

# Associate requirements with domain elements



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## Associate requirements with domain elements

This tutorial guides you through associating IBM® Rational® RequisitePro® requirements with IBM Rational Software Delivery Platform domain elements. The three modules in this tutorial provide details on viewing requirements, creating associations between requirements and domain elements, and working with requirements in specific linkable domains.

### Learning objectives

This tutorial introduces concepts about requirement associations and provides practice working with them. After completing this tutorial, you will be able to perform the following tasks:

- Open requirement views and projects
- View requirements in query results and documents
- Associate requirements and domain elements
- View requirement traceability
- Create associations in UML and development linkable domains

### Time required

Approximately 50 minutes.

#### Related information



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## Introduction: Associate requirements with domain elements

In the three modules of this tutorial you will learn about viewing requirements, creating associations between requirements and domain elements, and working with requirements in UML and development linkable domains.

This tutorial might require some optionally installable components. To ensure that you installed the appropriate optional components, see the System requirements list.

IBM Rational RequisitePro is integrated with IBM Rational Software Delivery Platform products. This tutorial demonstrates how to associate requirements with domain elements such as folders and files in the Resource linkable domain, model elements in the UML linkable domain, and classes in development linkable domains, such as Java and J2EE. If your product does not include the linkable domain in a particular lesson, you can skip the lesson or just review the instructions and the **Show Me** demonstration.

### Learning objectives

This tutorial helps you learn how to perform the following tasks:

- Open the Requirements perspective and views
- Open a RequisitePro project in the Requirement Explorer view
- View requirement properties and requirements in query results and documents
- Associate requirements with domain elements
- View proxy requirements
- View requirement traceability
- Create a direct association to a use case in the UML linkable domain

- Create an association to a class in a development linkable domain

## Time required

This tutorial will take approximately 50 minutes to finish.

## Skill level

Intermediate. Familiarity with development process is helpful.

## Audience

Business analysts, systems analysts, architects, designers, developers, testers, and other members of the development team

## System requirements

To complete this tutorial, you need to have the following tools and components installed:

- RequisitePro
- A Rational Software Delivery Platform product that supports the Rational RequisitePro integration
- A browser that supports Flash media (files with the .swf extension)

## Conventions Used

Each lesson in this tutorial contains a **Show Me** link. Click this link to view a demonstration of the steps described in the lesson.

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## Module 1: View requirements

This tutorial module describes how to open requirement views, projects, and individual requirements.

Module 1 is an introduction to the requirement views, projects, queries, and documents. Although you can access most Rational RequisitePro artifacts from within the Rational Software Delivery Platform product, RequisitePro opens Microsoft Word when you navigate to requirements in documents.

## Learning objectives

After completing the lessons in this module you will be familiar with requirements projects and related views and know how to perform the following tasks:

- Opening the Requirement perspective and related views
- Opening a RequisitePro project in the Requirement Explorer view
- Viewing requirements and requirement properties
- Viewing requirements in query results and documents

**Note:** Click the **Show Me** link in each lesson for a demonstration of the procedure.

## Time required

This module will take approximately 20 minutes to complete.

## Prerequisites

Before you begin the lessons, create a project in your Rational Software Delivery Platform product. This project will contain elements that you will associate with requirements.

To create the project in your Rational Software Delivery Platform product, complete the following steps:

1. Open your Rational Software Delivery Platform product and select a workspace for the tutorial artifacts.
2. Open the Project Explorer view. (Click **Window** → **Show View** → **Project Explorer**.)
3. Click **File** → **New** → **Project**.
4. In the New Project window, click **General** → **Project**.
5. Name the project My Tutorial Project and accept the default location for the project in the workspace.
6. Click **Finish**.

## Lesson 1.1: Open the requirement perspective and views

This lesson describes how to open the Requirement perspective and views in the Rational Software Delivery Platform product.

A perspective defines an initial set and layout of views in the Workbench window. The Requirement perspective includes a set of views that supports access to Rational RequisitePro requirements, documents, query results, properties, and traceability.

Show Me

1. Open the Requirement perspective. There are 2 ways to do this:
  - Use the **Window** menu to select **Open Perspective** → **Requirement**. If the Welcome screen is maximized you will have to use this procedure.
  - Use the **Open Perspective** control to select **Other...** → **Requirement**. If you are in one of the other perspectives you can use this procedure.

Note the Requirement button next to the Open Perspective control.

2. Take a tour of the views in this perspective. Close unneeded views such as Welcome, and expand views to make the individual tabs readable. The Requirement perspective includes the following views:
  - Requirement Explorer
  - Requirement Link Problems
  - Requirement Query Results
  - Properties
  - Link Clipboard
  - Requirement Trace
  - Requirement Text
  - Requirement Editor (not visible until needed)

You should see all of these views except the Requirement Editor view, which only appears when needed.

3. A separate control allows you to examine other linkable domains. Click **Window** → **Show View** → **Other**. Expand the **Linkability** folder and click **Linkable Domain Explorer**.

## Lesson 1.2: Open a requirements project

In this lesson, you will open a Rational RequisitePro requirements project. The project is displayed in the Requirement Explorer view.

RequisitePro requirements are stored in a project database. Although RequisitePro uses IBM DB2, Oracle, and SQL Server databases for large projects, it also uses a run-time version of Microsoft Access that is included in the product for small, local projects and sample "learning projects." A RequisitePro project includes a project file with the extension .rqs. This project file is used to identify key components of the

project, including the database. In this lesson, you open a sample project that is delivered with RequisitePro and use the sample project in subsequent lessons for associating requirements and linkable domain elements.

Show Me

To open a requirements project:

1. Click the **Open a RequisitePro Project** icon. 
2. In the Open a RequisitePro project window, browse to the RequisitePro Use-Case Learning Project, and then open the project file (*filename.rqs*). By default, this is installed as C:\Program Files\Rational\RequisitePro\samples\Learning\_Project-Use\_Cases\LEARNING - USE CASES.RQS.
3. If you are prompted to log on, use the default user name that is displayed in the Project Logon window. Leave the password blank and click **OK**.

The project is displayed in the Requirement Explorer view.

### Lesson 1.3: View requirements in query results

In this lesson, you will view requirements in a Rational RequisitePro Attribute Matrix view.

In RequisitePro, you can create a view of query results for a particular requirement type. This view is called an Attribute Matrix. You can filter the view by searching, sorting, or displaying specific requirement attributes or properties. Saved views are stored in the project and available in the Requirement Explorer view. In this lesson you open a view of all feature requirements.

Show Me

1. In the Requirement Explorer view, expand the **Learning Project - Use Cases** project folder.
2. Expand the **Features and Vision** folder.
3. Double-click the **All Features** icon . This is a shortcut to an Attribute Matrix view in the requirements project. This view shows query results for all feature requirements in the project.

The Attribute Matrix results are displayed in the Requirement Query Results view.

### Lesson 1.4: View requirement properties

In this lesson, you will select an individual requirement in the Requirement Explorer and examine its properties in the Requirement Editor.

Requirements can be accessed through Rational RequisitePro queries, documents, or you can access them individually in project folders.

Show Me

1. In the Requirement Explorer view, expand the **Features and Vision** folder.
2. Expand the **Web Shop System** folder.
3. Right-click the **FEAT1 Secure payment method** requirement and select **Open**. The Requirement Editor view is displayed.
4. The Overview tab shows properties of this requirement. The properties include requirement attributes such as **Difficulty**, which is set to **Low**. Likewise, **Priority** is set to **Must** and **Stability** is set to **Medium**.
5. Click the **Traceability** tab to view and modify traceability relationships for the requirement.
6. Click **History** to view the revision history of the requirement.
7. Click **Preview** to view and edit the requirement's description using a rich-text editor.

## Lesson 1.5: View requirements in a document

In this lesson you will view a requirement in a Rational RequisitePro requirements document.

RequisitePro uses Microsoft Word for creating requirements documents that capture requirements and communicate related development efforts. Each requirements document addresses a particular requirement type, such as product features, use cases, and supplementary specifications. A RequisitePro requirements document differs from a Word document in that you can access requirement attributes and other information directly from within the document.

You can open a requirements document by double-clicking the Word document icon  in a project folder; but in this lesson you will navigate from a requirement in the Requirement Explorer view to its location in the document.

Show Me

To view requirements in a document:

1. In the Requirement Explorer view, expand the **Features and Vision** folder.
2. Expand the **Web Shop System** folder.
3. Right-click the requirement **FEAT1 Secure payment method** and click **Select Requirement In → Microsoft Word**. RequisitePro opens, the requirements document opens in Microsoft Word and the FEAT1 requirement is selected. Requirement text is marked with Word bookmarks.
4. While the requirement is selected, click the **RequisitePro** menu in Word, and then click **Properties**. The Requirement Properties window is displayed.
5. To close the window, click **OK**.
6. To close the document, click **RequisitePro → Document → Close**. If you were working with other requirements documents, you would minimize RequisitePro. In this case, close it by clicking **File → Exit**.

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## Module 2: Create associations with requirements

In this module you will create associations between requirements and Resource linkable domain elements in your development project.

You will associate a high-level feature requirement with a folder in your Project Explorer view. You will use the folder as a container for related domain elements within your project. You will examine the proxy requirement that is created in Rational RequisitePro to represent the folder and the traceability from the proxy to the feature.

### Learning objectives

After completing the lessons in this module you will understand association concepts and know how to perform the following tasks:

- Making an association between a feature requirement and a domain element
- Understanding the purpose of proxy requirements
- Examining traceability from the proxy requirement to a feature requirement

**Note:** Click the **Show Me** link in each lesson for a demonstration of the procedure.

### Time required

This module should take approximately 15 minutes to complete.

## Prerequisites

Complete module 1 of this tutorial.

Before you begin the lessons in module 2, create a project in your Rational Software Delivery Platform product. This project will contain elements that you will associate with requirements.

Show Me

To create a project for this tutorial:

1. Open your Rational Software Delivery Platform product, and then select a workspace for the tutorial artifacts.
2. Open the Project Explorer view. (Click **Window** → **Show View** → **Project Explorer**.)
3. Click **File** → **New** → **Project**.
4. In the New Project window, click **General** → **Project**.
5. Name the project My Tutorial Project and accept the default location for the project in the workspace.
6. Click **Finish**.
7. To create more room for viewing requirement associations, minimize the Welcome view and other unused views.

## Lesson 2.1: Create associations with folders and files

In this lesson, you will create associations between requirements and a project folder and a file.

The Resource linkable domain in the Rational Software Delivery Platform includes domain elements that are common to all applications in the Eclipse SDK; these common elements include projects, folders, and files. In this lesson you will create a folder named Secure Payment that a developer could use in a project to group all design elements related to secure payment processes for the application users. You also create a file within the folder named Customer Authentication that a developer could use to make notes related to secure identification and authentication of application users. By associating the Customer Authentication file with the Customer ID glossary requirement in Rational RequisitePro, you ensure that the development team will begin to use consistent terminology as the team works on customer security design.

Notice that requirements in RequisitePro are listed in the Requirement Explorer view beginning with a tag and followed by the requirement name. The tag, which includes a textual abbreviation of the requirement type and a number, is a unique identifier within the requirements project; for example, FEAT1 represents the first feature requirement that was created in the project. Requirements can be rearranged and renumbered in RequisitePro, but each tag remains unique within the project.

Show Me

To create associations with folders and files:

1. In the Project Explorer view, right-click **My Tutorial Project** and click **New** → **Folder**.
2. In the New Folder window, type the folder name Secure Payment and click **Finish**. The new folder is displayed in the project.
3. Right-click the **Secure Payment** folder and click **New** → **File**.
4. In the New File window, type the file name Customer Authentication and click **Finish**. The new file is displayed in the folder.
5. In the Requirement Explorer view, expand the **Features and Vision** folder and expand the **Web Shop System** folder.

6. Drag the requirement **FEAT1 Secure payment method** from the Requirement Explorer view to the **Secure Payment** folder in the Project Explorer view. An association is created between the requirement and the folder.
7. In the Requirement Explorer view, expand the **Glossary** folder.
8. Drag the glossary requirement **TERM4 Customer ID** from the Requirement Explorer view to the Customer Authentication file in the Project Explorer view. An association is created between the requirement and the file. The file is marked with a horizontal arrow  that indicates a direct link to a proxy requirement, as described in the next lesson. The requirement is marked with a diagonal arrow  that indicates an indirect link with traceability to the proxy requirement.

## Lesson 2.2: View proxy requirements

In this lesson, you will examine the proxy requirements that were created by the associations you made in the previous lesson.

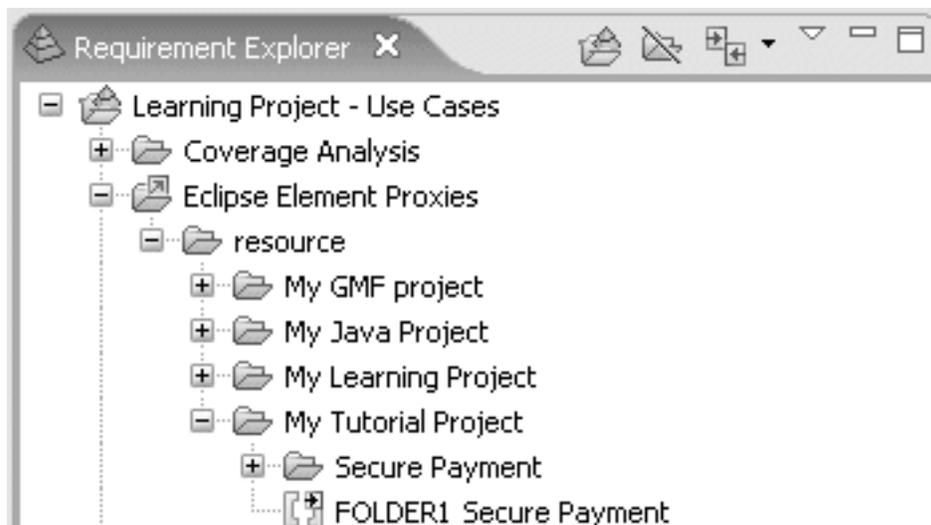
The association between the requirement and the folder that you used in lesson 2.1 is indirect. The requirement is marked with a diagonal arrow on its icon . The requirement is associated with the folder; the two are related, but are distinctly different artifacts. When you made the association in lesson 2.1, a proxy requirement was created in Rational RequisitePro. This proxy serves as a placeholder in RequisitePro for the associated domain element. Because the proxy is a requirement in RequisitePro, you can establish traceability from the proxy to one or more requirements in the project. Traceability between the original target requirement and the proxy is created when the indirect association is made.

Show Me

To view proxy requirements, complete the following steps:

1. In the Project Explorer view, expand **My Tutorial Project** and right-click the **Secure Payment** folder.
2. Click **Linkability** → **Select in Requirement Explorer**.

The following folders are displayed in the Requirement Explorer view: Learning Project - Use Cases > Eclipse Element Proxies > resource > My Tutorial Project. Notice the requirement **FOLDER1 Secure Payment**; this is a proxy for the folder domain element.



3. Expand the **Secure Payment** folder in this directory. Notice the proxy requirement "FILE1 Customer authentication." The proxy requirement icons are marked with a horizontal arrow  that indicates a direct link to the folder and file domain

elements. The name of the folder, the file, and their proxies typically remain synchronized because the proxies represent the domain elements in RequisitePro.

## Lesson 2.3: View traceability

In this lesson you will view traceability relationships between requirements and proxy requirements.

Requirement traceability is a relationship between two requirements that implies the source, derivation, or dependencies between the artifacts. *Trace to* and *trace from* indicators help identify the source, derivation, or dependency clearly; for example, design elements, such as use cases or classes, typically *trace to* high-level feature requirements, implying that the feature is the source, or "motivator," for the design element. Traceability relationships help you determine the extent to which your project requirements are satisfied. As elements or their associated requirements change, you can use traceability relationships to monitor the impact of these changes.

In this lesson you will view traceability in the Requirement Trace view, which shows traceability for the selected requirement. You will also view traceability for all feature requirements in a Traceability Tree query.

Show Me

To view traceability, complete the following steps:

1. Expand the **Features and Vision** folder and the **Web Shop System** folder in the Requirement Explorer view.
2. Select the requirement **FEAT1 Secure payment method**. Traceability relationships for this requirement are displayed in the Requirement Trace view.
3. Click the icons in the Requirement Trace view: **Show Requirements Tracing From the Focus**

 **Requirement** and **Show Requirements To the Focus Requirement** . Because the FOLDER1 proxy requirement traces to the feature, the traceability relationship is shown only when the **Show Requirements To the Focus Requirement** option is selected.

4. In the Requirement Explorer view, expand the **Coverage Analysis** folder.
5. Double-click the **Full Coverage Report** icon . This icon indicates that the artifact is a Traceability Tree view from Rational RequisitePro.
6. In the Requirement Query Results view, expand the **FEAT1 Secure payment method** requirement. The traceability from the proxy requirement to the feature requirement is displayed.

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## Module 3: Work in other linkable domains

This module presents examples of creating requirement associations in specialized linkable domains, including the UML linkable domain and the development linkable domains.

In the UML linkable domain, you can make direct associations between use-case requirements and use-case model elements. This direct linking capability is configured by default for use cases. In the development linkable domains, such as Java and J2EE, you create indirect associations to classes and other domain elements.

### Learning objectives

After completing the lessons in this module you will know how to do the following:

- Create a direct association between use cases in the UML linkable domain
- Create an indirect association using proxy requirements to a class in a development linkable domain

**Note:** Click the **Show Me** link in each lesson for a demonstration of the procedure.

## Time required

This module will take approximately 15 minutes to complete.

## Prerequisites

- Complete module 1 and module 2 of the tutorial.
- For lesson 3.1, support for UML modeling is required to perform the procedure.
- For lesson 3.2, support for Java projects and classes is required to perform the procedure.

**Note:** If your product does not include the domain elements that are required for a particular lesson, you can skip the lesson or review the instructions and the **Show Me** demonstration.

## Lesson 3.1: Create a direct association between use cases

In this lesson, you will create a direct association between a use-case requirement and a use case in the UML linkable domain. This lesson also demonstrates the use of the Link Clipboard view.

This lesson requires the installation of the UML linkable domain, which is not included in some Rational Software Delivery Platform products. If you do not have access to this domain, you can still review these steps and the **Show Me** viewlet to understand direct associations, or skip to the next lesson.

A direct association links a domain element and a requirement. This link associates the domain element and requirement and synchronizes both artifacts so you can manage them as a single, conceptual item. Creating direct links does not generate proxy requirements. The direct link capability is configured by default for use cases, and therefore best demonstrated in the UML linkable domain; however, you can customize the link policy for other requirement types and linkable domain elements in the project properties.

This example demonstrates how a systems architect or development manager can associate UML use cases with use cases created in Rational RequisitePro by a requirements analyst. The direct association creates a direct link and synchronizes the name and documentation of the UML use cases with the name and text of the requirement use cases.

Show Me

To create a direct association between use cases:

1. In the Project Explorer view, right-click **My Tutorial Project** and click **New** → **Other** → **Modeling** → **UML Model**.
2. In the New UML Model wizard, accept the standard template, type Tutorial Model as the model name and click **Finish**.
3. In the Project Explorer view, right-click the **Tutorial Model** and click **Add UML** → **Use Case**.
4. Accept the default name of the use case (UseCase1). Repeat the preceding step to create UseCase2.
5. In the Requirement Explorer view, expand the **Use Cases** folder in the Learning Project.
6. Expand the **Arrange Shipment** folder, and drag the **UC1 Arrange Shipment** use case to the **UseCase1** model element.
7. In the RequisitePro Requirement Synchronization window, accept the requirement name and text. This overwrites the name and documentation of UseCase1 with the Arrange Shipment use-case name and text from RequisitePro.
8. In the Requirement Explorer view, expand the **Check Order Status** folder, right-click the UC2 Check Order Status use case, and then click **Linkability** → **Add to Link Clipboard**.
9. In the Project Explorer view, right-click the **UseCase2** model element and click **Linkability** → **Create Link to "Check Order Status"**.

10. In the RequisitePro Requirement Synchronization window, accept the requirement name and text for the use case and click **OK**.

You have created direct associations between requirements and model elements in two ways: the

drag-and-drop and the Link Clipboard methods. The direct links are marked with a horizontal arrow  on each artifact icon.

## Lesson 3.2: Create associations in a development linkable domain

In this lesson, you will create associations between a use-case requirement and Java class.

In development linkable domains, such as Java or J2EE, systems architects or development managers can create associations with requirements. These associations help ensure the functional coverage of all requirements in a development project. Developers can then navigate from their development artifacts to requirements in Rational RequisitePro and examine the full text associated with the requirement. This provides a more complete understanding of the development goals.

These associations are configured by default as indirect associations. A proxy requirement is created in RequisitePro to represent the development artifact. Traceability is established in RequisitePro between the proxy and the targeted requirement.

In this lesson, you will create a Java project, and then create an association between a use-case requirement and a Java class. In a J2EE project, you might associate use-case or feature requirements with EJB JARs, Session Beans, BMP Beans, J2EE Message-Driven Beans, Web Services, Servlets, and other J2EE development artifacts.

Show Me

Start by examining the use case requirements for the project:

1. In the Requirement Explorer view, expand the **Use Cases** folder and the **Purchase CD** folder. In a typical scenario, you would study the Basic Flow of the use case in the Microsoft Word requirements document, and then associate multiple Java classes to satisfy the behavior of the use case.
2. Notice that there is an alternate flow use case, **INVALID SHOPPER ID**, below the Basic flow.

For the sake of simplicity in this lesson, you will create a single Java class and associate it with this alternate flow use case.

### Create a Java project and a class

Create a simple project, a folder, and a class to demonstrate an association with a development artifact:

Show Me

1. Click **File** → **New** → **Project**.
2. In the New Project wizard, click **Java Project** → **Next**.
3. Type a project name **My Java Project** and click **Finish**.
4. When you are prompted to open the Java perspective, click **No**.
5. To create a folder for classes, right-click **My Java Project** and click **New** → **Folder**.
6. In the New Folder window, type a folder name **classes** and click **Finish**.
7. To view the new folder, click the **Show Domain-Specific Linking Views** button , and then click **Java**. The Package Explorer view is displayed.
8. In the Package Explorer view, expand **My Java Project** and right-click the **classes** folder.
9. Click **New** → **Other** → **Class** → **Next**.
10. Type a name for the class, **FailedAuthentication**, and then click **Finish**.

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## Associate a class with a use-case requirement

Add the new Java class to the Link Clipboard, and then link the use case to the class. Examine the resulting proxy requirement and traceability.

Show Me

1. In the Package Explorer view, right-click the **FailedAuthentication** class and click **Linkability** → **Add to Link Clipboard**.
2. In the Requirement Explorer view, expand the **Use Cases** and **Purchase CD** folders and right-click the **INVALID SHOPPER ID** use case.
3. Click **Linkability** → **Create Link to FailedAuthentication.java**.
4. To examine the proxy requirement, scroll to and expand the **Eclipse Element Proxies** folder in the Requirement Explorer view.
5. Expand the resources folder and **My Java Project** folder.
6. Select the proxy for the Java class.
7. Click the Requirement Trace view and click the **Trace From** icon  to examine the traceability from the class proxy to the use-case requirement.

In this lesson, you have considered the basic and alternate flows of a use-case requirement. You created a Java project and a class. You associated the alternate flow use case and the Java class. Finally, you viewed the resulting proxy requirement and its traceability.

“Summary: Associate requirements with domain elements”

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## Summary: Associate requirements with domain elements

This tutorial introduced procedures for viewing requirements in Rational Software Delivery Platform products and creating associations between linkable domain elements and Rational RequisitePro requirements.

You have discovered how easy it is to associate RequisitePro requirements and domain elements in a Rational Software Delivery Platform product. These associations create logical connections and navigability between your development environment and your project requirements. You can apply these same techniques in more complex, real-world projects.

### Lessons learned

By completing this tutorial, you learned about the following concepts and tasks:

#### Module 1

- Opening the Requirement perspective and related views
- Opening a RequisitePro project in the Requirement Explorer view
- Viewing requirements and requirement properties
- Viewing requirements in query results and documents

#### Module 2

- Making an association between a feature requirement and a domain element
- Understanding the purpose of proxy requirements
- Examining traceability from the proxy requirement to a feature requirement

#### Module 3

- Creating a direct association between use cases in the UML linkable domain

- Creating indirect associations using proxy requirements to a class in a development domain

## **Additional resources**

For additional information, see the Help for your Rational Software Delivery Platform product. Also see the Help topic Associating requirements with domain elements.

### **Related information**

 [ibm.com](http://ibm.com)

 [eclipse.org](http://eclipse.org)