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Lab DSE-5071

Designing Impact Analysis capabilities for Product Line Engineering

February 2015



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Overview

In this lab you will explore the Impact Analysis capabilities in the Systems and Software Engineering solution using Requirement Management, Quality Management and Configuration Management.

In this lab you will get hands on experience with the following tools

- IBM Rational Team Concert
- IBM Rational DOORS Next Generation
- IBM Rational Quality Manager
- IBM Rational Configuration Manager

Over the course of this lab, you will explore the concepts of Impact Analysis:

- Understand change requests and impact analysis tasks
- Understand traceability and lifecycle artifact links
- Understand how to use global configurations and how to work with artifacts and links in the configuration context
- Understand how to explore artifacts links and assess impact
- Understand how to create links to track impact and downstream work on impacted artifacts

Lab Setup

This lab will use a Jazz server running various services for Configuration Management, Requirements Management, Quality Manager and Reporting within a VMware image. The Jazz server hosted on this image will be accessed through a web client to access needed applications and data, within the lab activities. Combining the server and the clients is not a normal configuration but is required to get all the resources needed for this lab into an easily portable image.

The VMWare image with the Jazz server should already been started by the lab staff. As a first step in this lab you may optionally validate that the Jazz server is running on your machine. You may also proceed directly to next main section in the lab.

Validating that the Jazz server is running

- 1. Log into the Windows server
 - a. Press Ctrl-Alt-Del
 - b. Log in as
 - User: Administrator
 - Password: Rati0nal
- 2. Check if the Tomcat server is running
 - a. In the Windows Taskbar, look for a Java program icon and a Tomcat server process.



b. Click on the Java program icon to open the Tomcat server process.

| 🛃 Tomcat | × |
|---|---|
| INFO: Patch service started | - |
| Dec 12, 2014 4:21:28 AM com.ibm.team.osgi.patch.PatchConfigurator addHooks | |
| INFO: Looking for patch directory in "C:\IBM\JazzTeamServer\server\patch" Dec 12. 2014 4:21:28 AM com.ibm.team.osgi.patch.PatchConfigurator addHooks | |
| INFO: No patches found | |
| SLF4J: Class path contains multiple SLF4J bindings. | _ |
| SLF4J: Found binding in [bundleresource://461.fwk1070022599/org/slf4j/impl/Stati | |
| cLoggerBinder.class] | |
| SLFÅJ: Found binding in [bundleresource://461.fwk1070022599:1/org/slf4j/impl/Sta | |
| ticLoggerBinder.class] SLF4J: Found binding in [bundleresource://461.fwk1070022599:2/org/slf4j/impl/Sta | |
| ticlogerBinder.class] | |
| SLF4J: Found binding in [bundleresource://461.fwk1070022599:3/org/slf4j/impl/Sta | |
| ticLoggerBinder.class] | |
| SLF4J: Found binding in [bundleresource://461.fwk1070022599:4/org/slf4j/impl/Sta | 1 |
| ticLoggerBinder.class] SLF4J: See http://www.slf4j.org/codes.html#multiple_bindings for an explanation. | |
| Sirau. See http://www.siraj.org/codes.ntmi#muitipie_bindings for an explanation. | |
| Dec 12, 2014 4:22:00 AM org.apache.catalina.startup.HostConfig deployWAR | |
| INFO: Deployment of web application archive C:\IBM\JazzTeamServer\server\tomcat\ | |
| webapps\ccm.war has finished in 33,618 ms | |
| Dec 12, 2014 4:22:00 AM org.apache.catalina.startup.HostConfig deployWAR | |
| INFO: Deploying web application archive C:\IBM\JazzTeamServer\server\tomcat\weba pps\clmhelp.war | |
| pps crunerp.war | - |
| | |

c. Confirm that the server is running.

If the Tomcat server process is running, proceed to next main section in the lab. If no Tomcat server process is running, proceed to the step below to 'Starting the server' 3. Starting the server

ONLY PERFORM THIS STEP IF THE JAZZ SERVER IS NOT STARTED

a. On the desktop, double click on the Start the Jazz Team Server icon



A command window titled **Tomcat** will open.
 In 3-5 minutes you'll see the output, as shown above, with the "Server startup in ..." message.

Note: Be patient. Starting the servers is an operation that a real user never does. Users normally run continuously on a dedicated server environment managed by an administration team.

If in doubt on the state of the server, check with the lab staff before proceeding.

c. Minimize the Tomcat server process window (DON'T click X!).

Introduction to Automated Meter Reader

This lab uses artifacts from the Automated Meter Reader sample data for reporting. The Automated Meter Reader sample uses a fictitious company JK Meters Corp, aspiring leaders of Smarter Flow Products for Utilities.

The Metering Division at JK Meters Corp has a range of Automated Meter Reader products in its product line. The most successful product is the Automated Meter Reader for Water Flow (see figure below). The product consists of meter interface units mounted on water pipes. The meter interface unit measures flow and delivers data to handheld or car mounted meter readers. The registered meter readings are uploaded from the handheld devices to the AMR server data management system manually. Uploading of data is performed continuously by the mobile meter readers using a mobile network connection, or manually when returning to the office at the end of the day when using the manual meter reader product. The Metering Division is currently investing in improved features in the product lines and new AMR products. An innovative new AMR Grid product reduces the operational cost of utility services by providing fixed grid meter readers that continuously reads a wireless grid of residential or industrial meter interface units and uploads data over a fixed network connection.



The Automated Meter Reader products are configured from reusable components. These component subsystems are developed and delivered by the Meter Reader, Meter Interface and AMR Sever platform teams. The platform teams deliver the component subsystems with feature variability for the product line. For example, the Meter Interface team delivers wired and wireless variants of the component for the Manual and Mobile products. The Meter Reader team delivers variant components for Manual, Mobile and Grid products.

| AMR Manual | Meter Interface | Manual Handheld Reader | AMR Server |
|---|-----------------|---------------------------|------------|
| AMR Mobile Market variability for US, EU and UK | Meter Interface | Mobile/Car Mounted Reader | AMR Server |
| AMR Grid | Meter Interface | Grid Reader | AMR Server |

The Automated Meter Reader products have been delivered to utility customers in US. JK Meters Corp is growing its market share by developing variants for other regional markets. The variants are configured with regional requirements on power voltage, dimensions on pipe mounting, regional units of flow and volume, language configuration for the handheld meter readers and regional city maps for GPS routing.

In this lab you will explore how the impact of changing requirements for a Mobile UK product are impacting artifacts in the US product variant.

Analyzing Impact

Configuration Management concepts

In this initial part of the lab you will learn about key concepts in configuration management, like *artifacts, links* and *components.*

The Automated Meter Reader (AMR) development teams are using the Systems and Software Engineering solution from IBM to manage the *system engineering artifacts* like requirements, tests, designs and source code. The artifacts are linked using traceability relationships. Examples of such links are shown in the figure below. In blue we indicate requirements for the 'Meter Reader (RM)' component specified in a 'Meter Reader Subsystem Requirements' module. Each requirement may be linked to a Test Case in the 'Meter Reader (QM)' component. Related requirements and test cases are linked using *validates* links. Test Cases are linked to *using* Test Plans and the results of run tests are linked to *related* Test Case Execution Results. In case a test run fails a Defect may be linked using an *affected* link.



As indicated in the figure above, a *component* is a unit of organization consisting of a reusable set of artifacts. The Automated Meter Reader (AMR) teams are using components to organize the lifecycle artifacts under development. The teams have defined components for the system / product level and at each subsystem level, figure below. Separate components are used, at each level, to manage requirements, tests, designs and source code.



The Automated Meter Reader (AMR) team responsible for developing a UK variant of the AMR Mobile product has received a change request related to new stakeholder requirements on the product. The change request has been decomposed into impact analysis tasks to analyze the impact from changes on stakeholder requirements. One of the changes which we will focus on in this lab is the market expectation for 4G mobile communications standard to be used by the Meter Reader subsystem in the Mobile UK product.

In the next section of the lab you will start exploring the change request and the impact analysis task. In following sections of the lab you will use the traceability links established between the impact analysis task and the system artifacts, as indicated in the figure below. You will navigate in the context of the 'AMR.S Mobile US' global configuration.



Exploring Work Items

You will now explore some of the requirements components in the Automated Meter Reader (AMR) product.

Logging in to the Jazz applications

In this lab you will use a generic user **rational**.

1. <u>Click on the **Firefox** icon on the Windows taskbar</u>.



- 2. Choose the **ccm** bookmark to open the Rational Team Concert application Alternatively enter the URL **https://ssejtsserver:9443/ccm/web**
- 3. Log in as User: rational with Password: rational

| gin - Jazz Team Server - Mozilla Firefox | _ |
|--|--|
| Jazz- TEAM SERVER | in Jazz requires a user ID and password: |
| | User ID: rational Password: Remember my User ID Log In |
| logo, Jazz, and Rational are trademarks of IBM Corporation | Corp. and its licensors 2008, 2014. All Rights Reserved. IBM, the IBM in the United States, other countries and regions, or both. Built on d all Java-based trademarks and logos are trademarks or registered es, other countries and regions, or both. Rational, software |

Opening the AMR (CCM) project

You will now open and explore the work items and plans Automated Meter Reader (AMR) product.

1. In the All Projects list, click 'AMR (CCM)'



2. The AMR (CCM) project area opens. In the **Quick Search** field, type susan. A list of work items assigned to Susan is shown.

|) 🔒 https:/ | ssejtsserver:9443/ccm/web/projects/AMR (CCM) | #action=com.ibm.team.dashboard.viev | wDashboard | ⊽ C ⁴ | |
|--|--|--|--|---|--|
| e and Configu | ration Management (/ccm) | | | One of the <u>Client Access Licenses</u> expires in 34 da | |
| | AMR (CCM) | | | Susan 🕌 * 🛱 * 🕐 | |
| ct Dashboar | | rol ~ Builds ~ Reports ~ | Quick Search You are searching 'All Work Items'. | E • susan | |
| | I) Dashboards > | | Found 11 results for 'susan'. | M Previous 1 - 10 of 11 Next | |
| | CCM) ^[2] | | 26: Develop requirements for the UK AMR Mobile product | | |
| General - CCB | | | 12: Create Meter Reader - Grid collection of test cases | | |
| 🚱 Welco | me to Rational Team Concert | 🔊 Teams (3) | 📋 13: Create Meter Reader - Gene | eric collection of test cases | |
| | | AMR Server (CCM) | 📋 14: Create Meter Interface - Ger | neric collection test cases | |
| | With Rational Team Concert, you can plan and track your | Meter Interface (CCM) Meter Reader (CCM) | 📋 15: Create Meter Reader - Mobi | le collection of test cases | |
| | development project, perform | meter (com) | 📋 16: Create Meter Interface - Mot | bile collection of test cases | |
| | change and configuration management, and manage your | 🦻 AMR (CCM) Queries | a 20: Baseline requirements for AMR Mobile UK 2013 product | | |
| build processes. Recently closed (0) Recently created (0) Recently created (0) | Recently created (0) | 28: Update a Stakeholder Requirements module for the UK variant of Mobile | | | |
| | Rational Team Concert. | Recently modified (0) | a0: Create UK variant System te | est plan | |
| | The Rational Collaborative Lifecycle | 31: Create UK Mobile Meter Real | | | |

3. In list of work items, click on the link **26: Develop requirements for the UK AMR Mobile product**. The work item is opened in the editor.

| 🕽 Requirement Change | Reques × + | | | |
|---|---|---|---------------------------------------|---|
| https://ssejtsserve | r:9443/ccm/web/projects/AMR (CCM)#action | n=com.ibm.team.workitem.viewWc | orkItem&id=26 | ⊽ C' |
| ge and Configuration Manage | ement (/ccm) | | | One of the <u>Client Access Licenses</u> expires in 34 |
| 🔤 📀 AMR ((| CCM) | | | Susan 🔠 ~ 🛱 ~ 🔞 |
| ect Dashboards 🗸 🛛 Wo | rk Items ∽ Plans ∽ Source Control ∽ | Builds ~ Reports ~ | | 📙 🎽 susan |
| Work Items > | | | | |
| Requirem | nent Change Request 2 | 6 🖗 | 🖹 👹 | 🧔 🗊 📸 🍇 🔗 🛛 Save |
| Summary: * Develo | nent Change Request 2 op requirements for the UK AMR Mobile nks Approvals History | | i i i i i i i i i i i i i i i i i i i | 🧔 🕮 🐮 🍇 🚸 Save ▼ |
| Summary: * Develo | op requirements for the UK AMR Mobile | product | | |
| Summary: * Develo | op requirements for the UK AMR Mobile | product Time Tracking | | ✓ ✓ |
| Summary: * Develo Overview Li Details | op requirements for the UK AMR Mobile nks Approvals History | product Time Tracking | ⇒ Open | ▼ Quick Information ∬ Attachments (1): 1 ∰ Subscribers (1): P |
| Summary: * Develo Overview Li Details Type: | op requirements for the UK AMR Mobile nks Approvals History | Time Tracking | ⇒ Open Susan | Quick Information Attachments (1): 1 Subscribers (1): P |
| Summary: * Develo Overview Li Details Type: Severity: | op requirements for the UK AMR Mobile nks Approvals History E Requirement Change Requ. (1) Major | roduct Time Tracking Owned By: Priority: | Susan ☐ Unassigned | ✓ ✓ |

4. Click on the **Links** tab to view the artifacts linked to 'Requirement Change Request 26'. Scroll down on the page to view the Links section

| Requirement Change Request 26: Develop requirements for the UK AMR Mobile product - Change and Configuratio | n Management - Mozilla Firefox | _ 8 |
|--|---|------|
| https://ssejtsserver:9443/ccm/web/projects/AMR (CCM)#action=com.ibm.team.workitem.viewWorkItem&id=26&tab=com.ibm | n.team.workitem.tab.links | |
| v Project Dashboards v Work Items v Plans v Source Control v Builds v Reports v | 😑 🎽 susan | ٩ |
| 🗐 Requirement Change Request 26: Develop requirements for the UK AMR Mobile product ? | ا الله الله الله الله الله الله الله ال | Save |
| Children 28: Update a Stakeholder Requirements module for the UK variant of AMR Mobile | | |
| 29: Analyze impact of the UK AMR Mobile Stakeholder requirements on the AMR Mobile System 30: Create UK variant System test plan 31: Create UK Mobile Meter Reader Subsystem test plan variant 32: Update UK system verification test plan and analyze impact to test cases 33: Update UK Mobile Meter Reader Subsystem test plan variant and analyze impact to test cases | | |

Note: The 'Requirement Change Request 26' links to a set of tasks in the **Children** section. These tasks represent work that needs to be completed update stakeholder requirements, analyze the impact of change, and plan and perform downstream work to implement the changes.

The 'Requirement Change Request 26' also links to the 'Stakeholder Requirements' module. This module should be updated by the team based on the new stakeholder requirements document attached to the change request in the **Attachments** section.

- 5. In the Children section, click on the task 29: Analyze impact of the UK AMR Mobile Stakeholder requirements on the AMR Mobile System. 'Task 29' is opened in the editor.
- 6. Open the Links tab in Task 29.

| ange and Configuration Management (/ccm) | One of the <u>Client Access Licenses</u> expires in 34 day Susan 🚜 × 🛱 × 🍘 × |
|--|---|
| | |
| oject Dashboards v Work Items v Plans v Source Control v Builds v Reports v | 🗄 🎽 <mark>susan 🔍 Q</mark> |
| Work items > | |
| E Task 29 3 | 🖮 🕮 🤯 🗃 🞇 🏹 🔗 🛛 Save |
| Summary: Analyze impact of the UK AMR Mobile Stakeholder requirements on the AMR Mobile System | ⇒ New 💌 |
| Overview Links Approvals History Time Tracking | |

7. Scroll down on the page to the Links section in the Links tab



Note: 'Task 29' links to a system requirement '511: The handheld device shall interfaces with the city's back office software'. This requirement has been previously identified as impacted by 'Requirement Change Request 26' and linked to the impact analysis task 29 as the context for the impact analysis.

You will now start exploring what artifacts might be further impacted by changes to system requirement '511: The handheld device shall interfaces with the city's back office software'.

Exploring Impacted Requirements

You will now trace from the work item view in Rational Team Concert to system requirements in Rational DOORS NG.

1. Hover over requirement link **511: The handheld device shall interfaces with the city's backoffice software**. Wait for the rich hover preview to open.

| Attachments | software. | all interfaces with the city's backoffice | 23 |
|--|---|--|----|
| Drop files to add them or click here to browse. | cmint_applied_RCR_numbers: Need: Questions: Schedule: Stability: Team Ownership: Test Status: Verification Method: | Description: Priority: Requirement Type: Source: Status: RM) Test Criteria: Verifiability: | • |
| Links | When used in AMR System Requirements: Links | | - |
| Parent 26: Develop requirements for the UK AMR Mobile Implements Requirement 511: The handheld device shall interfaces with the | information collected on handheld computer | shall allow for upload of all Market (1): 53: The rs during meter rounds, so handheld device shall rievable to business office interfaces with the city's backoffice software. | |

- 2. In the rich hover preview, scroll down to the In Modules section.
- Click on the link to the System Specification: 503.
 Hold down the ctrl-key while clicking to open the requirement in a new browser tab. Rational DOORS NG opens and loads the 'AMR (RM)' project. The '503:AMR System Requirements' module is opened in the editor with requirement '511' selected.

| | | Collections Modules Reports | 📷 🍸 Search Artifacts |
|---------------|----------------|---|--|
| AMR (RM) > 01 | 1 Requirement | s> <i>Ø</i> | No Tags Defined |
| 503 | AMR S | stem Requirements 👔 | II 🐯 🖓 🐿 = 🖬 🛛 |
| | ∎ ▼ ID | Contents | C |
| | 504 | 1 General Description | - |
| | 505 | -1.1 Environmental Considerations | |
| | 506 | The control computer shall be capable of operating in a normal office environ | iment. |
| | 507 | 2 System Requirements | |
| | 508 | -2.1 Functional Requirements | |
| | 509 | 2.1.1 Handheld device | |
| | 510 | The handheld device shall provide for the means for the meter reader to ma | anually enter a meter reading. |
| . ₪ | ∥ • 511 | The handheld device shall interfaces with the city's backoffice software. | |
| | 512 | The handheld device shall allow for programming of a defined route, advanc reader moves through the route. | cing to the next meter on the route as the meter |

Note: Collapse the left sidebar by clicking on the < icon on the splitter to make the **Contents** column wider.

Clicking on the < > icon will collapse both left and right sidebars.

| 503: AMR Sy | | - - | me | nts | | |
|---------------------------|------------|--------|------|-----|---|-----------|
| Reate New System | Requiremen | t 🗸 | _ | _ | • | ID 504 |
| Views | | | Gran | | | 504 |
| Search Views | ٩ | | < | | | 505 |
| Downstream Coverage | v | | | | | 506 |

Select a Configuration Context

Before proceeding to browse artifacts and links you need to select a global configuration context that defines the versions of the artifacts to be selected. You will choose the 'AMR.S Mobile US' global configuration.

1. From the Configuration Management menu on the banner, choose **Select Global Configuration Context...**



2. In the Select a Global Configuration dialog, type AMR.S Mobile US in the search field. From the list of found configurations, select 'AMR.S Mobile US – Impact Analysis'. Click OK.

| 🛃 Sel | lect a Global Configuration | Σ |
|-------|--------------------------------------|---|
| AMR. | S Mobile US | ٩ |
| | Name | Description |
| æ | AMR.S Mobile 3.1 US.GA | Global configuration for AMR system Mobile US variant. |
| æ | AMR.S Mobile US | Global configuration for AMR system Mobile US variant. |
| æ | AMR.S Mobile 3.0 US.GA | Global configuration for AMR system Mobile US variant. |
| æ | AMR.S Mobile 2.0 US.GA | Global configuration for AMR system Mobile US variant. |
| B | AMR.S Mobile US - Impact Analysis | |
| æ | AMR.S Mobile 3.2 US.GA | Global configuration for AMR system Mobile US variant. |
| | | |
| | | |
| | | |
| | | |
| | I∢ Previous | 1-6 of 6 Next ⊮ |
| | | OK Cancel |

3. The 'AMR (RM)' project is reloaded with the selected configuration context. Note: The selected context is shown on the banner.

📲 AMR.S Mobile US - Impact Analysis 🗈

Using the Link Explorer

You will now use the Link Explorer in Rational DOORS NG to visualize the artifacts linked to impacted requirements and tests cases.

Move the cursor to the row with requirement '511'. The row will highlight and a button with a pencil icon (2) will be shown.

2. Click the menu from the pencil icon and choose Other Actions > Open Link Explorer.



- 3. The **Diagram view of related links** window opens. Scroll or use the zoom controls to view the full diagram. See image below.
- 4. Analyze the artifacts and links shown on the diagram. Notice the following links from requirement 511.
 - An *Implemented By* link to the impact analysis Task 29. This is the link we navigated earlier to get to requirement 511.
 - A *Satisfies* link to the stakeholder requirement with ID 431. This is the up-stream stakeholder requirement that is driving the change request for a new mobile communication standard.
 - Three Link From links to subsystem requirements with IDs 685, 687 and 697. These
 requirements are specified in the 'Meter Reader System Requirement' module. From the
 requirement text we see that they are related to the US communication feature and the
 GSM/CDMA mobile communication standard. We may conclude that these requirements will
 be impacted by a stakeholder requirement change to adopt a 4G mobile communication
 standard.
 - A Validated By link to the system validation test case with ID 53. This is the test case that will validate that the Mobile Reader handheld device will connect and upload meter readings to the AMR Server.



Note: Hovering your cursor over the artifacts shows a rich hover preview with more detail on the linked artifact, like some of their attributes.



 Hover your cursor over requirement with ID '685'. Scroll down on the preview and click on the link to open the requirement in '673: Meter Reader Subsystem Requirements' module. Hold down the ctrl-key while clicking to open the module in a new browser tab.

| In Modules | | |
|--------------------------|---|--|
| System Specification: 67 | <u>]</u> m | |
| | 4 673: Meter Reader Subsystem Requirements | |

6. The '673: Meter Reader Subsystem Requirements' module opens with requirement '685' selected.



Note: The module '673: Meter Reader Subsystem Requirements' is contained in the 'Meter Reader (RM)' project. Browsing the link will open the Meter Reader project in the editor in the context of the 'AMR.S Mobile US – Impact Analysis' configuration context.

You have now explored the requirement links from system requirements to subsystem requirements. In the next step you will view a traceability table view with requirements and test cases in the 'Meter Reader Subsystem Requirements'. You will also use this view to browse to linked test cases.

Using traceability views

You will now view trace relations from module requirements to test cases.

- 1. Return to the browser tab with Rational DOORS NG, the 'Meter Reader (RM)' project, and the '673: Meter Reader Subsystem Requirements' module.
- 2. In the Views section in the left sidebar, click on the Test Coverage view.



Note: If the left sidebar is collapsed, hover over the splitter and click the > button to expand the sidebar.

3. The requirements view is updated and a traceability view is shown with requirement to the left in the **Contents** column, and the linked test cases in the **Validated By** column.

| 👔 🕕 Meter F | Reader (RM) | 🝶 AMR.S Mobile US - Impact Analysis \vee Rational 🖓 🎽 🌞 👋 🛛 |
|----------------------------|--|---|
| Project Dashboard Artifact | s 🗸 Collections 🗸 Modules 🗸 Reports 🗸 | 📷 * Search Artifacts 🔍 |
| Heter Reader (RM) > 01 Re | equirements > 🤌 | No Tags Defined 🏷 |
| 673: Meter | Reader Subsystem Requirements 🔋 | 第 🖏 〒 🛍 🖕 = 🔐 🚸 |
| TD TD | Contents | Validated By |
| 680 | The AMR system is used to determine Water, Gas and Electric service / consumption for connections in residential, commercial and industrial customers within an area. | 144: The AMR system is used to determine Water, Gas and Electric service / consumption for connections in residential, commercial and industrial customers within an area. |
| 681 | The Meter Reader equipment's, which include Handheld Meter Readers, are used to communicate with the Meter Interface and the AMR. Server to commission and extract metering information. | 142: The Meter Reader equipment's, which include Handheld Meter Readers, are used to communicate with the Meter Interface and the AMR Server to commission and extract metering information. |
| 684 | The AMR system consists of Handheld Meter Reader units that connect to the Meter Interface over wire or RF for reading and uploads water, gas or electrical flow consumption data. | 137: The AMR system consists of Handheld Meter Reader units that connect to the Meter Interface over wire or RF for reading and uploads water, gas or electrical flow consumption data. |
| P 🖉 685 | The Handheld Meter Reader unit provides is a rugged handheld Microsoft® Windows Mobile® tablet that provides GPS routing and cellular GSM / CDMA connectivity to the AMR servers. | 130: The Handheld Meter Reader unit provides is a rugged handheld Microsoft® Windows Mobile® tablet that provides GPS routing and cellular GSM / CDMA connectivity to the AMR servers. |
| 686 | The unit is based on a standard tablet and runs | Part 171: The unit is based on a standard tablet and runs the AMR Meter Interface |

Note: The icons on the **Validated By** column indicate the **Most Recent Execution Result** of the test case. Hovering over the test case will show a rich hover dialog with more details on the linked test case.

| | | | olet that provides GPS routing a y to the AMR servers. | and | No Tags Define 🗊 🐯 👻 🐔 🌇 🕶 🚍 💕 |
|---|-------------------------|-------------------------|--|-----|--|
| - | 🖉 Draft 🛯 Unassigned | | | | used to determine Water, Gas and Electric service / ions in residential, commercial and industrial customers |
| Details Type: Originator: Calculated Risk: | Test Case Rational | Owner: Project Area: | Dec 9, 2014 12:01:55 AM Unassigned Meter Reader (QM) | | quipment's, which include Handheld Meter Readers, are In the Meter Interface and the AMR Server to commission rmation. |
| Community Risk: Weight: | 00000 100 | Team Area: Suspect: | ♦ No | | nsists of Handheld Meter Reader units that connect to the or RF for reading and uploads water, gas or electrical flow |
| Most Recent Exec Dec 17, 2014 3:32 | | ed | | | |
| Show More | | | | | Reader unit provides is a rugged handheld Microsoft® at provides GPS routing and cellular GSM / CDMA |

The conclusions we can make from the impact analysis is that the Meter Reader subsystem is impacted by this requirement change and we should track changes to the three subsystem requirements.

You will in the next section establish a *Tracked By* link to the impact analysis task to track this identified impact.

Establishing links

You will now link the three subsystem requirements to the impact analysis task.

- 1. Return to the browser tab with the '673: Meter Reader Subsystem Requirements' module.
- 2. Select the three impacted subsystem requirements with IDs '685', '687' and '697' by clicking the

| check-box (| on each requirement. | | |
|--------------|--|--|--|
| | Reader units that connect to the Meter Interface over wire or RF for reading and uploads water, gas or electrical flow consumption data. | 137: The AMR system consists of Handheld Meter Reader units that connect to the Meter Interface over wire or RF for reading and uploads water, gas or electrical flow consumption data. | |
| P 🖉 685 | The Handheld Meter Reader unit provides is a rugged handheld Microsoft® Windows Mobile® tablet that provides GPS routing and cellular GSM / CDMA connectivity to the AMR servers. | It is a rugged handheld Meter Reader unit provides is a rugged handheld Microsoft Windows Mobile® tablet that provides GPS routing and cellular GSM / CDMA connectivity to the AMR servers. | |
| □ 686 | The unit is based on a standard tablet and runs the AMR Meter Interface Windows Mobile software. It integrates with Windows Mobile applications for messaging, map management and routing. The unit may be ordered with a car mount kit that charges the unit and connects to the car audio system over Bluetooth. | 171: The unit is based on a standard tablet and runs the AMR Meter Interface Windows Mobile software. It integrates with Windows Mobile applications for messaging, map management and routing. The unit may be ordered with a car mount kit that charges the u | |
| | The Grid Meter Reader unit provides is a rugged device, battery powered and solar recharged, that provides readings of meter interface grids and cellular GSM / CDMA connectivity to the AMR servers. | 156: The Grid Meter Reader unit provides is a rugged device, battery powered and solar recharged, that provides readings of meter interface grids and ccellular GSM / CDMA connectivity to the AMR servers. | |
| 689 | The Handheld Meter Reader unit is a rugged handheld Microsoft® Windows Mobile® tablet. | 168: The Handheld Meter Reader unit is a rugged handheld Microsoft® Windows Mobile® tablet. | |

3. Click the menu from the pencil icon () on one of the selected requirements, and choose the **Add a Link to 3 Artifacts > More...** command.

| equirements Managemen | 🞯 Insert New Artifact | × | One of the <u>Client Access Licenses</u> expires in 34 days 🏠 |
|-----------------------|--|--|---|
| 🏠 - 🚺 Me | Henry Insert Existing Artifact | • | 🎒 AMR.5 Mobile US - Impact Analysis 💉 Rational 🐰 👋 🗱 🐣 🍘 👻 |
| roject Dashboard | 🚰 Upload New Artifact | ⊳ prts ∽ | 📷 🎽 Search Artifacts 🛛 🔍 |
| Meter Reader (RM) | Open Artifacts | • | No Tags Defined 📡 |
| 673: M | Edit the attributes for 3 Artifacts Edit Artifact Row | rements 💿 | 🗊 🖏 - = 💰 🖗 |
| - | Set as Heading or Content | | Validated By |
| | chits > resulting of content chits > resultin | Handheld Meter the Meter Interface and uploads water, uption data. | 137: The AMR system consists of Handheld Meter Reader units that connect to the Meter Interface over wire or RF for reading and uploads water, gas or electrical flow consumption data. |
| - 🤍 🏹 | ✓ Cut 3 Artifacts Ctrl+X Image: Im | unit provides is a Windows Mobile® ing and cellular GSM MR servers. | 130: The Handheld Meter Reader unit provides is a rugged handheld Microsoft® Windows Mobile® tablet that provides GPS routing and cellular GSM / CDMA connectivity to the AMR servers. |
| | Paste as Link Ctrl+Shift+V Paste Special Remove 3 Artifacts Del Comments Other Actions | ard tablet and runs dows Mobile Vindows Mobile nap management ordered with a car hit and connects to Juetooth. | 171: The unit is based on a standard tablet and runs the AMR Meter Interface Windows Mobile software. It integrates with Windows Mobile applications for messaging, map management and routing. The unit may be ordered with a car mount kit that charges the u |
| | Add a Link to 3 Artifacts Show Permalinks for 3 Artifacts and cellular GSM / CDMA servers. | Satisfied By gged 3d, rids Satisfies AMR Mitigates | 156: The Grid Meter Reader unit provides is a rugged device, battery powered and solar recharged, that provides readings of meter interface grids and ccellular GSM / CDMA connectivity to the AMR servers. |
| | 689 The Handheld Meter Read handheld Microsoft® Wine | wore | Image: Barbar State |

4. The Create Link dialog opens.

Choose the **Link type: Tracked By** Type 29 to search for the impact analysis task. Select task '29' from the list of found work items. Click **OK**.

| Create Link | | | 23 |
|---------------------------|---------------------------------|--|-------------|
| Kind of link to create: * | Link type: Tracked By | From artifact: <multiple artifacts=""></multiple> | |
| Artifact Contain | er: AMR (CCM) | | • |
| | sting ^C Create New | | |
| | | | - |
| Project Area: | AMR (CCM) | v | 1 |
| Search by | Keyword or Work Item Number | C Search by Query | |
| Туре: | Task | |] |
| Work Item Nu | umber or Words Contained in the | Text. Use quotes for a phrase search: | |
| 29 | | | |
| Matching Wo | rk Items: | | 1 result(s) |
| | | keholder requirements on the AMR Mo | |
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| | | OK | Cancel |
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| | | | |

You have now created three new links from the impacted subsystem requirements '685', '687' and '697' to the impact analysis task '29'.

You will now return to the impact analysis task in Rational Team Concert and estimate complexity.

Using links to estimate complexity

- Return to the browser tab with Rational Team Concert. Alternatively, click on the ccm bookmark or enter the URL https://ssejtsserver:9443/ccm/web
- 2. Open the 'AMR (CCM)' project and open 'Task 29' using the Quick Search field
- 3. Click on the Links tab on 'Task 29' and scroll down to the Links section.

| | Management - Mozilla Firefox |
|--|---------------------------------|
| Task 29: Analyze impact of th × (a) 503: AMR System Requireme × (a) 673: Meter Reader Subsyste × + | |
| https://ssejtsserver:9443/ccm/web/projects/AMR (CCM)#action=com.ibm.team.workitem.viewWorkItem&id=29&tab=com.ibm.team.workitem | tab.links 🗸 🧟 |
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| Summary: Analyze impact of the UK AMR Mobile Stakeholder requirements on the AMR Mobile System | • |
| Overview Links Approvals History Time Tracking | |
| ttachments Drop files to add them or click here to browse. | Subscribers Pam - Add |
| inks | |

Note: The three links we created in the previous part is now showing on the impact analysis task.

You can now estimate complexity of the impact form the impact analysis task. Requirement 511 will be updated based on new stakeholder requirements. This will impact the Meter Reader subsystem and requirements 685, 687 and 697.

Summary of this Lab

In this lab you have explored the concepts of Impact Analysis by

- Using impact analysis Tasks to assign work
- Using a global configuration to work with artifacts and links in a configuration context
- Using lifecycle artifact links to explore and assess impact
- Create links to the impact analysis task to track impacted artifacts

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