Tools for Requirement, Test, and Defect Management

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Director at Large, PMI Syracuse
Principal Project Manager, National Grid
Agenda

• Why Use Tools?
• Definitions
• Tool Capabilities
• Requirements Management Tools
• Test Management Tools
• Defect Management Tools
Why Use Tools?

- Requirements Document
- Test Plans
- Requirements Traceability Matrix
- Defect Log

- Controls on content are very loose
- Only one person can make changes at a time
- Difficult for others to contribute – very manual
- Difficult to Audit
- Static Reporting
- Static References To Requirements, Test Cases, Defects, Other Artifacts
• Requirements Management Plan
  – PMBOK 5.1.3.2
  – Describes how requirements will be analyzed, documented, and managed
  – Includes requirements prioritization
• Quality Management Plan
  – PMBOK 8.1
  – The process of identifying quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with relevant quality requirements and/or standards.
• Defect
  – PMBOK Glossary p 536.
  – An imperfection or deficiency in a project component where that component does not meet its requirements or specifications and needs to be either repaired or replaced.
Definitions

- According to Wikipedia:
  - Requirements Management
    - *The process of documenting, analyzing, tracing, prioritizing and agreeing on requirements and then controlling change and communicating to relevant stakeholders.*
  - Test Management
    - *The activity of managing the computer software testing process*
      - This includes test plan creation and management, tracking and reporting on test execution and completion progress.
  - Defect Management
    - *The process of defect identification, documentation, management, tracking and reporting*
Tool Capabilities

- Requirements Management
  - Capture requirements, artifacts, and information related to artifacts
  - Process to review and approve requirements
  - Ability to add, change, and delete requirements

- Test Management
  - Capture test plans and scripts
  - Ability to change them
  - Ability to review and approve them
  - Associate test cases/components to requirements

- Defect Management
  - Capture defects during testing
  - Associate defects to test cases/components
  - Track defects through lifecycle to closure
Interactions

- Show traceability of requirements to testing
- Show which requirements are blocked from validation by defects
- Show which test cases need to be re-executed if a requirement changes
Tools

• Rational
  – Doors Next Generation (DNG, formerly Requirements Composer – RRC)
  – Team Concert (RTC)
  – Quality Manager (RQM)
  – Together form the Collaborative Lifecycle Management Suite (CLM)
• Microsoft
  – Visual Studio Team Services (VSTS)
Requirement States
(In DNG)

- Not Started
- In Progress
- Approved
- Blocked/Deferred
- Failed/Passed
The DMS web pages should render and system transactions should perform at standard internet speed that is acceptable to the end-user.
**New User Story**

**4.1.7 ID3 Gas Day Window Messaging**

- **State:** New
- **Area:** Mantey Playground
- **Reason:** New
- **Iteration:** Mantey Playground\Phase1

**Classification**
- **Value area:** Business

**Acceptance Criteria**

Ensure that the Over / Under Confirmations message is sent to the correct email addresses
Ensure that the Over / Under Confirmation message identifies that the confirmation was made from the ID3 window or was a Late Confirmation

**Discussion**
### Requirements (VSTS)

#### Stories

**Type**: User Story

<table>
<thead>
<tr>
<th>Order</th>
<th>Work Item Type</th>
<th>Title</th>
<th>State</th>
<th>Story...</th>
<th>Value Area</th>
<th>Iteration Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User Story</td>
<td>The slide must be waxed covered.</td>
<td></td>
<td></td>
<td></td>
<td>Mantey Playground</td>
</tr>
<tr>
<td>2</td>
<td>User Story</td>
<td>Monkey bars must withstand 200 lbs.</td>
<td>Active</td>
<td>Architectural</td>
<td></td>
<td>Mantey Playground</td>
</tr>
<tr>
<td>3</td>
<td>User Story</td>
<td>The paint must be green.</td>
<td>New</td>
<td>Business</td>
<td></td>
<td>Mantey Playground</td>
</tr>
<tr>
<td>4</td>
<td>User Story</td>
<td>The playground must have a rubber surface.</td>
<td>New</td>
<td>Business</td>
<td></td>
<td>Mantey Playground, Phase1</td>
</tr>
<tr>
<td>5</td>
<td>User Story</td>
<td>The screws must be fine threaded.</td>
<td>New</td>
<td>Business</td>
<td></td>
<td>Mantey Playground</td>
</tr>
<tr>
<td>6</td>
<td>User Story</td>
<td>The playground must have rain drainage.</td>
<td>New</td>
<td>Business</td>
<td></td>
<td>Mantey Playground, Phase1</td>
</tr>
<tr>
<td>7</td>
<td>User Story</td>
<td>Grass around the playground must be green.</td>
<td>New</td>
<td>Business</td>
<td></td>
<td>Mantey Playground</td>
</tr>
<tr>
<td>8</td>
<td>User Story</td>
<td>4.1.7 ID3 Gas Day Window Messaging</td>
<td>New</td>
<td>Business</td>
<td></td>
<td>Mantey Playground, Phase1</td>
</tr>
</tbody>
</table>

Test Mgmt Tools (RQM)

- Test Case
  - Test Script
  - Test Execution Record
  - Test Result
Test Case States (RQM)

- Not Started
- In Progress
- Hold
- Blocked/Deferred
- Failed/Passed
Test Case (RQM)

**Test Case Details**

- **Test Case ID**: B4.1.1_Upstate NY_BackHaul_TimelyNom_1
- **State**: Unassigned
- **Originator**: Sivakumar TN
- **Owner**: Sivakumar TN
- **Description**: To verify whether the End Time for Timely Nomination Cycle has been modified to reflect the new End Time and ensure all Nomination quantities flow to the Eve cycle on the End of Timely Nomination Cycle.

**Test Scripts**

Automated or manual test scripts that are associated with this test case. Scripts can be reused.

- **Group By**: Ungrouped
- **ID**: 11634, B4.1.1_Upstate NY_BackHaul_TimelyNom_1
Test Case (VSTS)
# Test Case (VSTS)

## Test suite: John's Test Plan (Suite ID: 33)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Order</th>
<th>ID</th>
<th>Title</th>
<th>Configuration</th>
<th>Tester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passed</td>
<td>1</td>
<td>34</td>
<td>Validate the Name Field can store valid names</td>
<td>Windows...</td>
<td>John Kast...</td>
</tr>
<tr>
<td>Failed</td>
<td>2</td>
<td>35</td>
<td>Validate Phone field can store a valid phone number</td>
<td>Windows...</td>
<td>John Kast...</td>
</tr>
<tr>
<td>Passed</td>
<td>3</td>
<td>36</td>
<td>Validate the Address field will store a valid address</td>
<td>Windows...</td>
<td>John Kast...</td>
</tr>
<tr>
<td>Active</td>
<td>4</td>
<td>37</td>
<td>Validate the City field will store a valid City name</td>
<td>Windows...</td>
<td>John Kast...</td>
</tr>
<tr>
<td>Active</td>
<td>5</td>
<td>38</td>
<td>Validate the State Field will store a two character State abbreviation</td>
<td>Windows...</td>
<td>John Kast...</td>
</tr>
<tr>
<td>Active</td>
<td>6</td>
<td>39</td>
<td>Validate the Zip Code field will store a valid Zip Code</td>
<td>Windows...</td>
<td>John Kast...</td>
</tr>
</tbody>
</table>
## Test Case (VSTS)

![Test Case (VSTS) screenshot](image)

### Recent Test Runs

<table>
<thead>
<tr>
<th>State</th>
<th>Run Id</th>
<th>Title</th>
<th>Completed Date</th>
<th>Build Number</th>
<th>Failed</th>
<th>Pass Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed</td>
<td>4</td>
<td>John's Test Plan (Manual)</td>
<td>2/28/2017 9:19:18 PM</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Completed</td>
<td>3</td>
<td>John's Test Plan (Manual)</td>
<td>2/28/2017 9:18:16 PM</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Needs investigat...</td>
<td>2</td>
<td>John's Test Plan (Manual)</td>
<td>2/28/2017 9:17:47 PM</td>
<td>1</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>
Test Case (VSTS)

35 Validate Phone field can store a valid phone number

Steps

1. Click on the Phone Number field.
   Expected result: The cursor should appear in the Area Code section of the Phone Number field.

2. Enter the phone number "3154432798".
   Expected result: '315' should appear in the area code section. '443' should appear in the first section of phone number and "2798" should appear in the second section. There should be no errors.

3. Click on the Phone Number Field again.
   Expected result: The cursor should appear in the Area Code section of the Phone Number field.

Parameter values

Development

- Add link
  Development hasn't started on this item.
  Create a new branch

Related Work

- Add link
  There are no links in this group.

Status

- Priority: 2
- Automation status: Not Automated
Test Execution (RQM)
Test Execution – Cont. (RQM)
Test Result (RQM)

14510: B4.1.1_Upstate NY_STANDBY_TimelyNom_1

State: %qm.workflow.state.draft
Action: Change State

Originator: Sivakumar TN
Owner: Sivakumar TN
Tested By: Sivakumar TN

Actual Result: Passed
Host Name: Local Computer

Test Plan: 98: System and Integration Testing
Iteration: 9393: B4.1.1_Upstate NY_STANDBY_TimelyNom_1
Test Case: 11635: B4.1.1_Upstate NY_STANDBY_TimelyNom_1
Test Script: 4552: B4.1.1_Upstate NY_STANDBY_TimelyNom_1
Test Case Execution Record: Unassigned
Test Data: Build: Unassigned
Weight: 1

Start Time: Feb 15, 2016, 5:58:37 AM
End Time: Feb 15, 2016, 5:59:45 AM
Total Run Time: 1 min 9 sec
Test Result (VSTS)

37*: Validate the City field will store a valid City name.

1. Click the Add User button
2. Click in the City field
3. Enter "Syracuse"
## Test Result - Cont. (RQM)

### Result Details

#### Summary Report

<table>
<thead>
<tr>
<th>Step</th>
<th>Type</th>
<th>Result</th>
<th>Description</th>
<th>Expected Results</th>
<th>Actual Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✓</td>
<td>Pass</td>
<td>1) Set the system time to 7.55 - Business Day prior to the Gas Day and Log into the application as Marketer defined in the setup and access the screen via the path below: <strong>Upstate NY - FNF Nomination Maintenance</strong></td>
<td>Screen should be accessible.</td>
<td>(1)</td>
</tr>
<tr>
<td>2</td>
<td>✓</td>
<td>Pass</td>
<td>2) Select the Gas Date and click on the 'Plus' sign at the bottom to add a new nomination</td>
<td>A new row to add nominations with available selections will be displayed.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>✓</td>
<td>Pass</td>
<td>3) From the file sent to EBB by TSA, get the list of Customers eligible to make stand by nominations which include marketer identifier, customer acct #, customer name, billing pool (East or West) and the maximum daily stand by nomination volume make the nominations based on the file.</td>
<td>The Nomination should be saved and displayed on the screen.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>✓</td>
<td>Pass</td>
<td>4) Verify whether change has been made so that Standby nominations must be entered by 8am on the prior business day where as current procedure requires marketers to enter nominations by 8am on the prior gas day (As per the updated procedure, nominations for Monday - Gas Day should be done by Friday 8 AM).</td>
<td>Stand By nominations should be done by 8 AM on the prior business day.</td>
<td></td>
</tr>
</tbody>
</table>
Dashboard (RQM)
Test Execution Report (RQM)

Execution Status using TER Count - ID3

Test plan: System and Integration - ID3 Narrowcast Testing

- Passed: 33
- Error: 0
- Incomplete: 0
- Inconclusive: 0
- Partially Blocked: 0
- Failed: 0
- Blocked: 0
- Permanently Failed: 26
- Deferred: 0
- Paused: 0
- In Progress: 0
- Not Run: 0

Report Generated: Feb 3, 2017 12:26:05 PM
Test Execution Report by Owner/Tester (RQM)
## INVP 4244 – EBB Gas Trading Day Changes

### SIT Testing

<table>
<thead>
<tr>
<th>Test Case Status</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Started</td>
<td>512</td>
<td>76.1%</td>
</tr>
<tr>
<td>In Progress</td>
<td>31</td>
<td>4.6%</td>
</tr>
<tr>
<td>Blocked</td>
<td>2</td>
<td>0.3%</td>
</tr>
<tr>
<td>Deferred</td>
<td>30</td>
<td>4.5%</td>
</tr>
<tr>
<td>Failed</td>
<td>6</td>
<td>0.9%</td>
</tr>
<tr>
<td>Passed</td>
<td>92</td>
<td>13.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>673</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Based on data in RQM

<table>
<thead>
<tr>
<th></th>
<th>Tested</th>
<th>Passed</th>
<th>Percentage Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Cases</td>
<td>98</td>
<td>92</td>
<td>93.9%</td>
</tr>
</tbody>
</table>
## Defect Work Item (RTC)

### Defect 149969

**Summary:** GSC: Microstrategy Nomination Comparison Report

**W.I. Type:** Defect

**Progress:** Estimated:

**Found In:** User Acceptance Testing

**Submission Date:** Mar 10, 2016, 9:49:56 AM

**Submitted By:** Adam Ostasz

**Project Area:** National Grid

**Team Area:** INVP4244 EBB Gas Trading Day Changes

**Severity:** 3 - Medium

**Phase Detected:** Testing

**Activity Found:** User Acceptance Test

**Filed Against:** ADKS/Network Strategy/INVP4

**Tags:**

**Assigned To:** Sivaram Kanda

**Priority:** Medium

**Planned For:** INVP4244 EBB Gas Trading Day

**Planned Start Date (Manual):** None

**Other Information:**

The Nomination Comparison report is missing nominations from the front end of the EBB. Comments 5 copied here: "As per discussion with Sivaram, this is not a valid defect and hence rejecting the defect. The functionality is working as expected."

### Steps to Reproduce

**Steps to Reproduce:**

#### Discussion

**Comments:**

1. Adam Ostasz  Mar 10, 2016 9:49 AM

   Added: attachment 25617 (NominationComparisonReport.jpg)

2. DEEPAK T. NAJKAR  Mar 15, 2016 1:50 AM

   Dipak changed "planned for". It was discussed in the UAT checkpoint meeting on 14-Mar-16, Adam & Sivaram agreed to close this defect. Hence requesting both of them to mark it as closed. If necessary, please provide the attachments screenshot.
Defect Work Item (RTC)

3. Adam Ostasz  Mar 15, 2016 7:59 AM

This defect can be closed


This was explained by Sivaram - and solution was acceptable to the end user, hence closing it. But Requesting Sivaram - to provide - what solution he has provided (please add in the comment section)

5. Ravi Kumar Naravarajula  Mar 15, 2016 8:42 AM

As per discussion with Sivaram, this is not a valid defect and hence rejecting the defect. The functionality is working as expected.

6. Ravi Kumar Naravarajula  Mar 15, 2016 9:08 AM

This defect is closed as per confirmation given by Adam.
Defect Work Item – Analysis (RTC)

Defect 149969

Summary: * GSO: Microstrategy Nomination Comparison Report

Details

- Process Area: Not Assessed
- Phase Injected: Testing
- Defect Class: Test case Implementation Error
- Process Root Cause: Other
- Work Product Root Cause: Test

Elaboration

Impact Assessment: *

Invalid defect and functionality is working as expected.

Proposed Workaround:

Planned Action:
Defect Work Item – Links (RTC)

Defect 149969

Summary: GSD: Microstrategy Nomination Comparison Report

Closed

Attachments

Add File: Choose Files No file chosen


Links

Add: Blocks Test Execution

Blocks Test Execution

5349: B4.2.1_Colonial_FNF_ID3Late_UnderNomination_Mail
Defect Work Item (VSTS)

**Bug 40**

40  Problem clearing out phone number

- **State**: New
- **Reason**: Build Failure
- **Area**: Mantey Playground
- **Iteration**: Mantey Playground\Phase1

**Repro Steps**

4. **Failed**  Number field.  Press the "Backspace" key until all the numbers disappear.
   
   Expected Result
   There should be no numbers visible in the Phone Number field.
   
   Comments: I was able to clear out the base 7 digit phone number but not the area code section of the phone number.

5. **None**  Enter "12345678901".

**System Info**

The test was performed on V3.2b1 of the application.

**Planning**

- **Story Points**
- **Priority**: 2
- **Severity**: 3 - Medium
- **Activity**:  
- **Testing**

**Effort (Hours)**

- **Original Estimate**
- **Remaining**
Defect Work Item (VSTS)

40  Problem clearing out phone number

State: New  Area: Mantey Playground
Reason: Build Failure  Iteration: Mantey Playground\Phase1

Comments: I was able to clear out the base 7 digit phone

System Info

The test was performed on V3.2b1 of the application.

Discussion

Add a comment. Use # to link a work item or @ to mention a person

System Info

Found in Build

Integrated in Build
Defect States (RTC)
Dashboard (RTC)
Dashboard – Cont. (RTC)
Queries (RTC)

### INVP 4244 EBB - Open Severity 1 and 2 Defects

<table>
<thead>
<tr>
<th>Severity</th>
<th>Summary</th>
<th>Id</th>
<th>Submission Date</th>
<th>Submitted By</th>
<th>Defect Type</th>
<th>Phase Detected</th>
<th>Phase Injected</th>
<th>Activity Found</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intraday 1 Nomination failure</td>
<td>165800</td>
<td>Feb 3, 2017, 12:45:26 PM</td>
<td>John Kastier1</td>
<td>Logical Errors in Design</td>
<td>Testing</td>
<td>Design</td>
<td>System Test</td>
</tr>
</tbody>
</table>
### INVP 4244 – EBB Gas Trading Day Changes
#### SIT Defect Status

<table>
<thead>
<tr>
<th>Total #</th>
<th>Raised</th>
<th>Assigned</th>
<th>Start Working</th>
<th>In Progress</th>
<th>Resolved</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set Ready for Test</th>
<th>Passed Test</th>
<th>Failed Test</th>
<th>Cancel</th>
<th>Reject</th>
<th>Put on Hold</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Based on data in RTC
Rational

- IBM Product
- We are using V 4.04 which is a little old
- Installation we are using is specific (configured) to us
- Very powerful
- Interface may not be as nice as with other tools
VSTS

- Microsoft product
- We are considering moving to this product
- May be a little simpler
- Better User Interface
Q&A