test Types	7-Execution Status	8-ASCA	Modified
	Any	Any	Any	Any	Any	Any	NOT STA	YES	Any
						<input type="checkbox"/> Focus <input type="checkbox"/> Process String <input checked="" type="checkbox"/> Usability			
ned	Unas...	U...	Unassi...	Unas...	Unassigned			Un...	Dec 22, 2010
ned	Unas...	U...	Unassi...	Unas...	Unassigned	U...	Unassi...	Un...	Jun 24, 2010
ned	Unas...	U...	Unassi...	Unas...	Unassigned	U...	Unassi...	Un...	Nov 2, 2010

Reset Run

Integrations

- Requirements
 - ▶ BH RQM to SAP Solution Manager integration

- Defect Tracking
 - ▶ ClearQuest is used for defect and change request management.
 - ▶ We had to write some code to deal with customization in both sides

- Test Automation
 - ▶ Worksoft Certify
 - ▶ RFT, RQM

- Other (not yet in BH)
 - ▶ RQM to Rational Requirements Composer
 - ▶ RQM to Rational Team Concert

Integration RQM - BH SAP Solution Manager

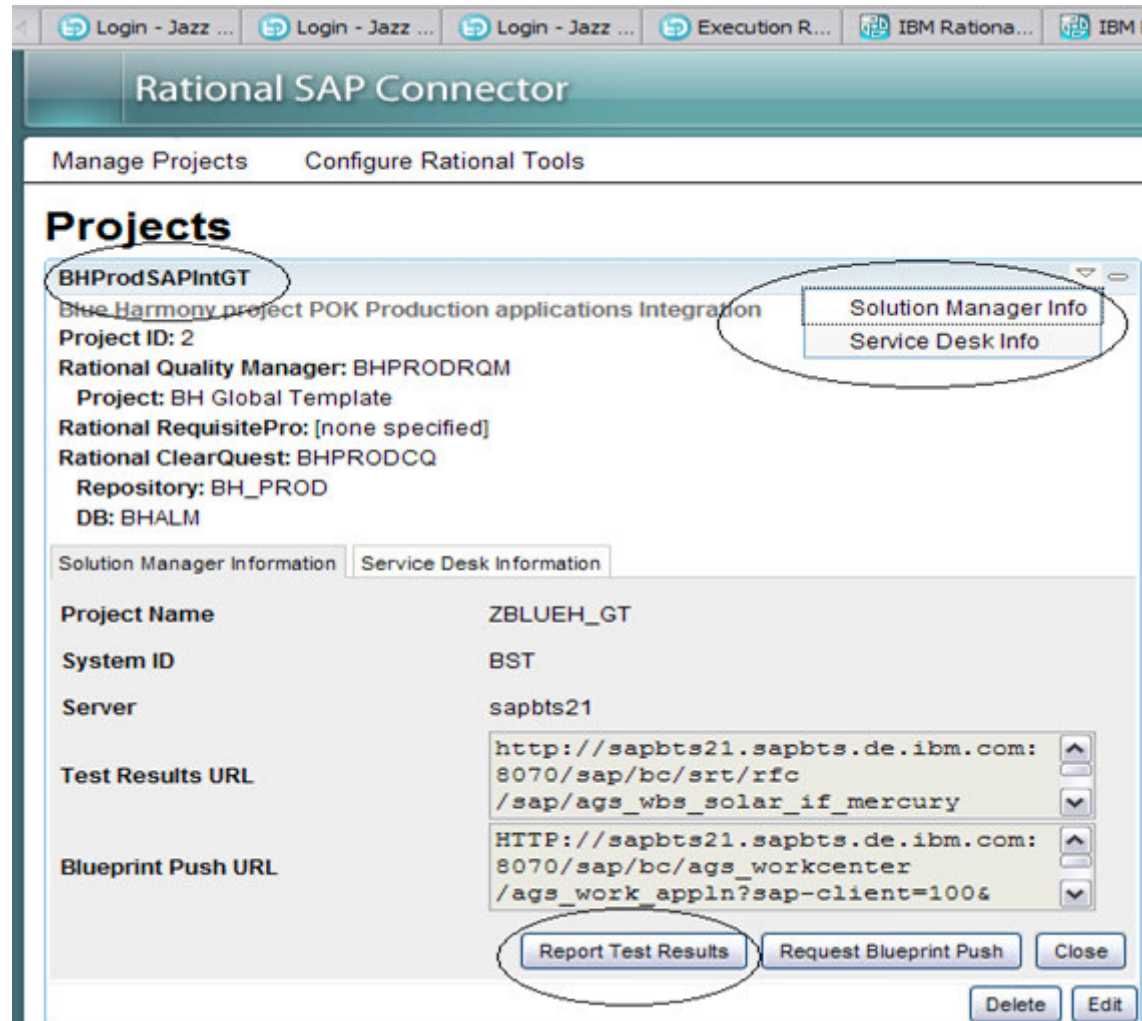
- SAP side
 - ▶ Transfer Requirements and test objects
 - ▶ View test results

The screenshot shows the SAP Solution Manager interface. The menu bar includes Configuration, Edit, Goto, Settings, Environment, System, and Help. The main window title is 'Configuration - SAP Solution Manager'. The 'System Role' is 'Development System' and the 'Business Process' is '11.50.05 Asset Capitalization'. A toolbar contains various icons, and a 'Transfer to RQM' button is visible on the right. A table at the bottom displays transfer data:

Transfer Type	Object Type	Logical Compone...	Object/Documentation Type	Name	Status
Business Requirement	Document		BH Process Definition Document	BH_PDD_FIN_009-04: Asset Ca	GISP Approved (Unl
Test Object	Program NanZ_BLUEH_BI		RDD-FINFA0044 UNPOSTED AS	<Name not found>	
Test Object	Program NanZ_BLUEH_BI		RDD-FINFA0054 ASSET ACQUIS	<Name not found>	
Test Object	Transaction Z_BLUEH_ERP		AB08	Reverse Line Items	

RQM Connector to SAP

- Periodic auto update
- Manual push from both directions
- SAP::Requirements
- RQM::Test Results



BH project - Lesson learnt

- How we use RQM
 - ▶ Test case > Linked to requirements documents imported from SAP Solman
 - ▶ Test plan not used
 - ▶ Test script > one or more for test case
 - ▶ Categories used in Test Case and Test Suite
- Integrations
 - ▶ RQM to SAP Solution Manager
 - ▶ RQM to ClearQuest (CQ heavily customized)
 - ▶ RQM to RFT, RPT & Worksoft Certify (for test automation)
- Suggestions
 - ▶ Identify categories early on – changes in categories cause inaccurate reports/confusion
 - ▶ Use one Test case per requirement to assure full traceability
 - ▶ Reports are very important – identify needs early to be able to customize as needed
 - ▶ We use Insight for reporting
 - ▶ Word/Excel import is useful and save time
 - ▶ RQM Import utility allow importing data from XML file.

Overall Lessons learnt

■ Best Practices

- ▶ Design artifact templates as per project need before creating test artifacts
- ▶ Avoid using child Test plan for better reporting capability
- ▶ Use Test Suite to group related Testcases e.g. Smoke Tests, Security.
- ▶ Avoid clubbing multiple unrelated Test scripts to a single test case
- ▶ Identify categories early on – changes in categories cause inaccurate reports/confusion
- ▶ Use Categories (for Test Plan, Test Case and Test Suite, Execution Records and Test Results) to better organize large volume of data
- ▶ Use hierarchical capabilities of Categories to leverage folder like structure
- ▶ Define Platform to be tested at Test plan level
- ▶ Use one Test case per requirement to assure full Traceability
- ▶ Use Execution Sequence to schedule BVT and automated regression tests
- ▶ Associate Test Results with appropriate Build to help reporting by Build

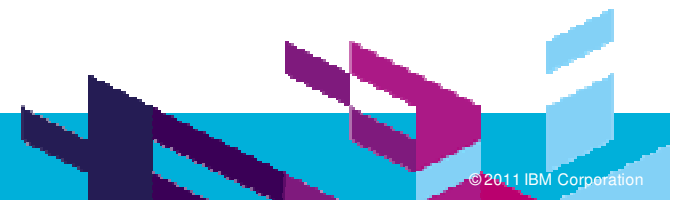
Overall Lessons learnt (Contd.)

- ▶ Plan Test Execution
- ▶ Use custom attributes to capture additional metric
- ▶ Use Testcell to group related machines for Automation Execution
- ▶ Reports are very important – identify needs early to be able to customize as needed
- ▶ Word/Excel import is useful and save time
- ▶ Remember deleting an artifact just hides it, exist in the database

QUESTIONS

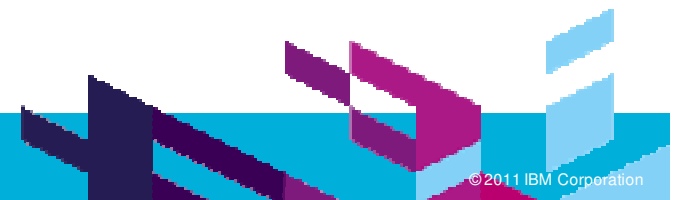


www.ibm.com/software/rational





www.ibm.com/software/rational



Remember

- Customizing categories improves:
 - ▶ Deriving quality metrics
 - ▶ Identifying the test objects

- You can control and improve your test process with customization

- Work item customization allows you to have:
 - ▶ Data that is more relevant to your business
 - ▶ Workflow that meets your process
 - ▶ Presentation that improves user satisfaction



www.ibm.com/software/rational

© Copyright IBM Corporation 2011. All rights reserved. The information contained in these materials is provided for informational purposes only, and is provided AS IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, these materials. Nothing contained in these materials is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software. References in these materials to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates. Product release dates and/or capabilities referenced in these materials may change at any time at IBM's sole discretion based on market opportunities or other factors, and are not intended to be a commitment to future product or feature availability in any way. IBM, the IBM logo, Rational, the Rational logo, Telelogic, the Telelogic logo, and other IBM products and services are trademarks of the International Business Machines Corporation, in the United States, other countries or both. Other company, product, or service names may be trademarks or service marks of others.