SYBASE®

Requirements Modeling

PowerDesigner® 15.1

Windows

DOCUMENT ID: DC00121-01-1510-01
LAST REVISED: June 2009

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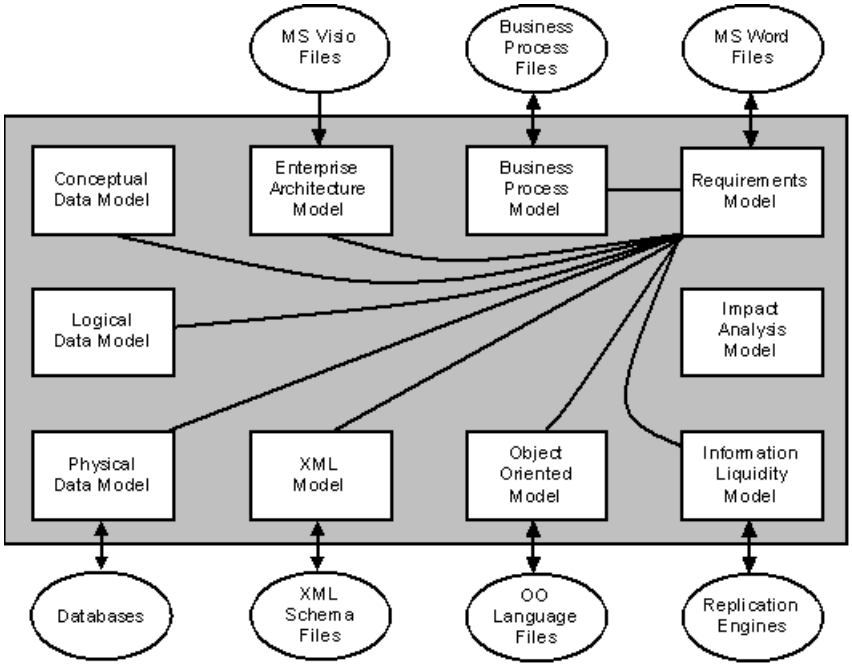
Contents

Getting Started with Requirements Modeling

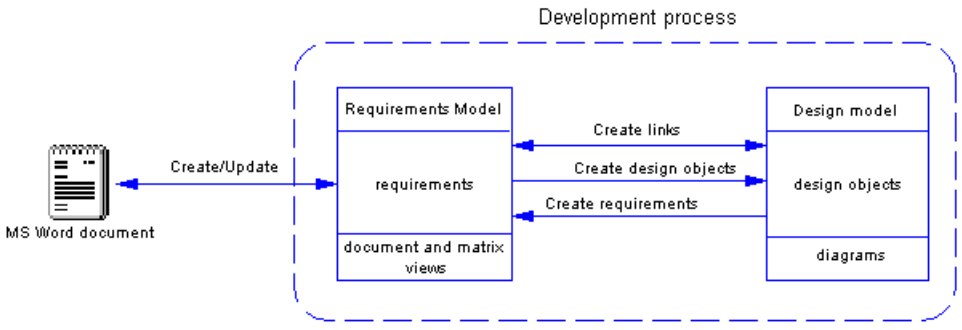
A *requirements model (RQM)* helps you analyze any kind of written requirements and to link them with design objects in other models. You can use an RQM to represent any structured document (e.g. functional specification, test plan, business goals, etc.) and import and export hierarchies of requirements as MS Word documents.

The PowerDesigner® Requirements Model allows you to:

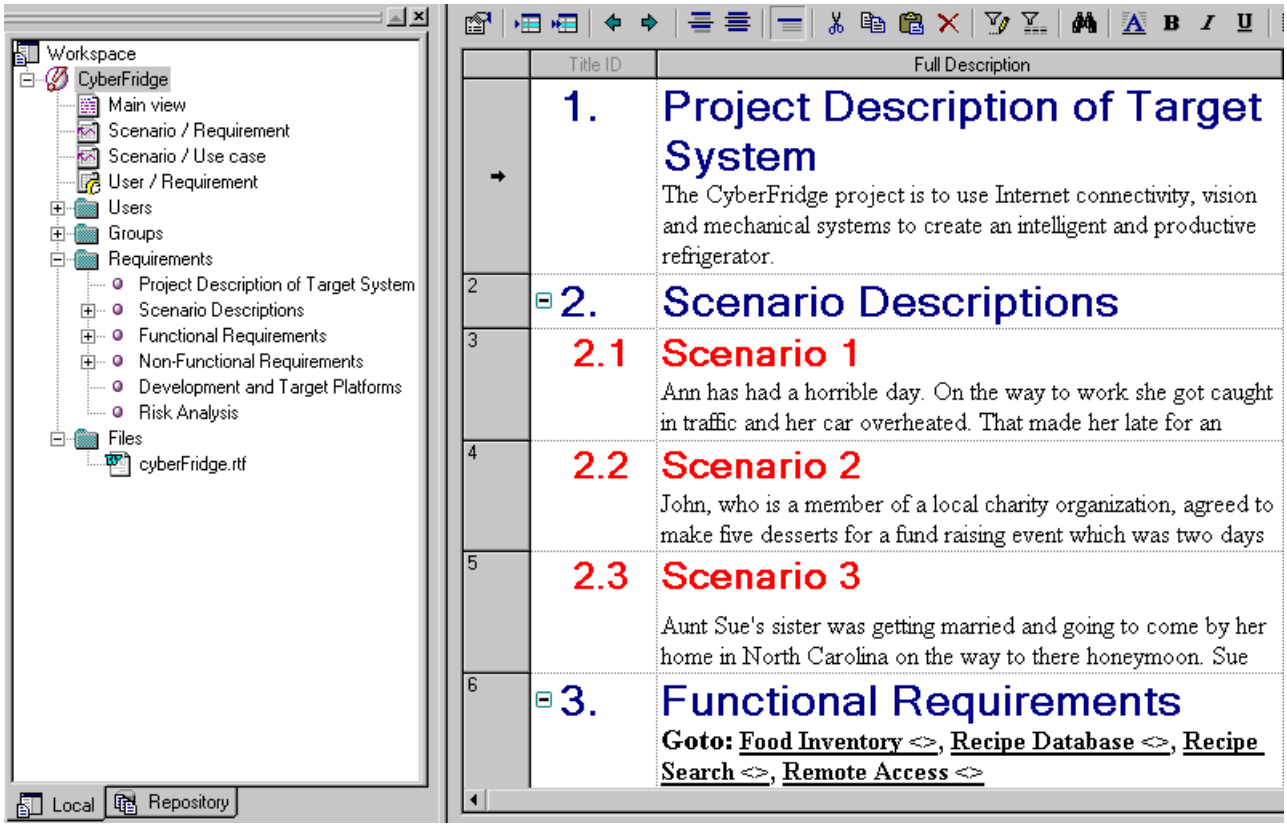
- Create an RQM from a structured technical document
- Check an existing or imported model
- Create links between requirements and design objects (objects from other types of models)



- Create requirements from design objects, and vice versa - some design objects (e.g. business rules, packages, use cases) may correspond to requirements, and vice versa
- Create and update an MS Word document from an RQM - to provide users with an MS Word document corresponding to the RQM
- Create and update a requirements model from an MS Word document – when starting from an existing MS Word document



The following example shows a Requirement Model containing various views, which help specifying the CyberFridge project:



Special thanks to Dr Gregory Abowd and his team, Jeffrey Corn (Manager), Travis Works (Architect), John Garrard (Programmer), Kesniel Acton (Technical Writer), and Dinesh Krishna (Quality Assurance), who designed the CyberFridge project – Copyright 2004, Georgia Tech Research Corporation, Atlanta, Georgia 30332-0415, All Rights Reserved

Note: Demo requirements models are available in the Examples directory.

Suggested Bibliography

- INCOSE (International Council on Systems Engineering) – *http://www.incose.org*

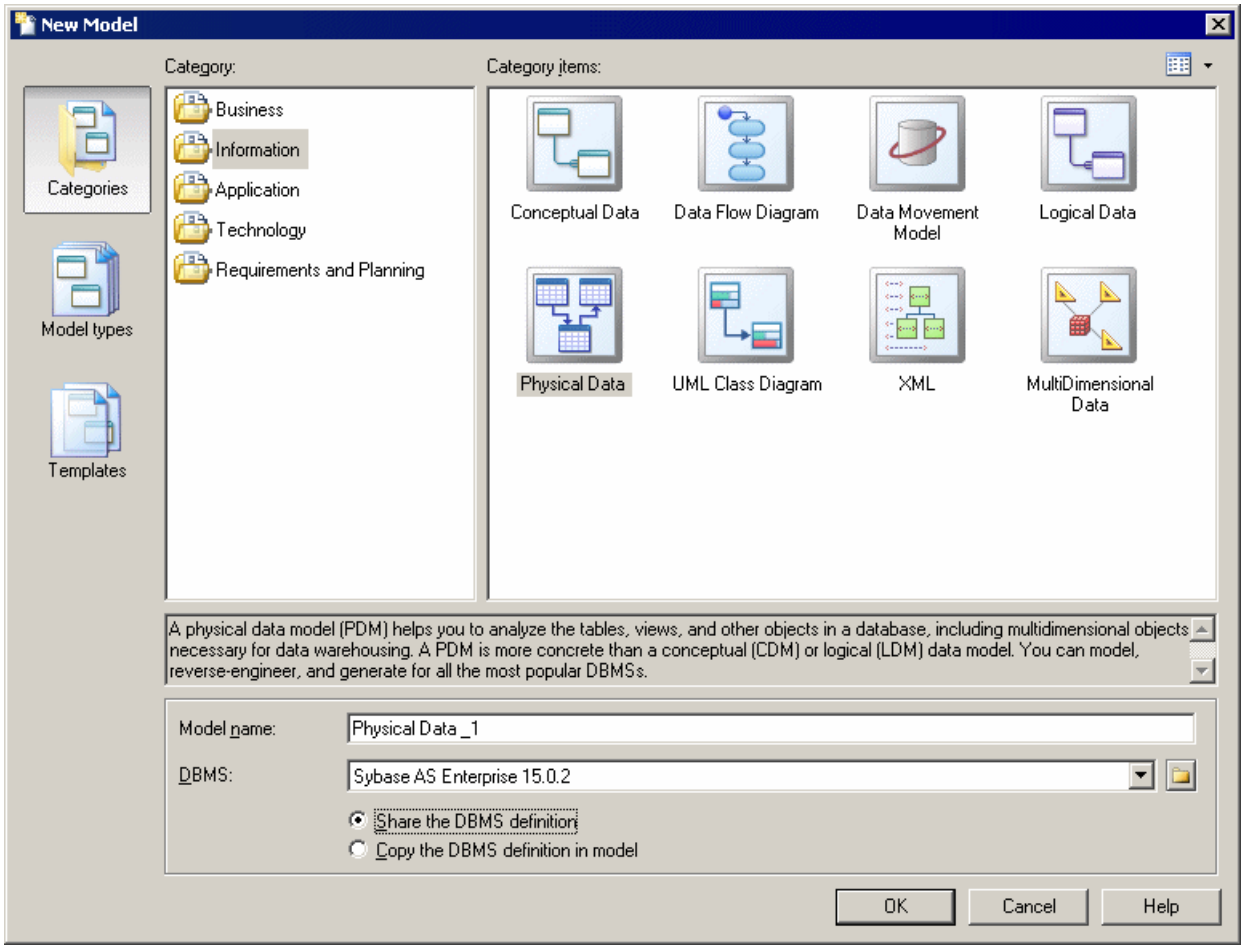
Creating an RQM

You create a new requirements model by selecting **File** > **New Model** .

Note: In addition to creating an RQM from scratch with the following procedure, you can also create a model by importing an existing MS Word document (see *Working with Word Documents and RQMs* on page 43).

The New Model dialog is highly configurable, and your administrator may have hidden options that are not relevant for your work or provided templates or predefined models to guide you through model creation. When you open the dialog, one or more of the following buttons will be available on the left hand side:

- **Categories** - which provides a set of predefined models and diagrams sorted in a configurable category structure.
- **Model types** - which provides the classic list of PowerDesigner model types and diagrams.
- **Template files** - which provides a set of model templates sorted by model type.



1. Select **File** > **New Model** to open the New Model dialog.
2. Click a button, and then select a category or model type (**Requirements Model**) in the left-hand pane.
3. Select an item in the right-hand pane. Depending on how your New Model dialog is configured, these items may be first diagrams or templates on which to base the creation of your model.

   Use the **Views** tool on the upper right hand side of the dialog to control the display of the items.
4. Enter a model name.

   The code of the model, which is used for script or code generation, is derived from this name according to the model naming conventions.
5. [optional] Click the **Extensions** button to open the Extended Model Definitions dialog, and attach one or more extensions to your model .
6. Click **OK** to create and open the requirements model .

   Note: Sample RQMs are available in the Example Directory.

RQM Model Properties

You can modify the model's properties from its property sheet. To open an RQM model property sheet, double-click its Browser entry. The following sections detail the property sheet tabs that contain the properties most commonly entered for RQM models. The General tab contains the following properties:

Property	Description
Name	The name of the item which should be clear and meaningful, and should convey the item's purpose to non-technical users

Property	Description
Code	The technical name of the item used for generating code or scripts, which may be abbreviated, and should not generally include spaces
Comment	Descriptive label of the model
File name	Location of the model file. This box is empty if the model has never been saved
Author	Author of the model. You can insert a name, a space or nothing. If you insert a space, the Author field in the title box remains empty. If you intentionally leave the box empty, the Author field in the title box displays the user name from the Version Info tab of the model property sheet
Version	Version of the model. You can use this box to display the repository version or a user-defined version of the model. This parameter is defined in the display preferences of the Title node
Default view	View displayed by default when opening the model

RQM Detail Tab

The Detail tab of a requirements model property sheet displays the following properties:

Property	Description
Workload 1	Sum of all the workloads assigned to a first person or team
Workload 2	Sum of all the workloads assigned to a second person or team
Workload 3	Sum of all the workloads assigned to a third person or team
Workload 4	Sum of all the workloads assigned to a fourth person or team

Workload

A *workload* is the time assigned to a person or a team to satisfy a requirement. This time is divided by as many persons in the team. You should respect a unit for all workloads (hour or day). Values must be greater or equal to zero, and limited to one decimal (For example: 3.5).

A parent requirement workload is the sum of its child requirements workloads. Parent workloads are automatically calculated once you enter their child workloads. Model workloads are the sum of all child workloads. Model and parent workloads are in read-only mode (grayed). You can only modify child workloads.

RQM Traceability Links Tab

The standard Traceability Links tab displays the following properties:

Property	Description
Linked Object	Design objects or external files linked to the requirements model or package
Bookmark	Bookmark for the MS Word file linked with the requirements model or package. Click a cell, then the Ellipsis button (...) to create or modify a bookmark. See *Defining a Bookmark in an MS Word Document* on page 25

To help understanding a requirements model or package, you can create links with design objects (objects from other types of models) and external files (MS Word, MS Excel, PowerDesigner...).

Use the following tools to create links with the current model or package:

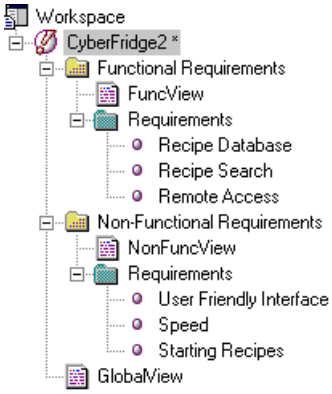
Tool	Description
	Add Links to Design Objects - creates shortcuts to attach design objects to the current model or package. Design objects are selected from design models open in the workspace
	Add Link to External File - creates a link between an external file (whatever the format) and the current model or package. The external file is stored in a Files folder within the model

Packages (RQM)

A package is a piece of a model.

When working with a large model, you can split the model into smaller subdivisions to avoid manipulating the entire set of model objects. Packages can be useful to assign portions of a model, representing different tasks and subject areas, to different development teams.

In the following example, a package contains functional requirements and another package contains non-functional requirements.



Package Hierarchy

You can create several packages at the same hierarchical level within a model, or decompose a package into other packages, and continue this process without limitation in decomposition depth. Each package is displayed with a default requirements view (document, traceability or user allocation view). At each level of decomposition, you can create several requirements views.

To display a package view, you must double-click its name or icon in the Browser tree view.

For more information on packages, see "Packages" in the Models chapter of the *Core Features Guide*.

Package Requirements

In a requirements model, packages only appear in the Browser tree view. To add requirements to a package, you can:

- Create requirements directly from the package document view(s)
- In the Browser, select requirements from the model Requirements folder, and *drag and drop* them either in the package document view(s) or beneath the package Requirements folder (for root requirements), or beneath other requirements (for child requirements)

You can link requirements from different packages of the same model. Use the *Add Links to Other Requirements* tool, in the Traceability Links tab of the requirements property sheet.

Requirements Package Properties

You can modify a package's properties from its property sheet. To open a package property sheet, double-click its Browser entry. The following sections detail the property sheet tabs that contain the properties most commonly entered for RQM packages. The General tab of a package property sheet contains the following properties:

Property	Description
Name	The name of the item which should be clear and meaningful, and should convey the item's purpose to non-technical users
Code	The technical name of the item used for generating code or scripts, which may be abbreviated, and should not generally include spaces
Comment	Optional label that describes a package and provides additional information
Stereotype	Sub-classification used to extend the semantics of an object without changing its structure. It can be pre-defined or user-defined
Use parent name-space	Defines the package as being the area in which the name of an object must be unique in order to be used. The package is the default namespace
Default view	View displayed by default when you open the package

Package Detail Tab

The Detail tab of a package property sheet contains the same properties as for the equivalent tab in the model property sheet.

For more information, see *RQM Detail tab* on page 4.

Package Traceability Links Tab

The Traceability Links tab of a package property sheet contains the same properties as for the equivalent tab in the model property sheet.

For more information, see *RQM Traceability Links tab* on page 4.

Customizing the RQM Environment

The requirements model environment includes a set of parameters and configuration options that define various aspects of the model content and behavior. You can set these parameters:

- At model creation
- After creating a model with default options and parameters
- When creating a model template

Selecting Extended Model Definitions at Model Creation

Extended model definitions (.XEM files) provide means for customizing and extending PowerDesigner metaclasses, parameters and generation. Extended model definitions are typed like models in PowerDesigner. You create an extended model definition for a specific type of model and you cannot share these files between heterogeneous models.

In the case of requirements models, you can use extended model definitions as methodological supports for requirements management:

- *Custom checks* verify that methodological statements are satisfied. For example, each requirement of scenario type must be associated with a use case in an OOM
- You can customize the *list of values* for some properties. See *Requirement Property Sheet Details Tab* on page 21
- You can initialize the default values of a requirement, just after its creation, by using the *Initialize* event handler

When you create a new requirements model, you can select one or several extended model definitions and attach them to the model from the New dialog box.

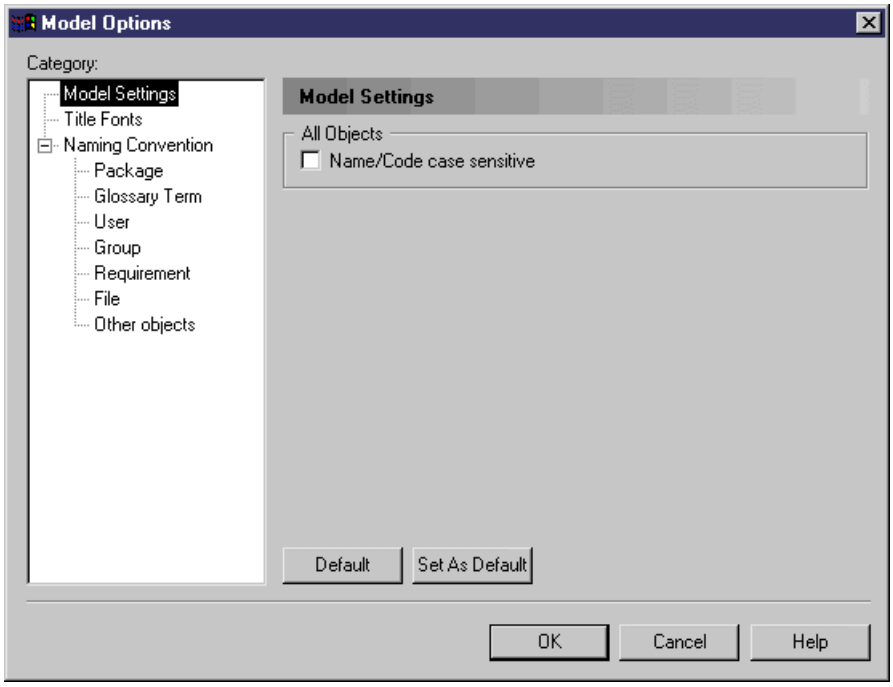
You can choose one of the following options:

Option	Description
Share	Current extended model definition constantly refers to the extended model definition stored in the Resource Files\Extended Model Definitions directory. Any changes made to the extended model definition are shared by all linked XEM
Copy	Current extended model definition is a unique copy of the extended model definition stored in the Resource Files\Extended Model Definitions directory. The current extended model definition is independent of the original one, so modifications made to the extended model definition in the Resource Files\Extended Model Definitions directory are not available to the copied XEM. This one is saved with the requirements model and cannot be used without it

For more information on extended model definitions, see "Extended Model Definitions" in the Resource Files and the Public Metamodel chapter of the *Customizing and Extending PowerDesigner* manual.

Setting RQM Model Options

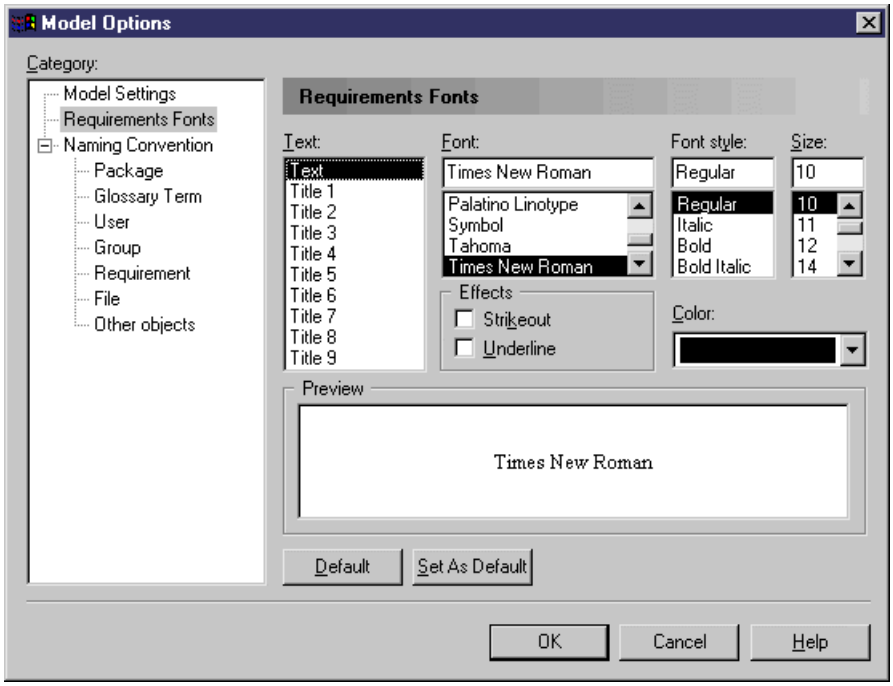
This section explains how to set global options for the objects in your RQM. For information about controlling the naming conventions of your model objects other than the requirement object, see "Naming Conventions" section in the Models chapter of the *Core Features Guide*. To set Model Settings, select **Tools** > **Model Options** .



Option	Description
Name/Code case sensitive	Specifies that you can have two objects with identical names or codes but different cases in the same namespace. You can modify the name and code case sensitivity during the design process. However, if you do so, make sure you run the check model feature to verify if the model does not contain any duplicate object.

Requirements Fonts Model Options

To set model options for requirements fonts, select **Tools** > **Model Options** ,and select the Requirements Fonts subcategory in the left-hand Category pane.



You can specify the font and its characteristics for any of the requirement levels by selecting the level in the Text box and the necessary requirements in the other fields.

Customizing Requirement Codes

Requirement codes are automatically computed from the other attributes of the requirement. You can customize requirement codes in the Code Template tab of the Requirement page of the Model Options dialog box.

In this tab you can:

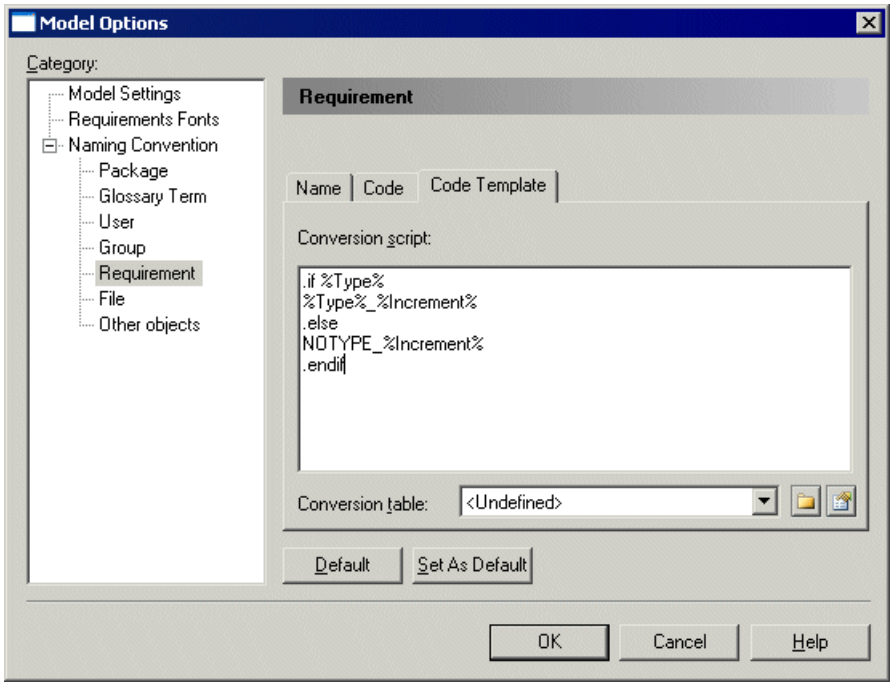
- Define a conversion script in the Conversion Script edit box to generate a code value for requirements using macros
- Select a conversion table from the Conversion table list. This allows you to convert an expression to another, when using the .convert_name or .convert_code macros with any property (not only the name or the code). For more information about macros, see "Using a conversion script" section in the Models chapter of the *Core Features Guide*. The use of conversion tables is optional. See the "Using a conversion table" section in the Models chapter of the *Core Features Guide*.

REQ_%-4:Increment% is the default GTL (Generation Template Language) template script. The %increment% variable is a specific variable, which ensures the code uniqueness.

You can customize the default template in order to fit your needs and create user-defined codes for your requirements. To do so, you can use any of the available GTL macros. See "GTL Macros" in the Customizing Generation with GTL chapter of the *Customizing and Extending PowerDesigner* manual. The code value will be computed using the user-defined template.

You can still modify a requirement code in the requirement property sheet or directly in the document view. In this case, the User-Defined button is pressed automatically to indicate that the modified code no longer satisfy the code template definition. You can always return to the current default code template by re-clicking the User-Defined button.

1. Select **Tools** > **Model Options** to open the Model Options dialog box.
2. Select Requirement beneath the Naming Convention node in the Category tree view.
3. Specify a script in the Conversion Script edit box.



4. [Optional] Select a conversion table.
5. Click Ok to close the dialog box.

Requirements Model Extended Dependencies

Extended dependencies are links between objects of a requirements model. These links help to make object relationships clearer but are not interpreted and checked by PowerDesigner, as they are meant to be used for documentation purposes only.

You can complement these links by applying stereotypes. Stereotypes can be used to define extended dependencies between objects in a requirements model.

You can type stereotypes directly in the Stereotype column of the object property sheet or select a value from the list, if you have previously defined stereotypes in an embedded or imported extended model definition (.XEM).

For more information about extended dependencies, see "Using extended dependencies" in the Objets chapter of the *Core Features Guide*.

Building a Requirements Model

A requirements model represents a detailed and structured *list* of actions that must be implemented during a development process. A diagram, showing a structure of interconnected symbols, is not the best way to represent a numbered list of requirements. Document, traceability or user allocation views are *grids* that enumerate a list of requirements with respectively a set of attributes, traceability links or user allocations.

There are three types of views in a requirements model:

- Requirements document views – list requirements in a hierarchy
- Traceability matrix views - display the links between requirements and design objects (objects from other types of models), external files or other requirements
- User allocation matrix views – display the links between requirements and the users and groups who will fulfill them

A requirements model can have as many views as necessary. You can differentiate views by selecting requirements, customizing columns, changing the traceability matrix type.

Creating a Requirement View

You can create a requirement view in an existing RQM in any of the following ways:

- Right-click the model in the Browser and select **New** > **[Type] View** from the contextual menu
- In the requirements view toolbar, select one of the following tools:

Tool	Description
	Create a Requirements Document View - with the same hierarchy of requirements as the original view. You can modify the new view without altering the original view.
	Create a Traceability Matrix View - with the same traceability links as the original view. You can modify the new view without altering the original view.
	Create a User Allocation Matrix View - with the same links as the original view. You can modify the new view without altering the original view.

Warning! The new requirements view may be identical to the original requirements view. To make sure that a new requirements view has been created, check its name in the PowerDesigner general title bar or in the Browser tree.

Navigating Between Requirement Views

You can navigate between requirement views in a simplified hierarchy via the View menu.

Opening the Simplified Requirements View Hierarchy

To open the simplified requirements view hierarchy:

1. Select **View** > **Diagram** > **Select View** to open the Select View dialog box.
2. Select a view within the hierarchy and then click OK to open it.

RQM Objects

You can create the following objects in an RQM:

Object	Description
Requirement	The name and description of an action. It can be part of a hierarchy with parent and child requirements. It must be defined precisely before being assigned to users and groups
Glossary term	A word used in a requirements model. It must be defined precisely to avoid misunderstandings and set a common vocabulary
User	A person that is concerned by at least one requirement
Group	A group of users that have a common interest in satisfying at least one requirement

None of these objects has a graphic symbol, since there are no diagrams in a requirements model.

Requirements Views Properties

You can display a requirements view property sheet using one of the following methods:

- From the menu bar, select **View > Requirements View > Properties**
- From the Browser tree view, right-click the requirements view name or icon, and select Properties in the contextual menu

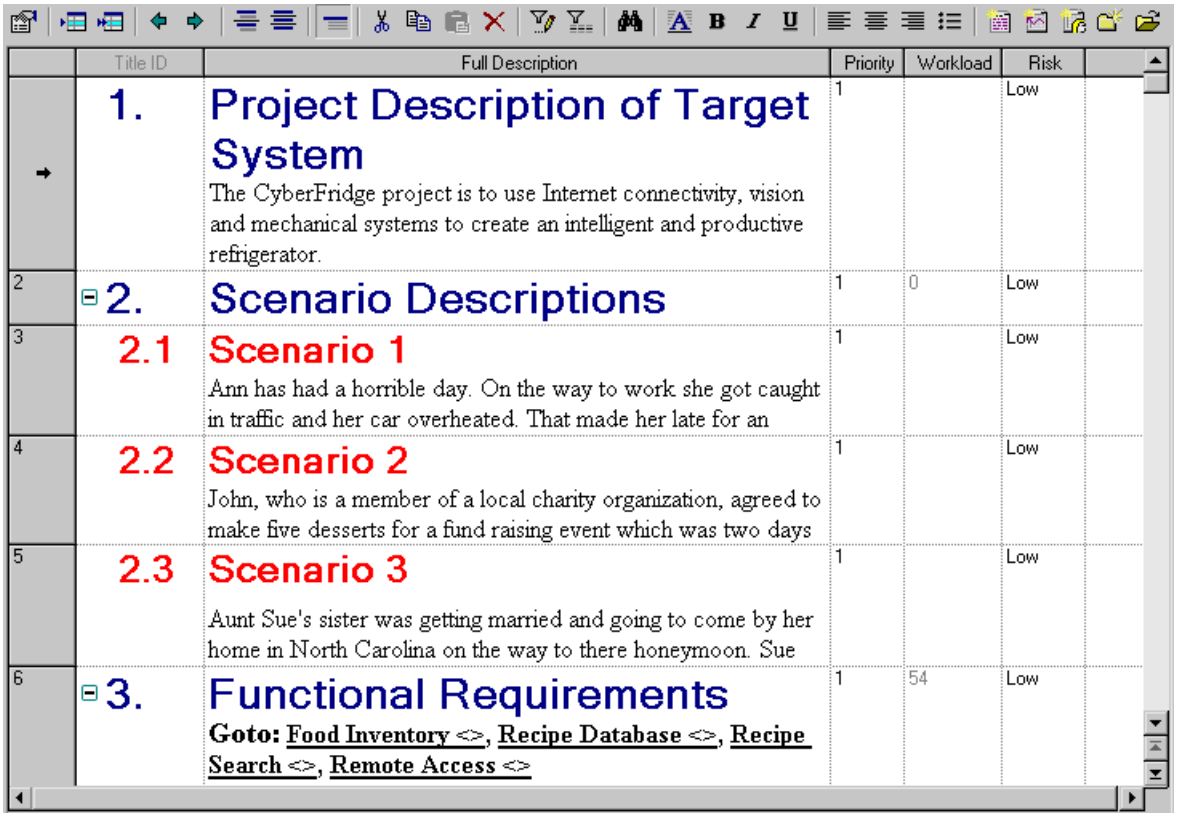
The General tab of a requirements view property sheet displays the following properties:

Property	Description
Name	The name of the item which should be clear and meaningful, and should convey the item's purpose to non-technical users
Code	The technical name of the item used for generating code or scripts, which may be abbreviated, and should not generally include spaces
Comment	Any comment on the requirements view
Traceability matrix type	Only for traceability matrix views. Use the list to select the type of linked objects (Design Object, File or Requirement) displayed in the traceability matrix view
Parent	Name of the model or package to which the requirements view belongs
Default view	If checked, the current requirements view (document, traceability or user allocation view) is displayed by default when opening the model

Requirements Document Views

A *requirements document view* displays a list of written requirements in a hierarchic grid.

The following example shows a requirements document view with a two level hierarchy:



Note: The arrow beside the first title ID indicates that the first requirement is selected.

A requirements model can have as many requirements document views as necessary. You can differentiate the views by customizing columns and filtering rows.

For more information, see *Customizing columns and filtering rows* on page 14.

Creating a Requirements Hierarchy

To create a requirements hierarchy in a requirements document view, use the specific tools of the requirements document view toolbar:

Tool	Description
	Insert a Row - Creates a new requirement at the same level as a selected requirement
	Insert a Sub-Object - Creates a requirement inferior by one level to a selected requirement
	Promote - Upgrades a selected requirement by one level
	Demote - Downgrades a selected requirement by one level
	Show Titles and Texts - Shows the title and description of the requirements. Also available from **Requirements > Show Titles and Texts**
	Show Titles Only - Shows only the title of the requirements. Also available from **Requirements > Show Titles Only**
	Show Current Title and Text / Show Current Title Only - When pushed-in, shows the title and description of a selected requirement. When released, shows only the title of the selected requirement. Also available from **Requirements > Show Current Title and Text / Show Current Title Only**

Tool	Description
	Expand all Objects – Expands all levels in the requirements hierarchy Also available from **Requirements > Expand all Objects**
	Collapse all Objects - Collapse all levels in the requirements hierarchy Also available from **Requirements > Collapse all Objects**

Redefining Title and Description Fonts

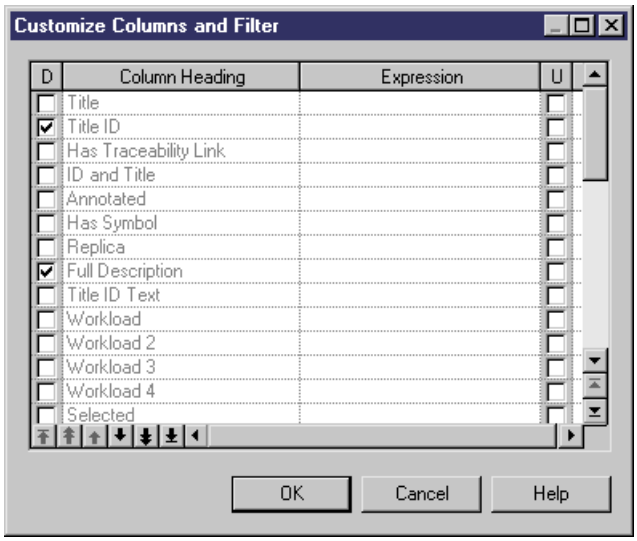
To set model options for requirements fonts, select **Tools > Model Options** ,and select the Requirements Fonts sub-category in the left-hand Category pane.

You can specify the font and its characteristics for any of the requirement levels by selecting the level in the Text box and the necessary requirements in the other fields.

Customizing Columns and Filtering Rows

You can customize the columns displayed and use criteria to filter the rows in a requirements document view.

1. Click the Customize Columns and Filter tool to open the Customize Columns and Filter dialog box.



2. To specify columns to display, select or clear check boxes in the Displayed (D) column.
3. To reorder the display of columns, use the arrow buttons at the bottom-left corner of the list.
4. To filter the rows displayed, enter an expression in the expression column.

   For more information on filtering rows, see "Customizing object list columns and filtering lists" in the Objets chapter of the *Core Features Guide*.
5. Click OK.

   The requirements document view is displayed with customized columns and filtered rows.

Traceability Matrix Views

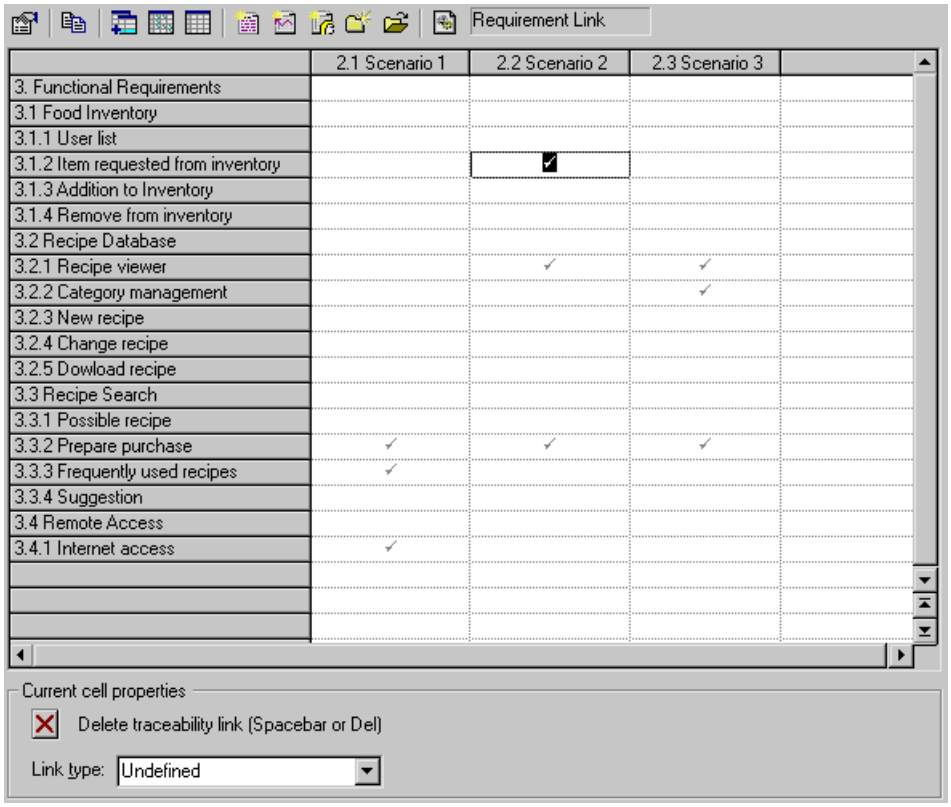
A *traceability matrix view* displays the links between requirements and objects from other types of models, external files or other requirements.

You can link objects to a requirement to confirm that the requirement has been integrated during the analysis and design processes. (See the Traceability Links tab of a requirement property sheet)

There are three types of traceability matrix views corresponding to three types of links, between requirements and:

- Design objects (objects from other types of models) – to confirm that the requirements have been integrated in the analysis and design processes
- External files (MS Word, MS Excel, PowerDesigner...) - the links with MS Word are managed automatically. You can also link requirements with pieces of various documents (e.g. a planning)
- Requirements from different hierarchies - to manage interconnected requirements. For example, you can start from a customer requirements list, then move to a designer requirements list, and end with specifications. The requirement to requirement matrix view allows you to check that no requirement has been forgotten between the customer list and the specifications

The following example shows a traceability matrix view with requirements links:



The *Current cell properties* group box displays the properties of a selected link:

Property	Description
Link type	Additional information about the object linked to the current requirement
Bookmark	Only with MS Word files. Bookmark for the MS Word file linked with the current requirement. (See *Defining a bookmark in an MS Word document* on page 25)

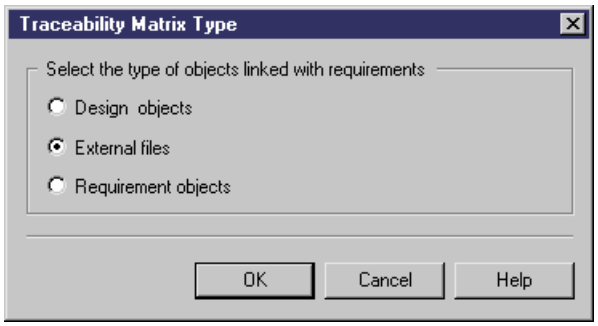
You can also *create* or *delete* traceability links with the tool in the upper left corner of the Current cell properties group box (see *Creating and deleting traceability links* on page 17).

You can create as many traceability matrix views as you want, by changing the linked objects type or selecting the linked objects.

Selecting the Type of Traceability Links

You can select the type of traceability links displayed in a traceability matrix view.

1. Click the Change Traceability Matrix Type tool to open the Traceability Matrix Type dialog box.

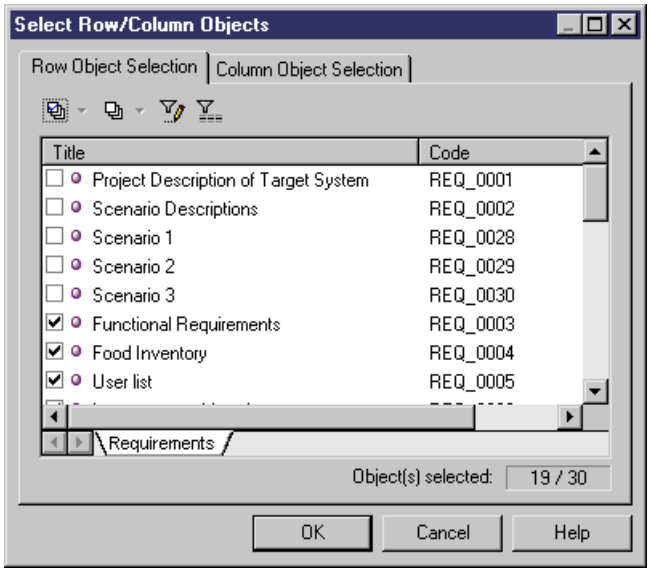


2. Select the type of objects to link to and click OK to return to the traceability matrix view, which now displays the selected type of objects in the columns.

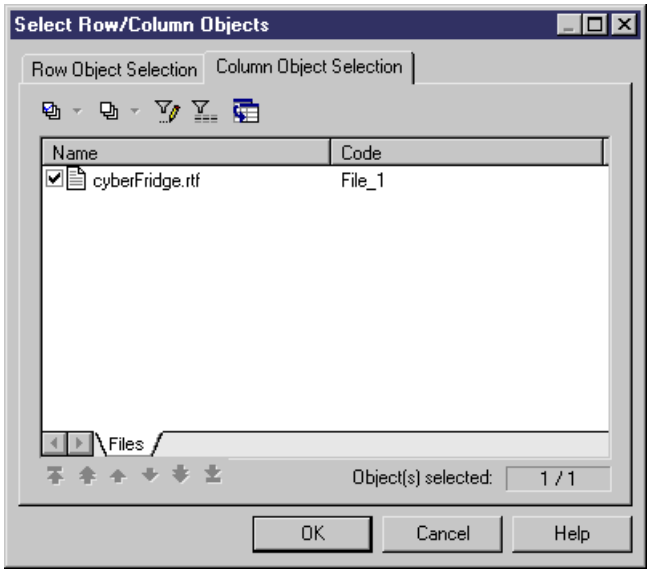
Selecting Rows and Columns in a Traceability Matrix View

You can select the objects displayed in the rows and columns of a traceability matrix view.

1. Click the Select Rows/Columns tool to open the Select Row/Column Objects dialog box.



2. The Row Object Selection tab displays the list of requirements. Select or clear the check boxes to specify the rows to display.
3. Click the Column Object Selection tab to display the list of linked objects. Select or clear the check boxes to specify the columns to display.



4. [optional] To add new columns, click the Add New Column Object tool to open:
   - the Select Design Objects dialog box (for a matrix view with design objects links), or
   - a standard Windows Open dialog box (for a matrix view with external files links).

   Note that the Add New Column Object tool is not available for a matrix view with requirement objects links, because requirements from different models cannot be linked
5. Click OK to return to the traceability matrix view, which now displays the rows and columns specified.

Filtering Rows and Columns in a Traceability Matrix View

You can filter a traceability matrix view by hiding or displaying its full or empty rows and columns:

- In the menu bar, select **Requirements** > **Display Only Full Rows/Columns** ou**Display Only Empty Rows/Columns**.
- In the matrix view toolbar, use the following tools:

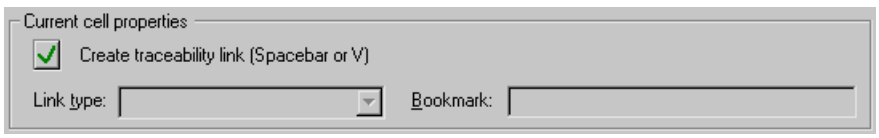
Tool	Tooltip	Description
	Display Only Full Rows/Columns	When pushed-in, it displays only *full* rows and columns, so that you focus only on requirements with links
	Display Only Empty Rows/Columns	When pushed-in, it displays only *empty* rows and columns that need to be linked

Creating and Deleting Traceability Links

You create and delete traceability links in a traceability matrix view:

1. Click a cell in the traceability matrix view, where you want to create a traceability link.

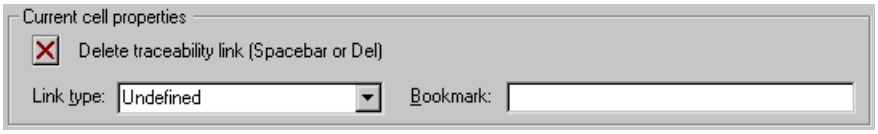
   The current cell properties are displayed at the bottom of the window in the Current cell properties group box.



2. If the cell is empty, you can create a link by clicking the Create Traceability Link tool, or by typing "V", or pressing the space bar. A check mark is displayed in the cell and its properties are modified. The link is also added to the Traceability Links tab of the appropriate requirement property sheet.
3. [optional] Select a value in the Link type list to specify the kind of linked object involved in the traceability link.

   Note that the Link type values are customizable through an extended model definition (see *Customizing a list of values* on page 22).

   A bookmark can be defined when you create a link with an MS Word file, in the Traceability Links tab of a requirement property sheet (see *Defining a bookmark in an MS Word document* on page 25).



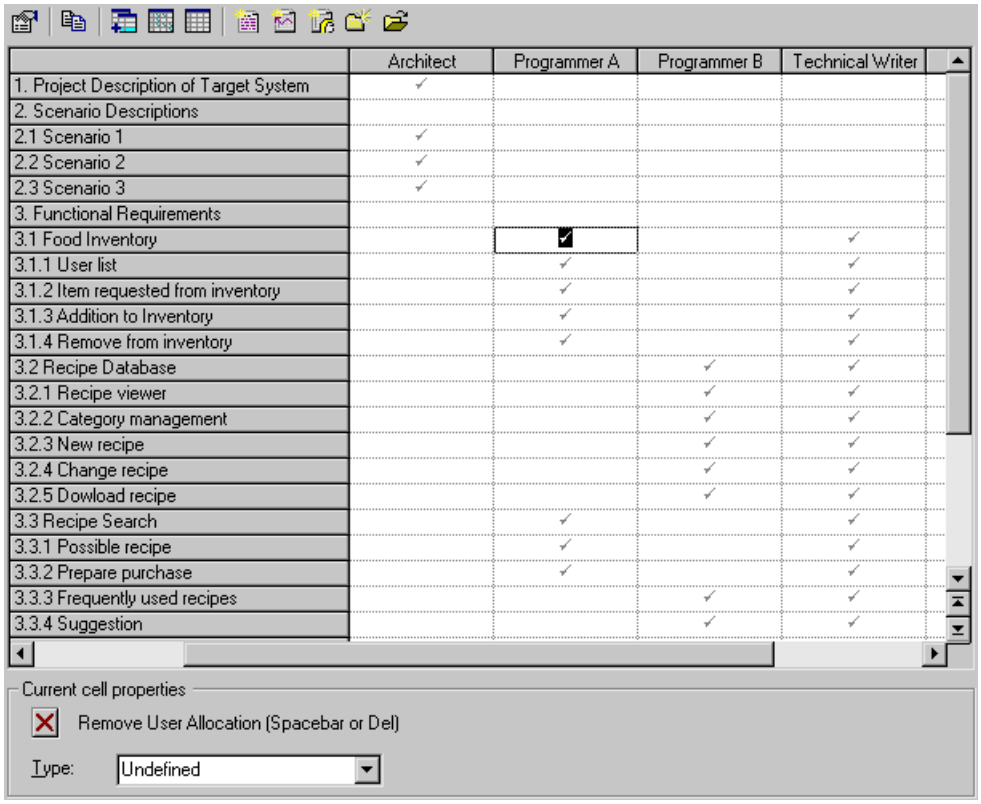
4. If the cell contains a check mark, you can delete the link by clicking the Delete Traceability Link tool, or by pressing the Del or the space bar. The check mark is deleted from the cell and its properties are modified. The link is also deleted from the Traceability Links tab of the appropriate requirement property sheet.

User Allocation Matrix Views

A *user allocation matrix view* displays the links between requirements and the users and groups who will fulfill them.

Note: User allocation matrix views work identically to traceability matrix views, without the traceability matrix type option.

In the following example, the user allocation matrix view shows the links between requirements and the users who will fulfill them. Architect will fulfill Scenario 1, 2, and 3 but not Scenario Descriptions:



The *Current cell properties* group box displays the type of user allocation.

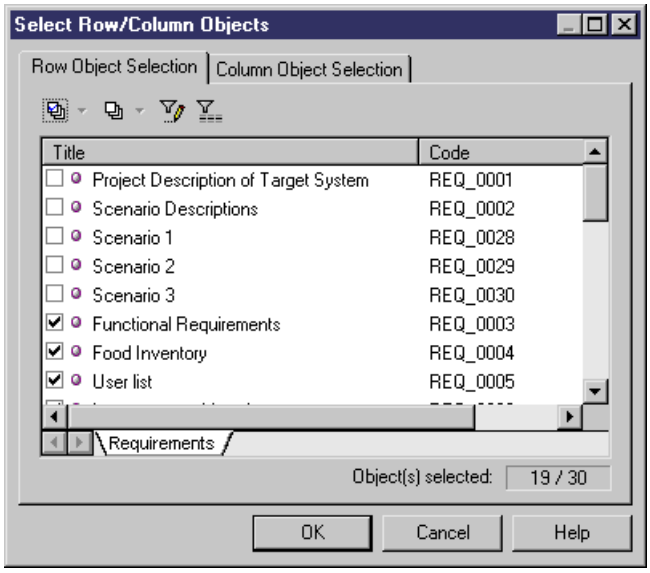
You can also *add* or *remove* user allocations with the tool in the upper left corner of the Current cell properties group box (see *Creating and deleting user allocations* on page 19)

You can create as many user allocation matrix views as you want, by selecting or filtering rows and columns.

Selecting Rows and Columns in a User Allocation Matrix View

You can select the objects displayed in the rows and columns of a user allocation matrix view.

1. Click the Select Rows/Columns tool to open the Select Row/Column Objects dialog box.



2. The Row Object Selection tab displays the list of requirements. Select or clear the check boxes to specify the rows to display.
3. Click the Column Object Selection tab to display the list of users and groups. Select or clear the check boxes to specify the columns to display.
4. Click OK to return to the user allocation matrix view, which now displays the rows and columns specified.

Filtering Rows and Columns in a User Allocation Matrix View

You can filter a user allocation matrix view by hiding or displaying its full or empty rows and columns:

- In the menu bar, select **Requirements > Display Only Full Rows/Columns** or**Display Only Empty Rows/Columns**.
- In the matrix view toolbar, use the following tools:

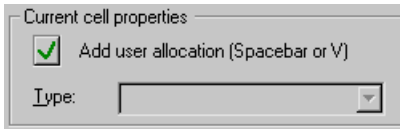
Tool	Tooltip	Description
	Display Only Full Rows/Columns	When pushed-in, it displays only *full* rows and columns, so that you focus only on requirements with allocated users and groups
	Display Only Empty Rows/Columns	When pushed-in, it displays only *empty* rows and columns that need to be linked

Creating and Deleting User Allocations

You create and delete user allocations in a user allocation matrix view:

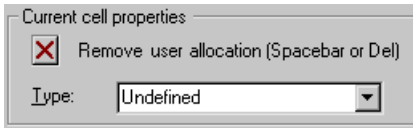
1. Click a cell in the user allocation matrix view, where you want to create a user allocation link.

   The current cell properties are displayed at the bottom of the window in the Current cell properties group box.



2. If the cell is empty, you can create a link by clicking the Add User Allocation tool, or by typing "V", or pressing the space bar. A check mark is displayed in the cell and its properties are modified. The allocation is also added to the User Allocations tab of the appropriate requirement property sheet.
3. [optional] Select a value in the Link type list to specify the kind of user allocation.

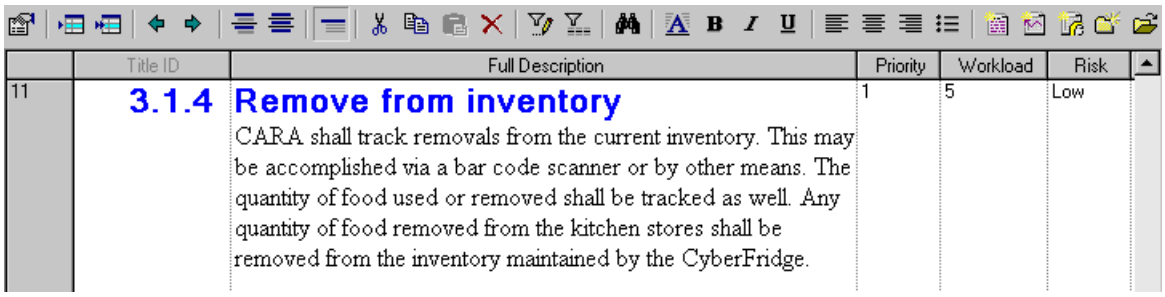
   Note that the Link type values are customizable through an extended model definition (see *Customizing a list of values* on page 22)



4. If the cell contains a check mark, you can delete the allocation by clicking the Remove User Allocation tool, or by pressing Del or the space bar. The check mark is deleted from the cell and its properties are modified. The allocation is also deleted from the User Allocations tab of the appropriate requirement property sheet.

Requirements (RQM)

A requirement is a clear and precise description of an action that must be implemented during a development process.



Note: All columns (except Title ID) are editable.

Creating a Requirement

You can create a requirement in any of the following ways:

- Click in an empty row in a requirements document view.
- Click the Insert an Object or Insert a Sub-Object tool in the toolbar at the top of a requirements document view.
- Right-click the model or package in the Browser, and select **New** > **Requirement** .

For general information about creating objects, see the Objects chapter in the *Core Features Guide*.

Requirement Properties

You can modify an object's properties from its property sheet. To open a requirement property sheet, double-click its diagram symbol or its Browser entry in the Requirements folder. The General tab contains the following properties:

Property	Description
Parent	Name of the parent requirement. For root requirements (directly linked to the Requirements folder), it is the requirements model name

Property	Description
Title ID	Read-only number expressing the place of the requirement in the requirements hierarchy. For example: 1.3.2
Title	Name of the requirement
Code	Code of the requirement, which can be computed or user-defined. The computed value comes from a user-defined GTL template that you specify in the Model Options dialog box. See *Customizing Requirement Codes* on page 8
Description	Full description of the requirement. You can use the RTF editor toolbar. The text is displayed simultaneously in the Description tab of the Notes tab

Requirement Property Sheet Details Tab

The Detail tab of a requirement property sheet displays the following properties:

Property	Description
Comment	Any comment on the requirement
Stereotype	Sub-classification used to extend the semantics of an object without changing its structure. It can be predefined or user-defined
Type	Type of requirement from the process point of view (See Customizing a list of values)
Status	Validation level for a requirement (See Customizing a list of values)
Priority	Priority level attached to a requirement. Select a value in the list or type a value. The value cannot be null or negative, and is limited to one decimal. For example: 1.9
Selected	If checked, the requirement is retained for the project. If cleared, the requirement is excluded from the project and the sum of workloads
Risk	Level of risk, would a requirement not be satisfied (See Customizing a list of values)
Verification	Test level for a requirement (See Customizing a list of values)
Workload 1	Time assigned to a first person or team to satisfy the current requirement (See note below)
Workload 2	Time assigned to a second person or team to satisfy the current requirement (See note below)
Workload 3	Time assigned to a third person or team to satisfy the current requirement (See note below)
Workload 4	Time assigned to a fourth person or team to satisfy the current requirement (See note below)

Note: You should respect a *unit* for all workloads (hour or day). A workload is divided by as many persons in a team. Values must be greater or equal to zero, limited to one decimal (e.g. 3.5). A parent requirement workload is the *sum* of its child requirements workloads. Parent workloads are automatically calculated once you enter their child workloads. Parent workloads are in read-only mode (grayed). You can only modify child workloads.

Requirement Property Sheet Traceability Links Tab

The Traceability Links tab lists objects attached to the requirement.:

You can use the following tools to create traceability links:

Tool	Description
	Add Links to Design Objects - attaches design objects to the requirement. Design objects are selected from design models open in the workspace

Tool	Description
	Add Link to External File – attaches an external file (whatever the format) to the requirement. The external file is stored in a Files folder within the model. See *Defining a bookmark in an MS Word document* on page 25
	Add Links to Other Requirements – attaches another requirement to the requirement. The second requirement is drawn from the same model (but from a different hierarchy or root requirements), or from another model open in the workspace.

Requirement Property Sheet User Allocations Tab

The User Allocations tab lists the users and groups attached to the requirement.

Click the *Add Objects* tool to select the users and groups you want to attach to the requirement:

For more information, see *Users and Groups (RQM)* on page 26.

Note: User allocations are globally managed in user allocation matrix views.

Requirement Property Sheet Related Glossary Terms Tab

The Related Glossary Terms tab lists terms attached to the current requirement. It lists the vocabulary that is used for the current requirement, or that should be used for matters concerning the current requirement.

For more information, see *Glossary Terms (RQM)* on page 28.

Customizing a List of Values

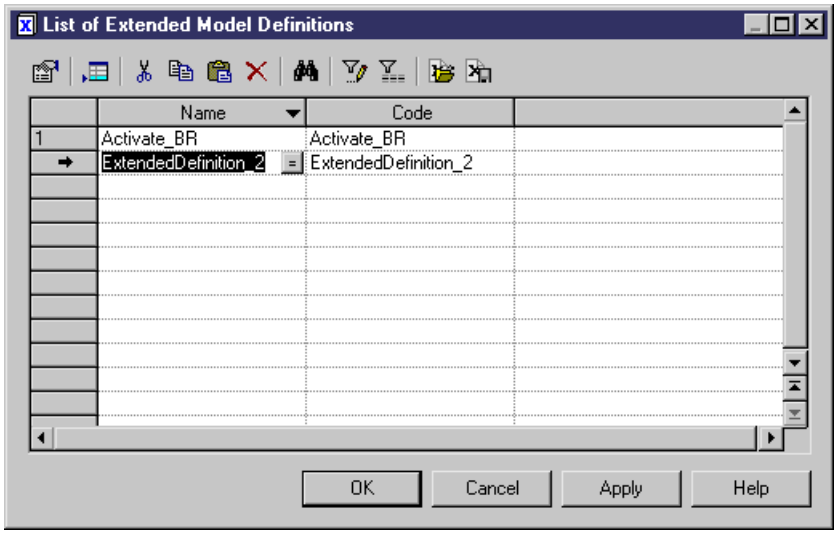
Some requirement properties come with a predefined list of values. You can define your own list of values by creating an *extended model definition*. In the case of several extended model definitions, all the lists are merged.

You can customize the list of values for the following requirement properties:

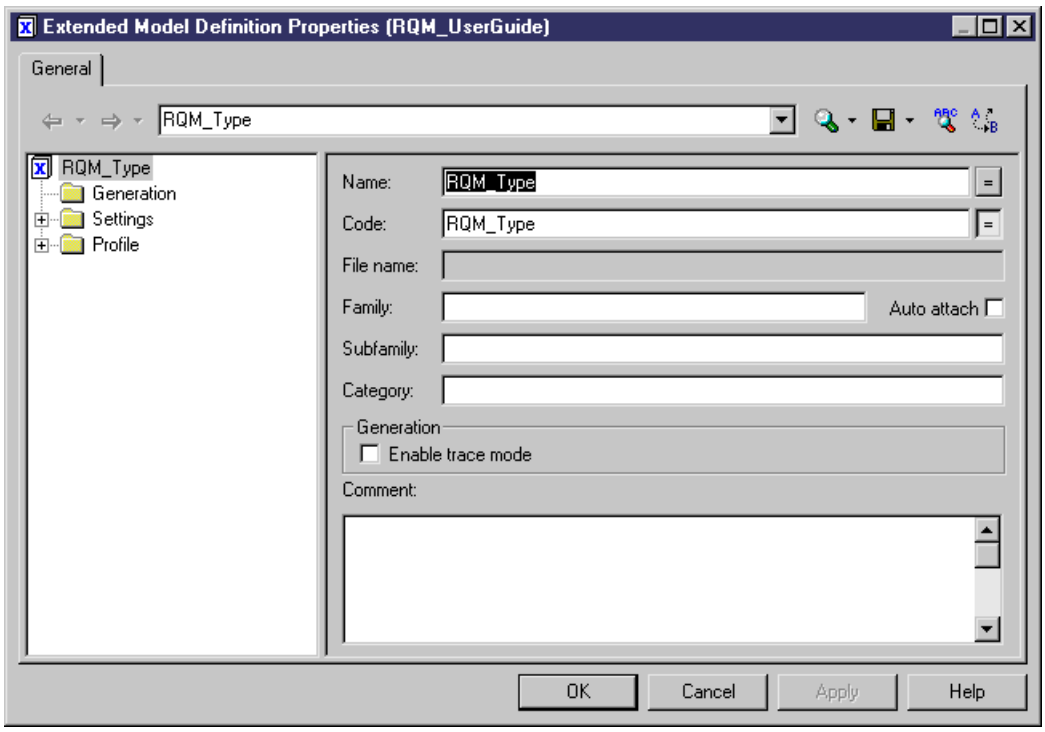
- Type
- Status
- Risk
- Verification

You can also customize the list of values for the *Link type* property in traceability matrix views, and for the *Type* property in the User Allocations tab of the requirements property sheet.

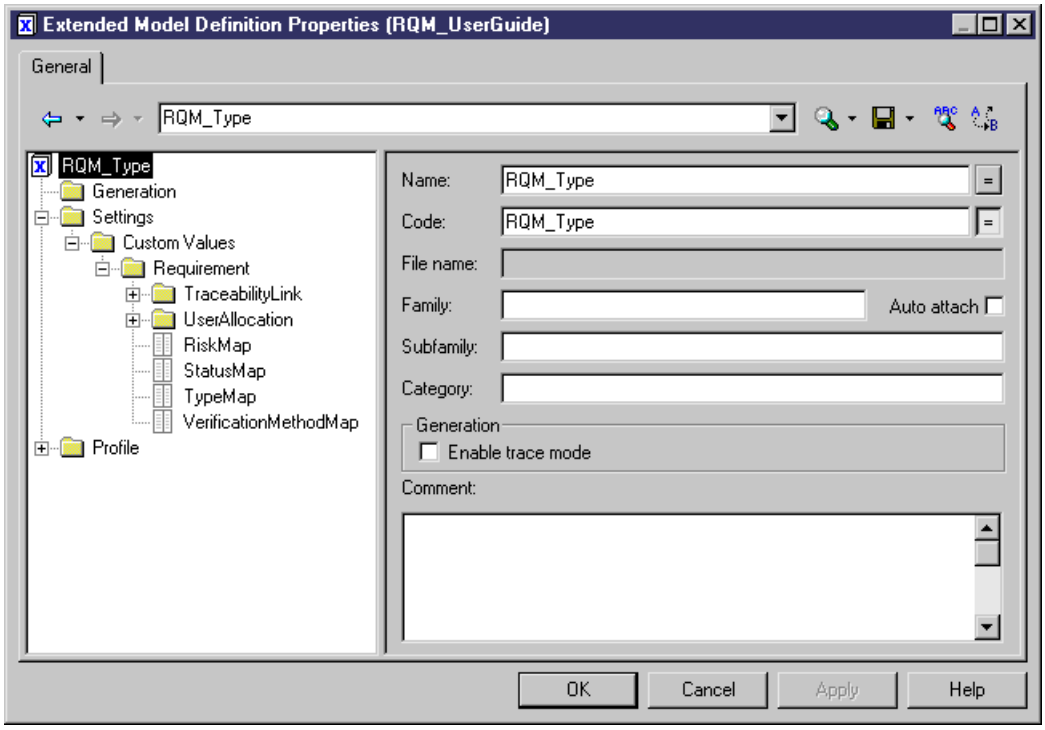
1. In the menu bar, select **Model > Extended Model Definitions** to open the List of Extended Model Definitions and click the *Add a Row* tool.



2. Type a name and a code for the new extended model definition and click Apply.
3. Click the Properties tool to open the property sheet for the new extended model definition.

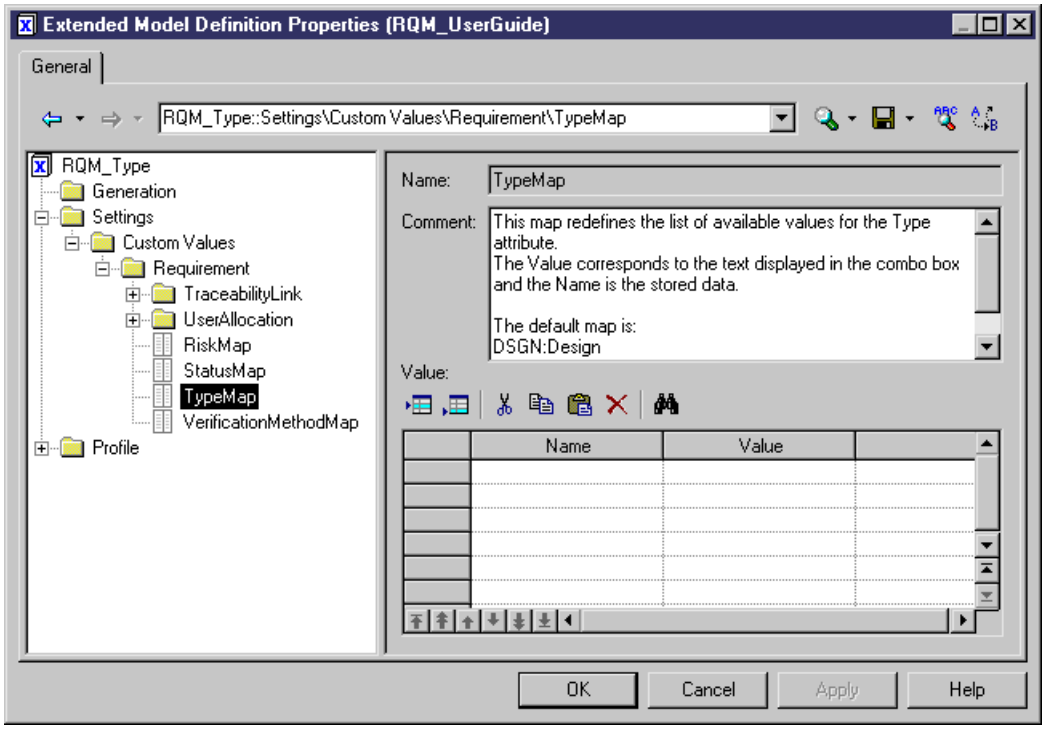


4. In the left pane, expand **Settings** > **Custom Values** > **Requirement** category.

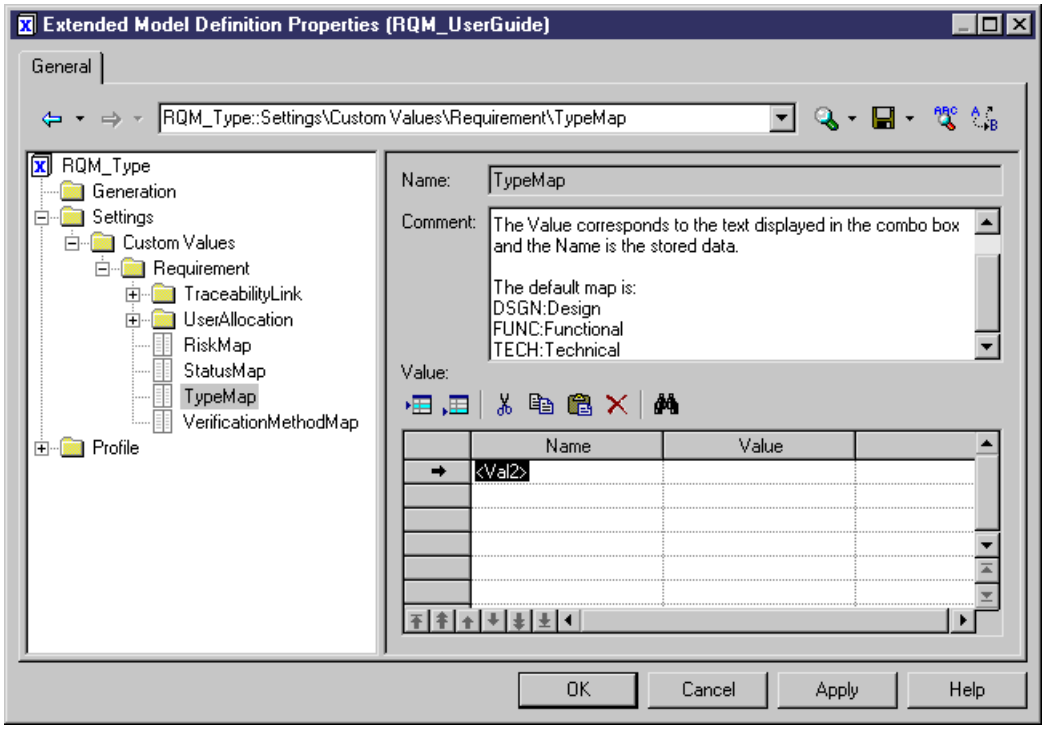


Note: Expand the TraceabilityLink category to define Link type values in traceability matrix views, and the UserAllocation category to define Type values in the User Allocations tab of requirements property sheets.

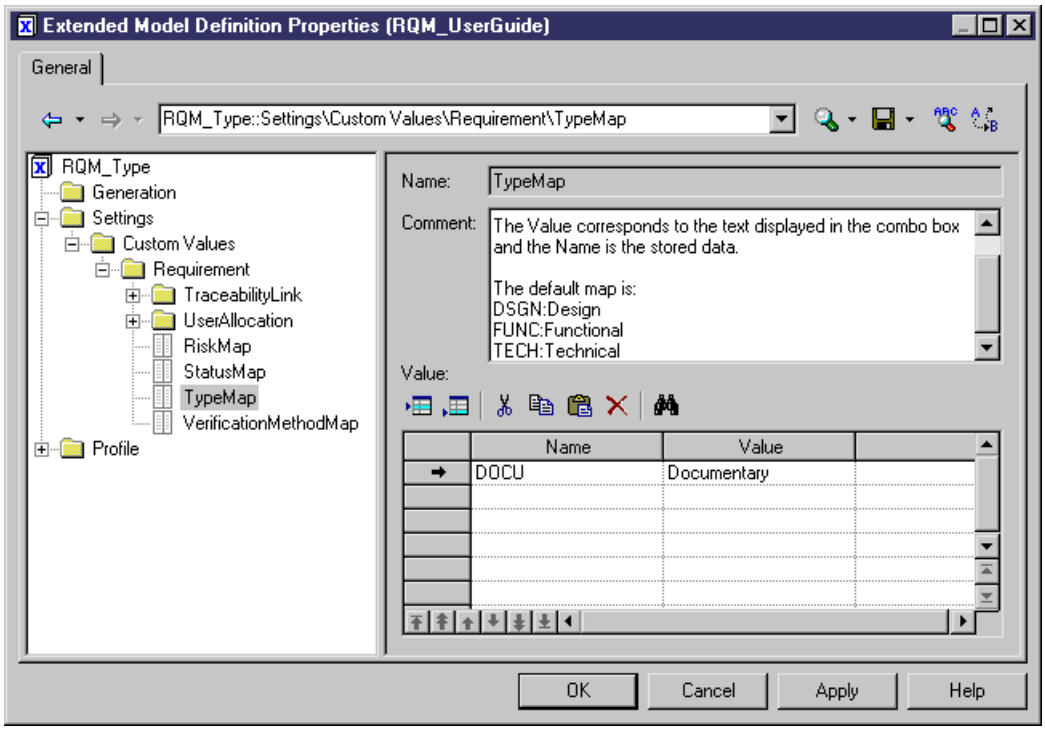
5. In the Requirement category, select a property (for example, TypeMap) to display the name and comment (definition, default values) for the selected property in the right-hand panel.



6. In the Value table, click the *Add a Row* tool to create a new value.



7. Type a value in the Value column (this value will appear in the property list) and a code in the Name column (this code is stored in the system).



8. Repeat the previous step for each value that you want to create and then click OK to return to the List of Extended Model Definitions.
9. Click OK again to return to the model. The new values are now available in the property list.

Defining a Bookmark in an MS Word Document

You can create bookmarks in a MS Word document attached to the model.

Modifying a Bookmark

To modify a bookmark in an MS Word document, click the bookmark cell in the Traceability Links tab of the requirement property sheet, then click the Ellipsis button (...) to redefine a bookmark.

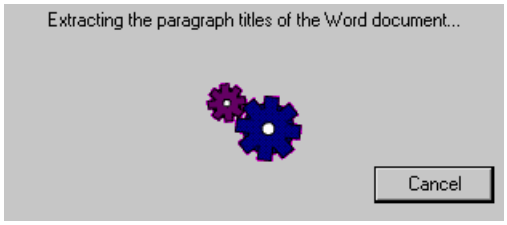
Displaying a Bookmark

To display a bookmark in an MS Word document, select the linked file in the Traceability Links tab of the requirement property sheet, then click the Properties tool in the tab toolbar. The MS Word document is displayed starting with the title defined as bookmark.

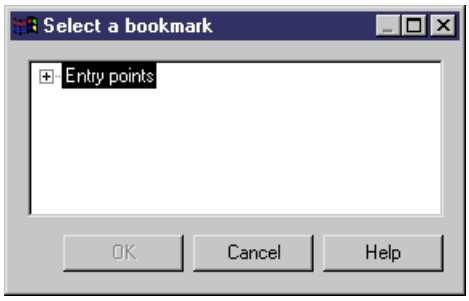
Creating a Bookmark in an MS Word Document

To create a bookmark in an MS Word document:

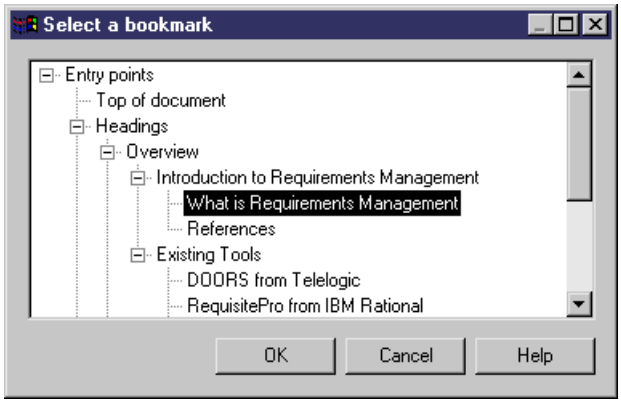
1. Open the property sheet of a requirement and click the Traceability Links tab
2. Click the Add Link to External File tool, then select an MS Word file in your directory. A message is displayed indicating that the system is parsing the MS Word document to extract its paragraph titles.



3. When the parsing is over, the Select a bookmark dialog box is displayed:



Expand the *Entry points* node, to reveal the paragraph titles hierarchy, and select a title as a bookmark:



4. Click OK. The bookmark reference is displayed in the Traceability Links tab of the requirement property sheet, as well as in the traceability matrix view.

Users and Groups (RQM)

Users are all the people concerned by at least one requirement defined in a requirements model.

Groups are categories of users specialized in one or more aspects of a development process (e.g. a QA team). A group is concerned by at least one requirement defined in a requirements model.

Users and groups are attached to requirements via the *User Allocations* tab of the requirements property sheet, or via user allocation matrix views.

The *Dependencies* tab of a user or group property sheet displays:

- The list of requirements assigned to that user or group
- The groups or child groups linked to that user or group

Creating a User or a Group

You can create a user or a group in any of the following ways:

- Select **Model** > **Users** to access the List of users or **Model** > **Groups** to access the List of Groups, and click the Add a Row tool.
- Right-click the model or package in the Browser, and select **New** > **User** or **New** > **Group** .

For general information about creating objects, see the Objects chapter in the *Core Features Guide*.

User Properties

You can modify an object's properties from its property sheet. To open a user property sheet, double-click its Browser entry in the Users folder. The General tab contains the following properties:

Property	Description
Name	The name of the item which should be clear and meaningful, and should convey the item's purpose to non-technical users
Code	The technical name of the item used for generating code or scripts, which may be abbreviated, and should not generally include spaces
Comment	Any comment on the user
Stereotype	Sub-classification used to extend the semantics of an object without changing its structure. It can be predefined or user-defined
Email address	E-mail address of the user

Group Properties

You can modify an object's properties from its property sheet. To open a group property sheet, double-click its diagram symbol or its Browser entry in the Groups folder. The General tab contains the following properties:

Property	Description
Name	The name of the item which should be clear and meaningful, and should convey the item's purpose to non-technical users
Code	The technical name of the item used for generating code or scripts, which may be abbreviated, and should not generally include spaces
Comment	Any comment on the group
Stereotype	Sub-classification used to extend the semantics of an object without changing its structure. It can be predefined or user-defined
Email address	E-mail address of the group

Group Property Sheet Group Users Tab

The Group Users tab of a group property sheet allows you to attach users and child groups to the current group.

Attaching Users and Groups to a Group

To attach users and groups to a group:

1. Open the property sheet of a group, and click the Group Users tab.
2. Click the Add Objects tool to open the Add Objects dialog box.
3. The User sub-tab lists the available users in the model. Select the users you want to attach to the current group.
4. Click the Group sub-tab. This sub-tab lists the available groups in the model. Select the groups you want to attach to the current group and click OK to return to the Group property sheet.

   The selected users and child groups are displayed on the Group Users tab.

Warning! You must not select child groups that are, at the same time, parent groups of the current group (see *Group Checks* on page 34).

Glossary Terms (RQM)

Glossary terms are clearly defined words used to avoid misinterpretations in a requirements model. Use the *Description* tab, in the Notes tab of a glossary term property sheet, to give a full and precise description of a glossary term.

Glossary terms are attached to requirements via the *Related Glossary Terms* tab of the requirements property sheet.

The *Dependencies* tab of a glossary term property sheet displays the requirements associated with the glossary term.

Creating a Glossary Term

You can create a glossary term in any of the following ways:

- Select **Model** > **Glossary Terms** to access the List of Glossary Terms, and click the Add a Row tool.
- Open the Related Glossary Terms tab in the property sheet of a requirement, and click the Create an Object tool.
- Right-click the model or package in the Browser, and select **New** > **Glossary Term** .

For general information about creating objects, see the Objects chapter in the *Core Features Guide*.

Glossary Term Property Sheet General Tab

You can modify an object's properties from its property sheet. To open a glossary term property sheet, double-click its Browser entry in the Glossary Terms folder. The General tab contains the following properties:

Property	Description
Name	The name of the item which should be clear and meaningful, and should convey the item's purpose to non-technical users
Code	The technical name of the item used for generating code or scripts, which may be abbreviated, and should not generally include spaces
Comment	Any comment on the glossary term
Stereotype	Sub-classification used to extend the semantics of an object without changing its structure. It can be predefined or user-defined

Design Objects (RQM)

Design objects are objects defined in other types of PowerDesigner models:

- Business Process Model (BPM)
- Conceptual Data Model (CDM)
- Physical Data Model (PDM)
- Information Liquidity Model (ILM)
- Object-Oriented Model (OOM)
- XML Model (XLM)

These objects can be an additional source of information about requirements, either in the making of a requirements model, or as a result of a requirement satisfaction.

You can perform several actions concerning design objects in a requirements model:

- Attach design objects in other models to a requirement – see *Linking Requirements with Design Objects* on page 35
- Export requirements to other models as design objects – see *Exporting Requirements as Design Objects* on page 40
- Import design objects in other models as requirements – see *Importing Design Objects as Requirements* on page 41

Business Rules (RQM)

A business rule is a rule that your business follows. It is a written statement specifying what an information system must do or how it must be structured. It could be a government-imposed law, a customer requirement, or an internal guideline.

You can attach business rules to your model objects to guide and document the creation of your model. For example, the rule "an employee belongs to only one division" can help you graphically build the link between an employee and a division.

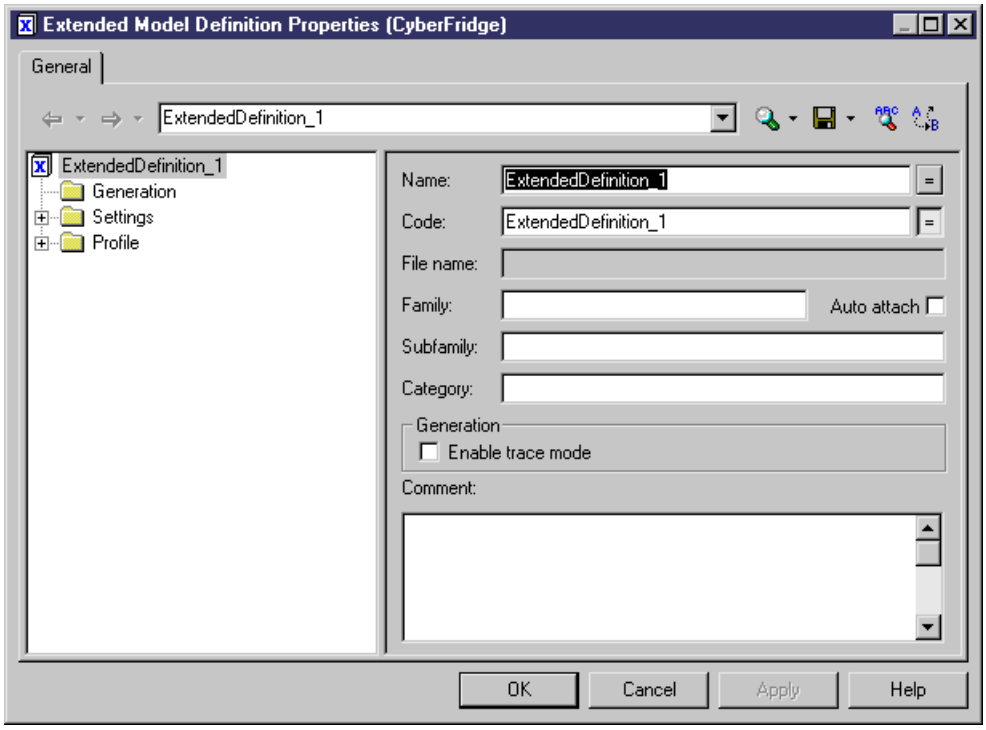
In the case of the Requirements Model, a business rule should be used as a *super requirement*, i.e. a requirement defined for requirements. For instance, a business rule could be a methodological rule for writing requirements.

Business rules are not available by default in a requirements model. You must activate them through the creation of an extended model definition.

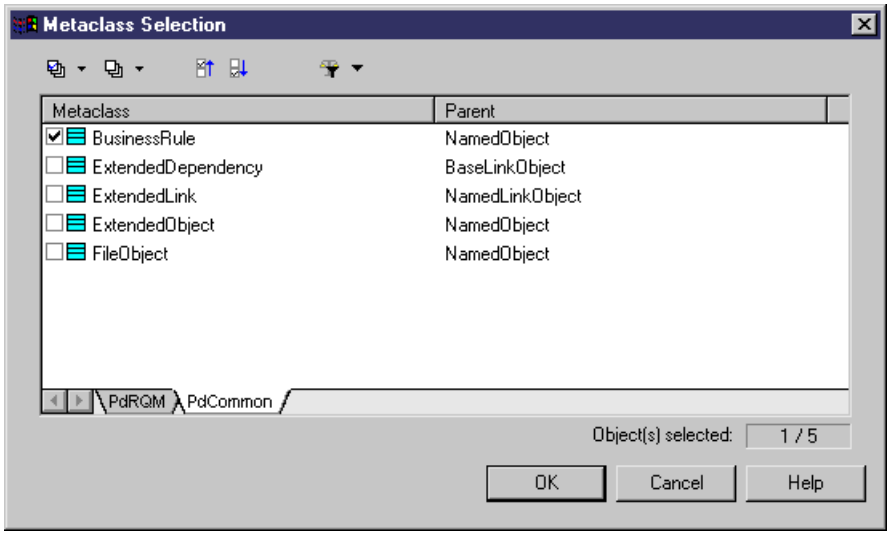
Activating Business Rules in an RQM

To activate business rules in an RQM:

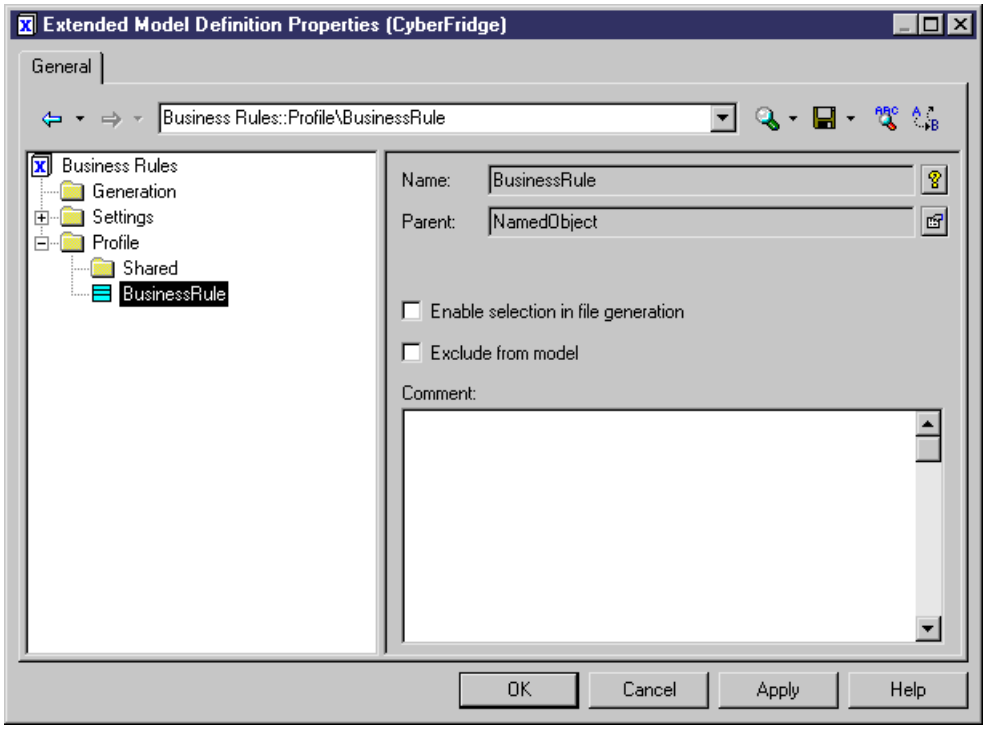
1. Select **Model > Extended Model Definitions** , to open the List of Extended Model Definitions and click the Add a Row tool to create a new extended model definition.
2. Click Apply and then click the Properties tool to open the property sheet of the new extended model definition.



3. In the right pane, type a name and a code for the extended model definition.
4. In the left pane, right-click the Profile category and select Add Metaclasses in the contextual menu to open the Metaclass Selection dialog box.
5. Click the PdCommon sub-tab and select BusinessRule.



6. Click OK to return to the property sheet. The BusinessRule entry is displayed within the Profile category.



7. Click OK to return to the List of Extended Model Definitions.
8. Click OK to return to the model. The new extended model definition is displayed in the Browser tree view, and you can now create business rules and attach them to requirements.

For information about using business rules, see "Business Rules" in the Objects chapter of the *Core Features Guide*.

Working with a Requirements Model

Requirements models benefit from the powerful model tools available in the PowerDesigner enterprise modeling environment.

Checking a Requirements Model

The Requirements Model is a very flexible tool, which allows you quickly to develop your model without constraints. You can, however, check the validity of your RQM at any time.

You can check an RQM in any of the following ways:

- Press F4, or
- Select **Tools** > **Check Model** , or
- Right-click the diagram background and select Check Model from the contextual menu

The Check Model Parameters window opens, which allows you to specify the kinds of checks to perform, and the objects to apply them to. For detailed information about this window and correcting problems reported, see "Checking a Model" in the Models chapter of the *Core Features Guide*.

The following sections document the RQM-specific checks available by default. For information about checks made on generic objects available in all model types, see "Checking a Model" in the Models chapter of the *Core Features Guide*.

Glossary Term Checks

The following RQM model checks are made on glossary terms:

Check	Description and Correction
Glossary term name and code uniqueness	A model cannot contain two glossary terms with same names and/or codes. Manual correction: Modify the duplicate name/code Automatic correction: Appends a number to the duplicate name/code
Unused glossary term	A glossary term should be attached to at least one requirement. Manual correction: Attach the glossary term to a requirement, by using the *Related Glossary Terms* tab of the requirement property sheet, or delete the glossary term Automatic correction: None

User Checks

The following RQM model checks are made on users:

Check	Description and Correction
User name and code uniqueness	User names and codes must be unique in the model. Manual correction: Modify the duplicate name/code Automatic correction: Appends a number to the duplicate name/code

Check	Description and Correction
Existence of user allocation	A user should be allocated to at least one requirement. Manual correction: Attach the user to a requirement, by using the *User Allocations* tab of the requirement property sheet, or delete the user Automatic correction: None

Group Checks

The following RQM model checks are made on groups:

Check	Description and Correction
Group name and code uniqueness	Group names and codes must be unique in the model. Manual correction: Modify the duplicate name/code Automatic correction: Appends a number to the duplicate name/code
Existence of user	A group must contain at least one user or another group of users. Manual correction: Attach a user or another group to the group, by using the *Group Users* tab of the group property sheet, or delete the empty group Automatic correction: None
Circular group definition	One group cannot be at the same time parent and child of another group. Manual correction: Remove a group (parent group) from the *Group Users* tab of another group (child group) property sheet. The parent group is displayed in the *Dependencies* tab of the child group property sheet Automatic correction: None

Requirement Checks

The following RQM model checks are made on requirements:

Check	Description and Correction
Requirement title uniqueness	Requirement titles must be unique in the model. Manual correction: Modify the duplicated title Automatic correction: None
Requirement code uniqueness	Requirement code must be unique in the model. Manual correction: Modify the duplicated code Automatic correction: None
Empty description on atomic requirement	An atomic requirement (as opposed to a composite requirement) should have a description. Manual correction: In the requirement property sheet, type a description in the Description box of the *General* tab or in the Description sub-tab of the *Notes* tab Automatic correction: None

Comparing and Merging Requirements Models

You can compare and merge two requirements models.

The comparison process allows you to highlight the differences between two requirements models.

The merge process allows you to form a single model that combines design efforts performed independently by several team members.

Merge is performed from left to right. The model in the right pane is compared to the model in the left pane. Differences are highlighted and merge actions are proposed in the model to be merged.

For more information on comparing and merging models, see the Comparing and Merging Models chapter in the *Core Features Guide*.

Linking Requirements with Design Objects

You should always try to link requirements with design objects (objects from other types of models), to verify that the design process meets the requirements.

Requirements can be linked with design objects, either from a requirements model or from a design model.

Attaching Design Objects to Requirements

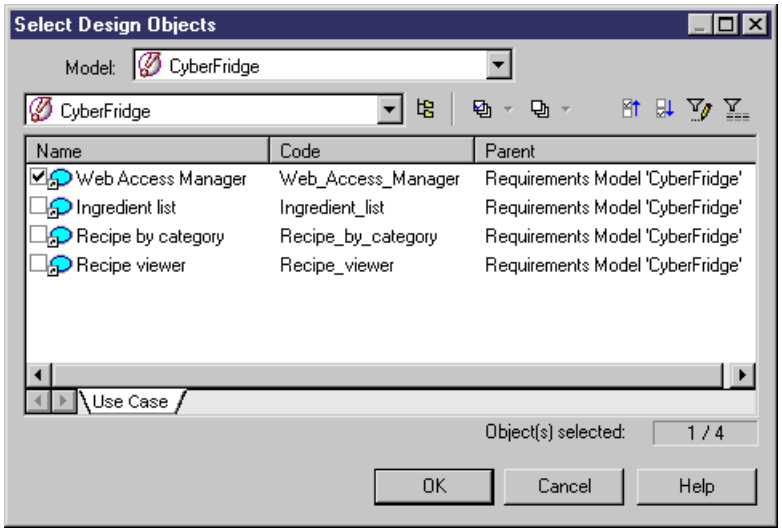
When a design object meets a requirement, you should attach it to the requirement.

The following procedure assumes you have a requirements model and a design model (CDM, PDM, OOM, BPM, XSM or ILM) open in the workspace.

1. In the requirements document view, double-click the row number of a requirement.

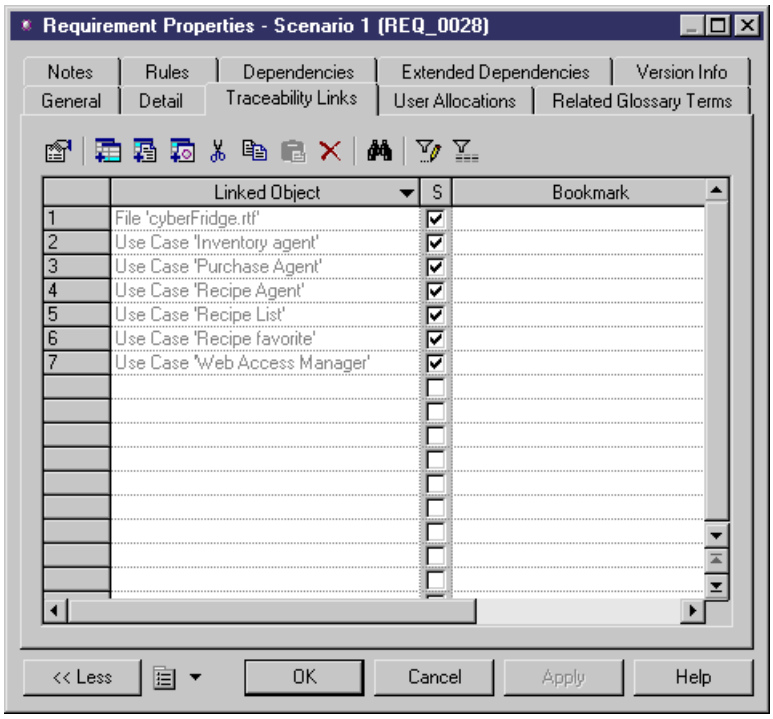
   The requirement property sheet is displayed.
2. Click the *Traceability Links* tab.
3. In the toolbar of the Traceability Links tab, click the *Add Links to Design Objects* tool.

   A Select Design Objects dialog box is displayed.
4. Select the design model in the *Model* list, and select the design objects you want to attach to the requirement.



5. Click OK.

   The design objects appear in the Traceability Links tab.



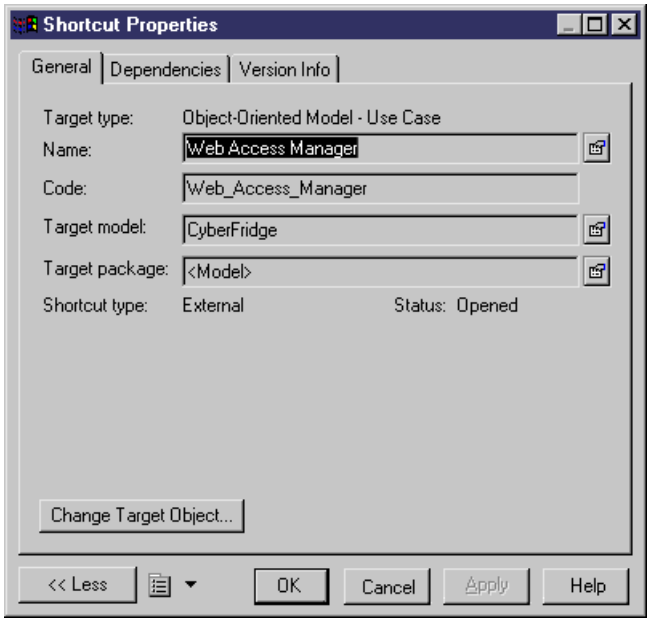
6. Click OK.

   or

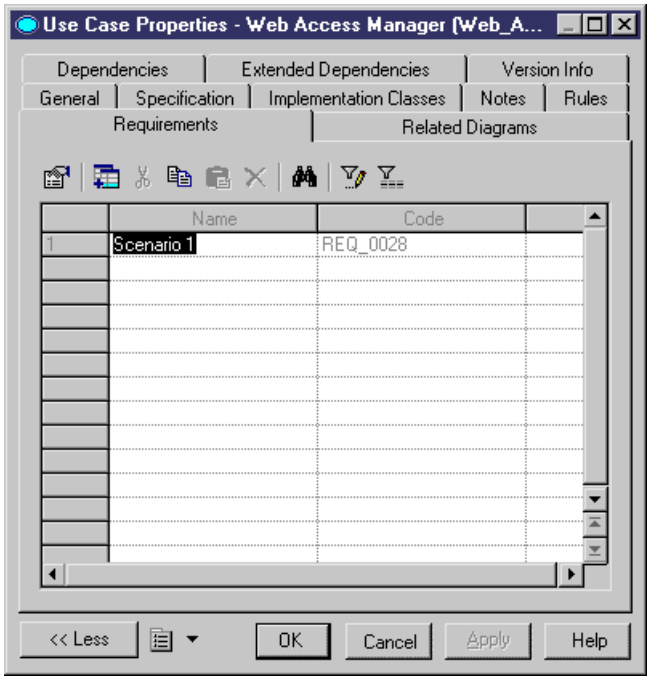
   Click Apply.

7. < If you clicked Apply > Double-click a row number corresponding to a design object in the list.

   The design object shortcut property sheet is displayed.



8. Click the *Properties* tool beside the Name box to display the design object property sheet.
9. In the design object property sheet, click the *Requirements* tab to display the list of requirements attached to the design object.



The requirement, to which the design object has been attached, is displayed in the Requirements tab of the design object property sheet.

10. Click OK in each property sheet (design object, shortcut and requirement).

Attaching Requirements to Design Objects

To verify that the design process meets the requirements, you should attach requirements to objects in design models (CDM, PDM, OOM, BPM, XSM, ILM).

If no requirement has yet been attached to a design object, then you must activate the Requirements tab in the design objects property sheet.

Activating the Requirements Tab in a Design Model

The following procedure assumes you have a design model open in the workspace.

1. In the menu bar, select **Tools** > **Model Options** .

The Model Options dialog box is displayed.

2. In the Model Settings tab, select *Enable links to requirements* in the All Objects group box.

3. Click OK.

Double-click any symbol in the diagram to verify that a new Requirements tab is displayed in the design object property sheet.

Add Requirements in a Requirements Tab

The following procedure assumes you have a design model and a requirements model open in the workspace.

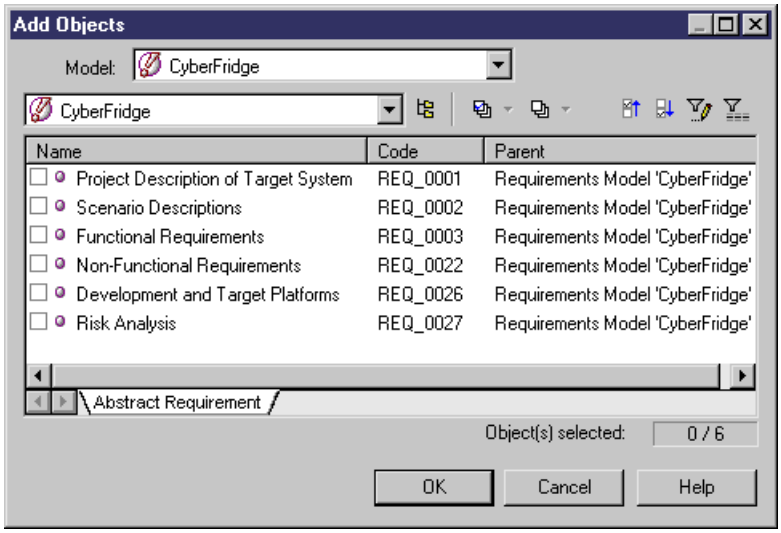
1. Double-click the object symbol in the diagram. (e.g. a use case from an OOM)

The object property sheet is displayed.

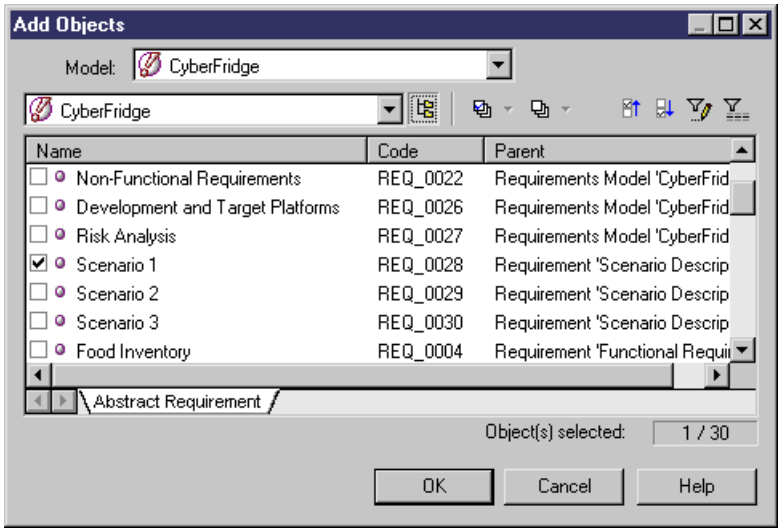
2. Click the *Requirements* tab to display the Requirements tab.

3. In the Requirements tab toolbar, click the *Add Objects* tool.

The Add Objects dialog box is displayed with the requirements model selected and its root requirements displayed in a check list.

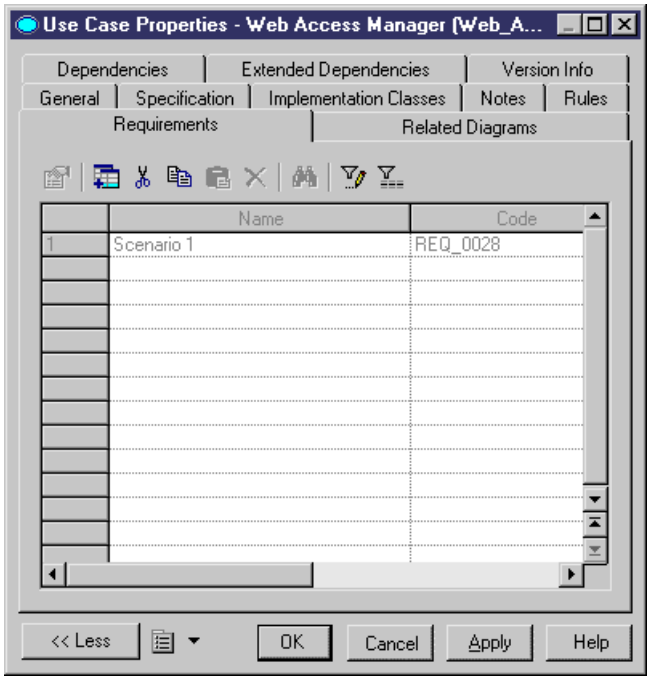


4. In the Add Objects toolbar, click the *Include Sub-Objects* tool to display all the requirements, and select the requirements you want to attach to the design object.



5. Click OK.

The attached requirements appear in the Requirements tab of the design object property sheet.



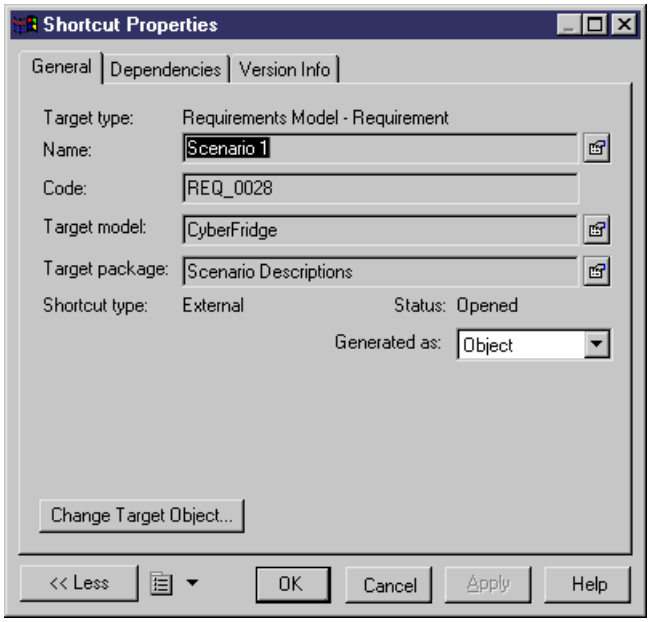
6. Click OK.

   or

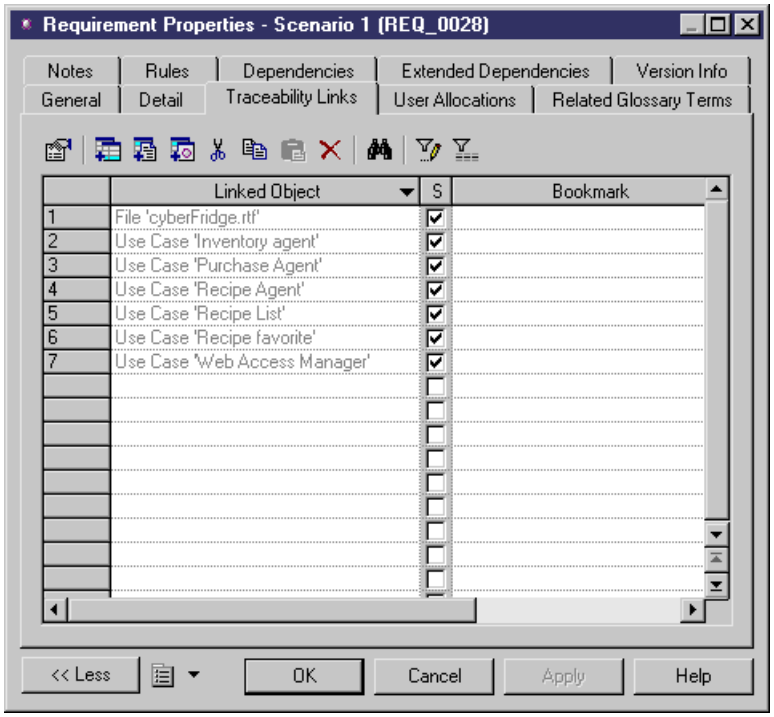
   Click Apply.

7. < If you clicked Apply > Double-click the row number corresponding to a requirement in the list.

   The requirement shortcut property sheet is displayed.



8. Click the *Properties* tool beside the Name box to display the requirement property sheet.
9. In the requirement property sheet, click the *Traceability Links* tab to display the list of linked objects.



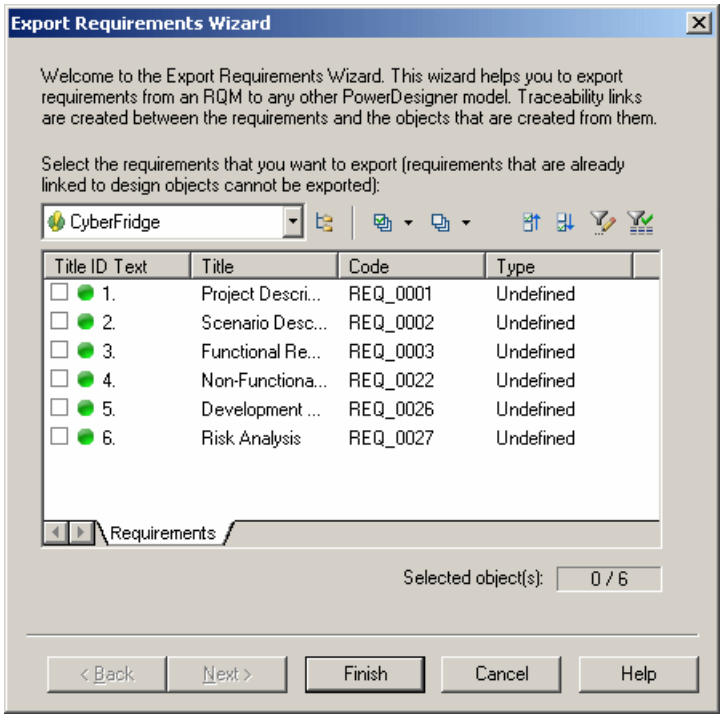
The design object, to which the requirement has been attached, is displayed as a linked object in the Traceability Links tab of the requirement property sheet.

10. Click OK in each property sheet (requirement, shortcut and design object).

Exporting Requirements as Design Objects

The *Requirement Export Wizard* allows you to export requirements as design objects in other PowerDesigner models. The resulting design objects bear the same name and code as their corresponding requirement. A traceability link is created between each design object and its corresponding requirement.

1. Select **Requirements** > **Export Requirements as Design Objects** to open the Export Requirements Wizard:



2. Specify the requirements that you want to export as design objects, and then click Next.
3. Specify the model to which you want to export the requirements from among the models open in the workspace, and then click Next.
4. Specify the kind of object that you want to create in the target model (for example, a class in an OOM), and then click Finish to start the export.

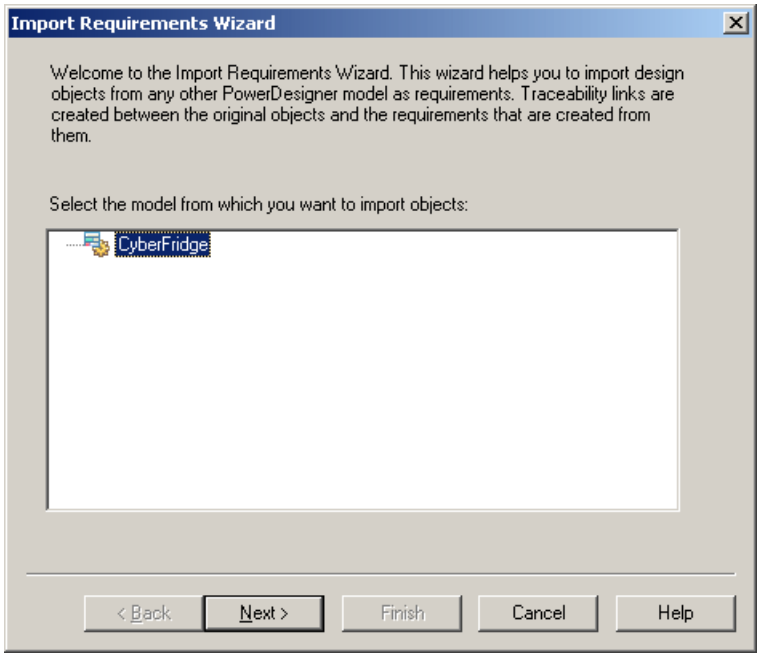
   The design objects created from the requirements appear in the specified design model.

Note: By default, the symbols of the new design objects do not appear in the diagram. To display them, you can either drag and drop the design objects from the Browser to the diagram, or select **Symbol > Show** Symbols, in the menu bar, and select the symbols in the Show Symbols dialog box.

Importing Design Objects as Requirements

The *Requirement Import Wizard* allows you to import design objects as requirements. The resulting requirements bear the same name and code as their corresponding design object. A traceability link is created between each requirement and its corresponding design object.

Select **Requirements > Import Design Objects as Requirements** to open the Import Requirements Wizard:



1. Specify the model from which you want to import the requirements from among the models open in the workspace, and then click Next.
2. Specify the design objects that you want to import to the RQM by selecting them from among the sub-tabs in the selection field, and then click Next.
3. Specify the location within the RQM where you want to create the requirements, and then click Finish.
   The requirements created from the design objects appear in the RQM at the specified location.

Working with Word Documents and RQMs

PowerDesigner provides the facility to link an RQM with an MS Word document via an optional addin, which allows you to import a Word document into an RQM and to export an RQM to MS Word format. The RQM and the Word document will be linked, allowing you to keep the two versions synchronized.

In this way you can leverage the capabilities of PowerDesigner to link requirements to design objects in other models, while retaining a requirements document in a format familiar to less technical users. You can either start from a Word document and create an RQM, or start from an RQM and create a Word document. In both cases, the Word document and the RQM can be linked to allow easy updating.

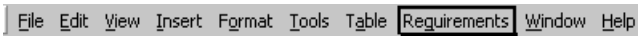
Note: The MS Word addin is not installed by default during the PowerDesigner installation process. In order to install it, you must expand the Requirements Model node on the Features page of the PowerDesigner installer, and select the Word Addins feature. For detailed information about installing PowerDesigner, see the *Installation Guide*.

In order to link an RQM with a Word document, your environment must conform to all of the following requirements:

- MS Word 2000 or higher is installed on your machine
- You have selected to install the Word Addins during your installation of PowerDesigner. To do so, expand the Requirements Model node on the Features page of the PowerDesigner installer, and select the Word Addins feature.
- You have enabled the Microsoft Word Import Export add-in in PowerDesigner. To do so, select **Tools > General Options** , click the Add-Ins category and then select Microsoft Word Import Export. Note that the add-in only works if the system code page is consistent with the model language. For example, if you are working with a Chinese model, your system code page must be Chinese.
- You have selected the WordToRqm.dot template in MS Word (select **Tools > Templates and Add-Ins**).
- The titles in the Word document are formatted with Word heading styles, and use only MS Word numbering.
- Heading styles must not increase by more than one level. For example, a title with Heading 1 must not be followed by a subtitle with Heading 3

Preparing MS Word

The first time you open or create an RQM, the MS Word Import Export add-in is registered in HKEY_CURRENT_USER \Software\Microsoft\Office and by default the Requirements menu...



... and toolbar should appear in the MS Word interface.

The following tools are available in the toolbar:

Tool	Description
	Create/Update a Requirements Model from the Document For more information, see *Creating an RQM from a Word Document* on page 44 and *Updating Linked RQMs and Word Documents* on page 53.
	Detach the Document from the Requirements Model For more information, see *Detaching Linked RQMs and Word Documents* on page 54.

If the menu and toolbar do not appear in MS Word, you can install them manually.

Installing the RQM Menu and Toolbar Manually

To install the RQM menu and toolbar manually:

1. Select **Tools** > **Customize** , click the Commands tab, and select Tools in the Categories pane.
2. Select COM Add-Ins in the Commands pane, and drag this command to any menu item
3. Select the COM Add-Ins command to display the COM Add-in dialog box, and select the PowerDesigner Requirements COM Add-Ins for MS Word check box. If you deselect the check box, the add-in menu and toolbar disappear from your MS Word environment.

Note: If you have several versions of PowerDesigner installed on your machine, you will not have several toolbars and menu bars. The latest version of PowerDesigner used to create or open an RQM disables previous versions.

Creating an RQM from a Word Document

You can create an RQM from a Word document by exporting it from within Word or importing it from within PowerDesigner.

The following procedure assumes you have a Word document available and that your environment and document are in conformance with the requirements listed above. Note that graphics cannot be imported into an RQM.

Creating an RQM from a Word Document

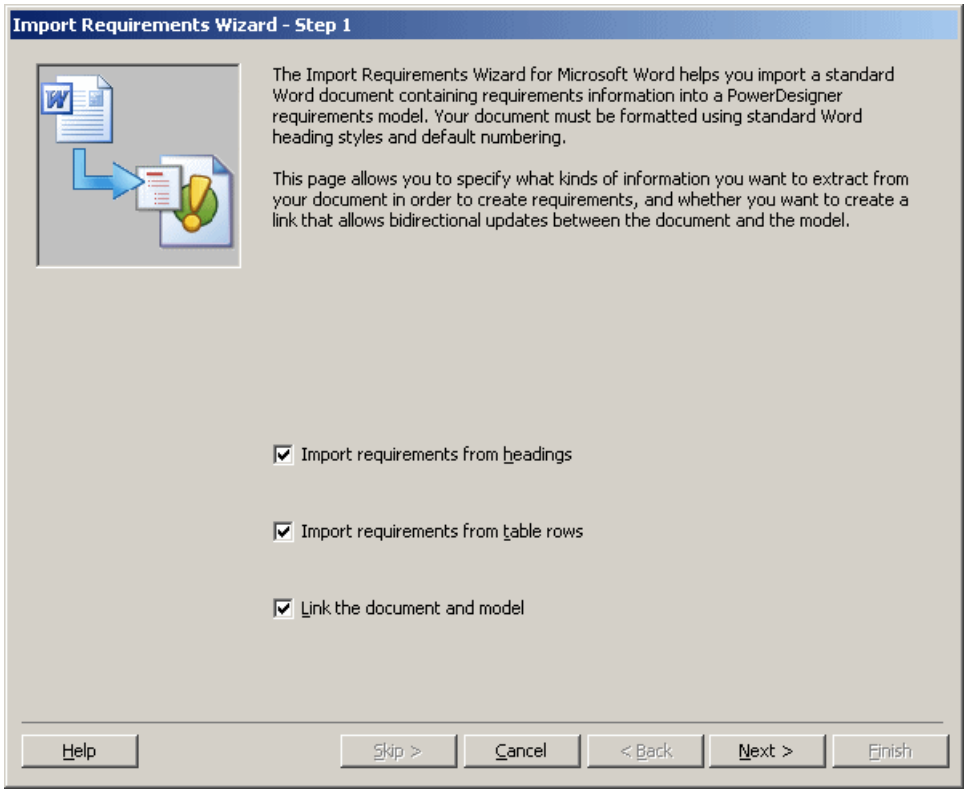
To create an RQM from a Word document:

1. In PowerDesigner, select **File** > **Import** > **Word Document** , navigate to the document to be imported, and then click Open.

   or

   In Word, with the document open, select **Requirements** > **Create/Update a Requirements Model** , or click the Create/Update a Requirements Model tool.

   If PowerDesigner is not presently open, it will be launched at this time, and the Import Requirements Wizard opens:

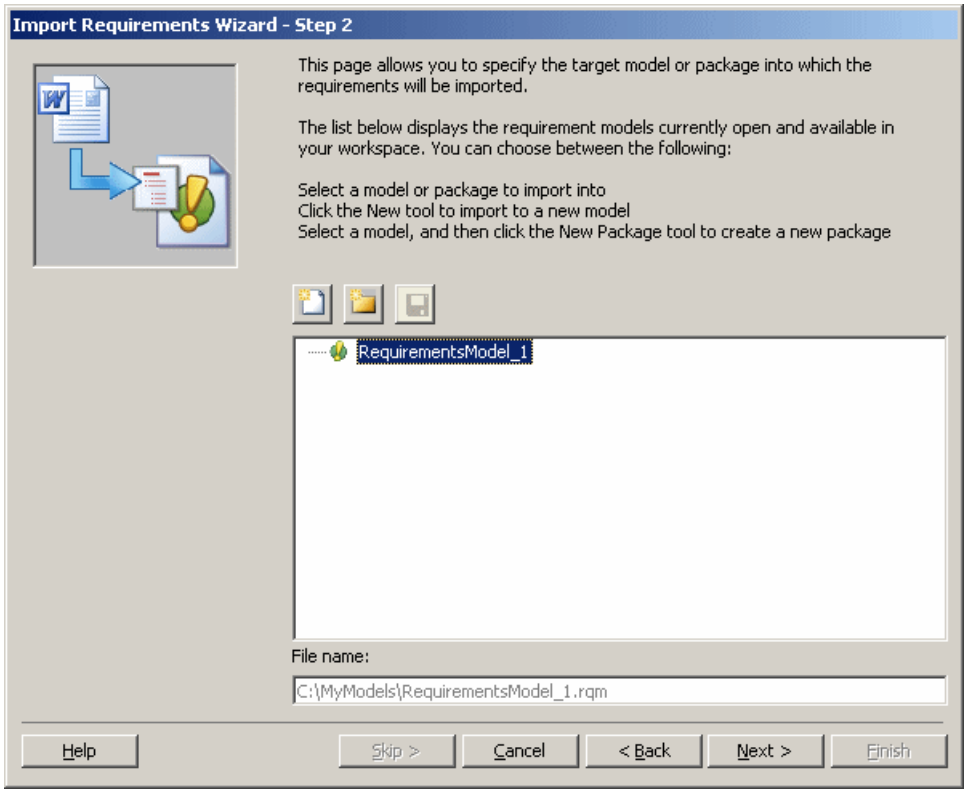


2. Choose whether you want to:

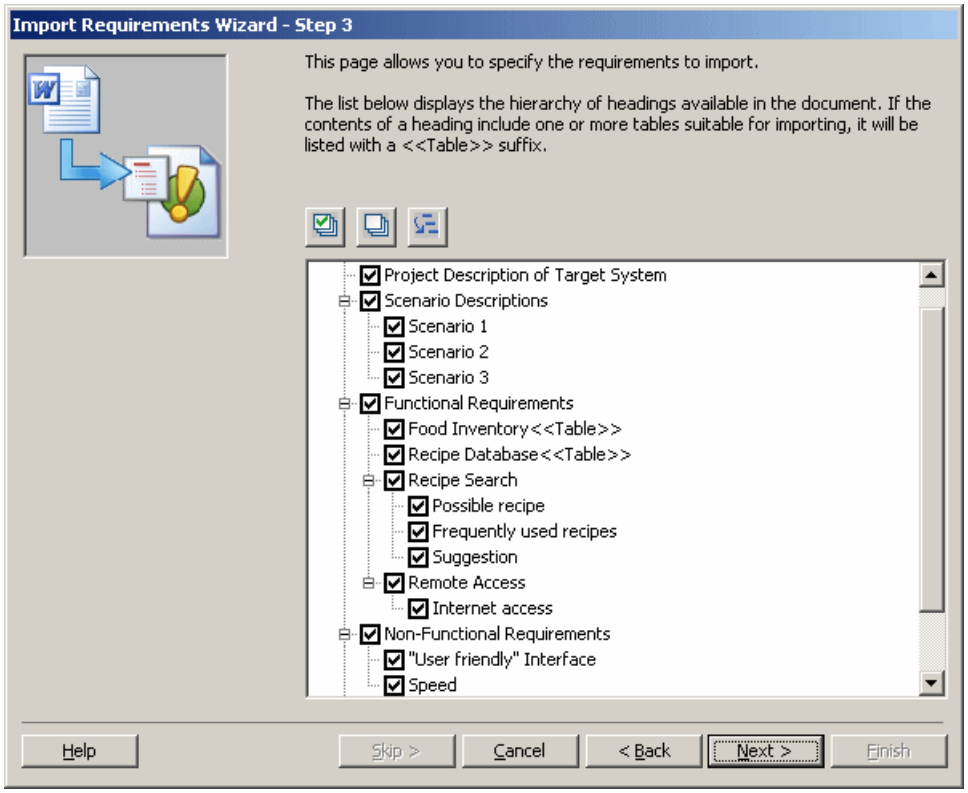
- Import requirements from document headings (default), and/or
- Import requirements from document tables

You can also specify that the document will from now on be linked to the Rqm, enabling easy synchronization of the two.

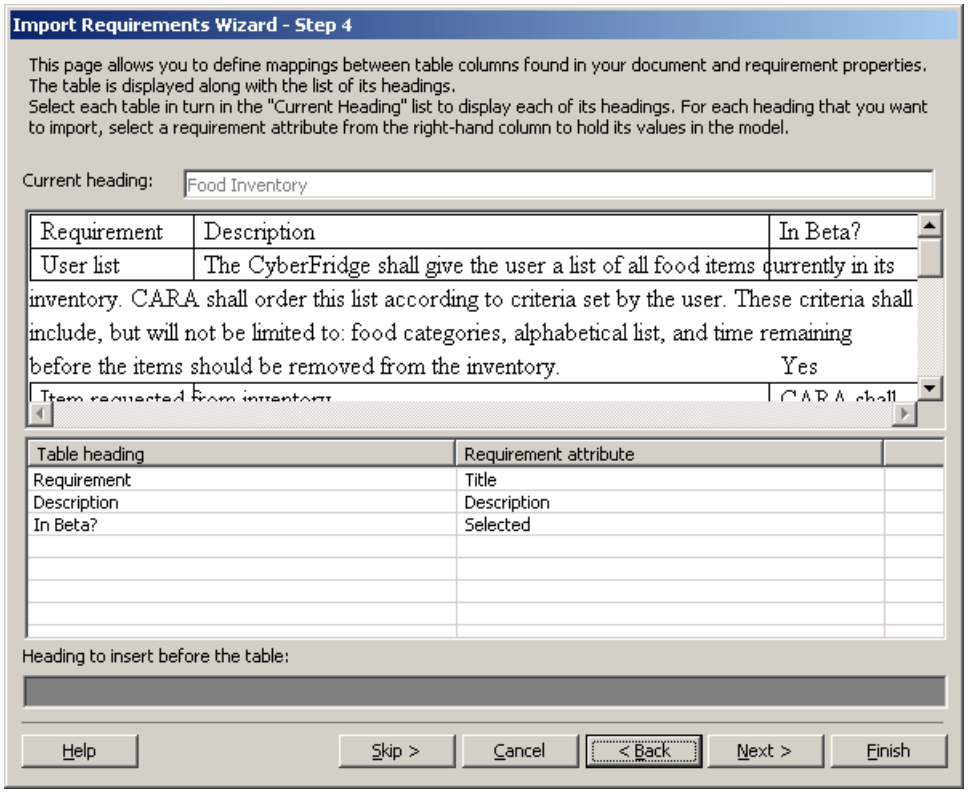
3. Click Next to go to the next screen:



4. This screen lists requirement models open in the PowerDesigner workspace. You can select an existing model or create a new one by clicking the New tool.
5. Click Next to go to the next screen. If the selected model is not saved you will be prompted to save it now:



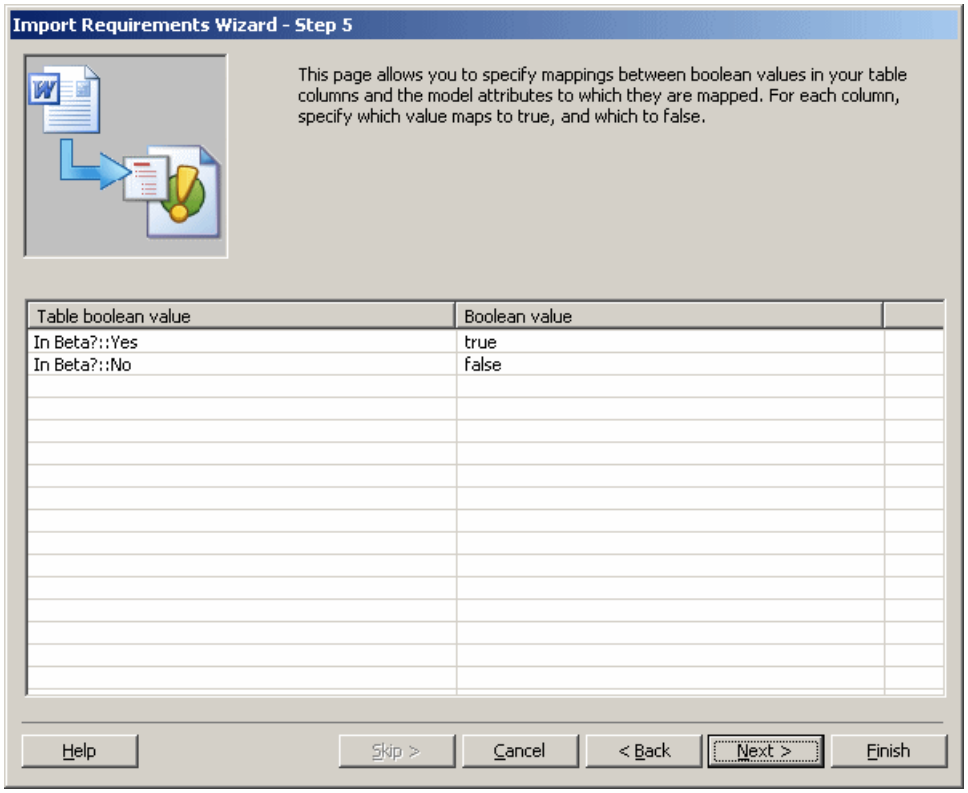
6. This screen lists all the headings available in the Word document. All are selected by default. You can deselect and reselect headings using the tools above the list. When your selections are complete, click Next to go to the next screen:



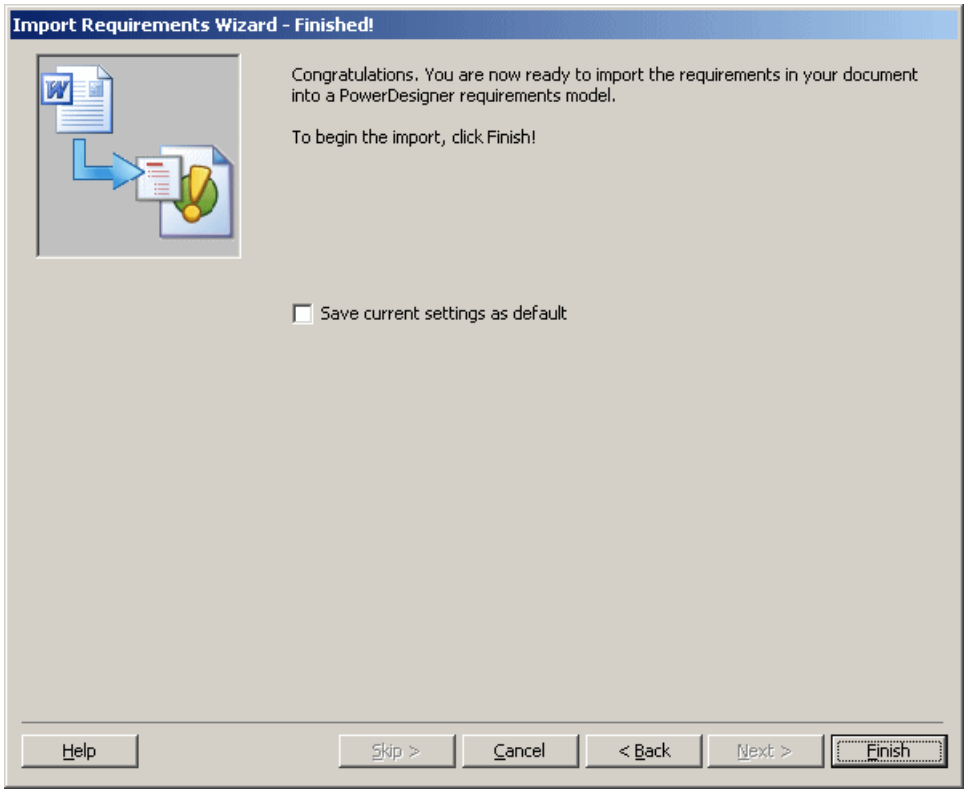
7. If there are tables in your document and you have selected to import requirements from them, this screen lists the tables and invites you to specify mapping between any unresolved table headings and their equivalent requirement attributes

in the RQM. If there is no suitable attribute, you can choose Extended Attribute, and PowerDesigner will create a new extended attribute to hold this column's entries. You can also specify a heading to insert before the table.

8. Click Next to go to the next screen:

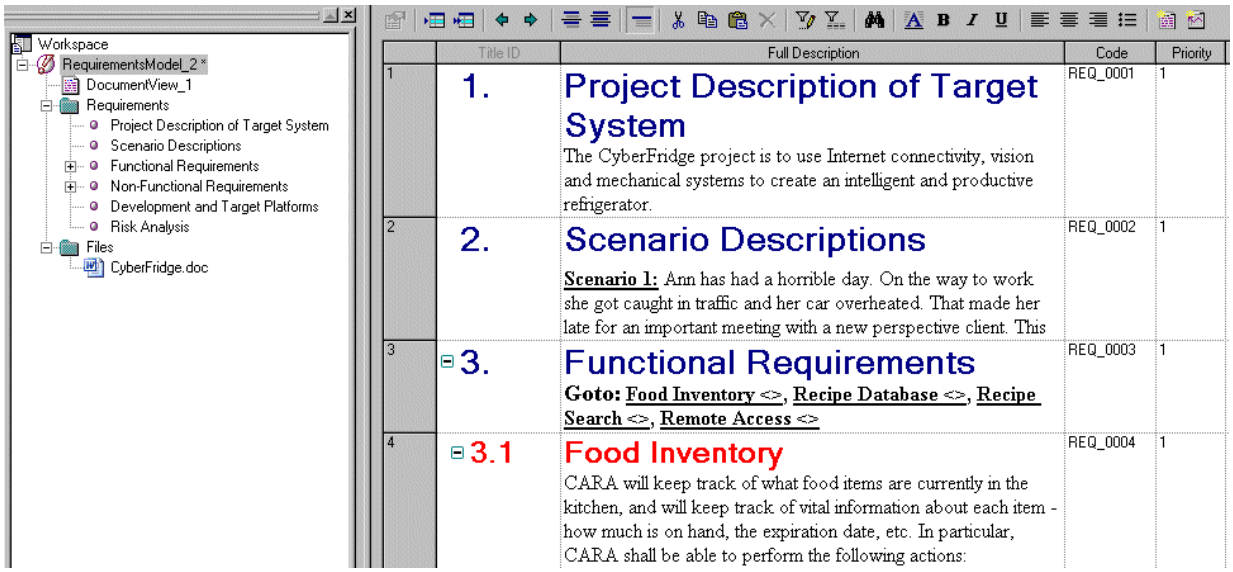


9. This screen allows you to link values in any column that you have mapped to a boolean attribute to true or false for that attribute. Select an appropriate value for each pair of values in each boolean column, and then click Next to go to the next screen:



10. This final screen invites you to save your current settings as the default. Click Finish to begin the import.

The RQM is created in the PowerDesigner workspace, and the Files folder in the Browser contains the file of the linked Word document:



You can also import a Word document into an existing RQM or one of its packages as follows.

Importing a Word Document into an Existing RQM or One of Its Packages:

To import a Word document into an existing RQM or one of its packages:

1. Right-click the model or one of its packages in the Browser, and select Import from Word Document from the contextual menu.
2. Follow the steps in the procedure above.

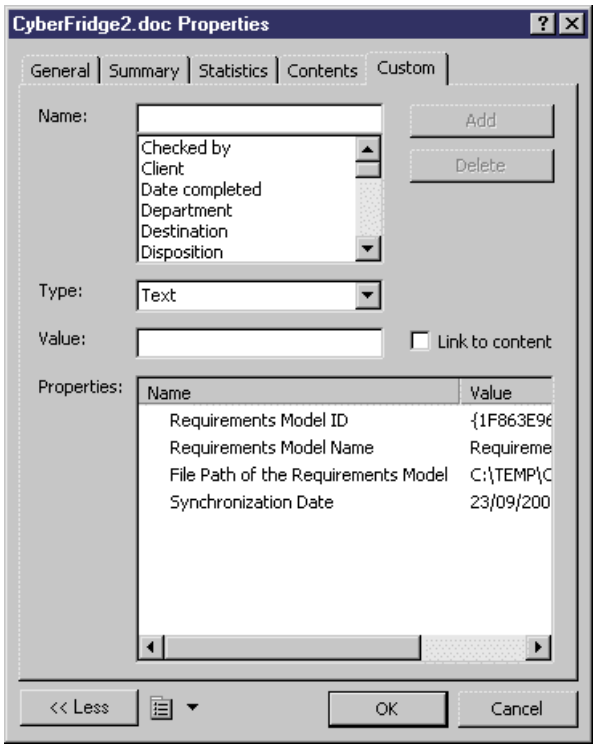
Links Between an RQM and a Word Document

If you select to create a link between the RQM and Word document during the import process, then they will be synchronized and can be updated when either changes.

Word Document Properties Sheet

A Word document is linked to an RQM (or package) through custom properties and requirement tags, and the link details are displayed on the *Custom* tab of the Word document's property sheet.

To display the document property sheet, select **File** > **Properties** from within Word.



Custom Tags

The actual linking is performed by custom tags in the document:

[PDRQM:{A7C188E8-DA79-4CC2-B145-42C7D3B2BD91}:REQ_0003]¶

Functional·Requirements¶

Goto:·Food·Inventory,·Recipe·Database,·Recipe·Search,·Remote·Access°°·¶
[/PDRQM]¶
[PDRQM:{BBAE3891-9213-44C3-899A-375948823D80}:REQ_0004]¶

Food·Inventory·¶

CARA·will·keep·track·of·what·food·items·are·currently·in·the·kitchen,·and·will·keep·track·of·vital·information·about·each·item·-·how·much·is·on·hand,·the·expiration·date,·etc.·In·particular,·CARA·shall·be·able·to·perform·the·following·actions:·¶
[/PDRQM]¶
[PDRQM:{20420C74-533B-4E2A-A2FA-448D8048CF49}:REQ_0005]¶

User·list¶

The·CyberFridge·shall·give·the·user·a·list·of·all·food·items·currently·in·its·inventory.·CARA·shall·order·this·list·according·to·criteria·set·by·the·user.·These·criteria·shall·include,·but·will·not·be·limited·to:·food·categories,·alphabetical·list,·and·time·remaining·before·the·items·should·be·removed·from·the·inventory.·¶
[/PDRQM]¶

Each requirement is placed between a [PDRQM] tag with a unique ID to indicate its start, and a [/PDRQM] tag to indicate its end. To display the requirement tags, click the Show/Hidetool:

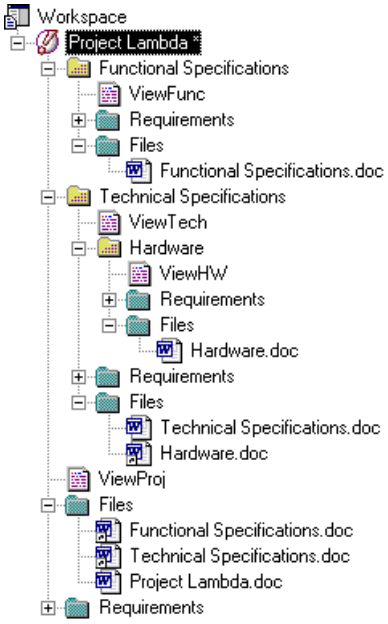
Browser Files Folder

The linked Word document is shown in the PowerDesigner Browser in a *Files* folder attached to the model (or package).

When an RQM contains packages, each package can be linked to a specific Word document. A package cannot be linked to more than one document.

If the model is itself linked to a document, only the requirements which do not belong to a package are linked to the document.

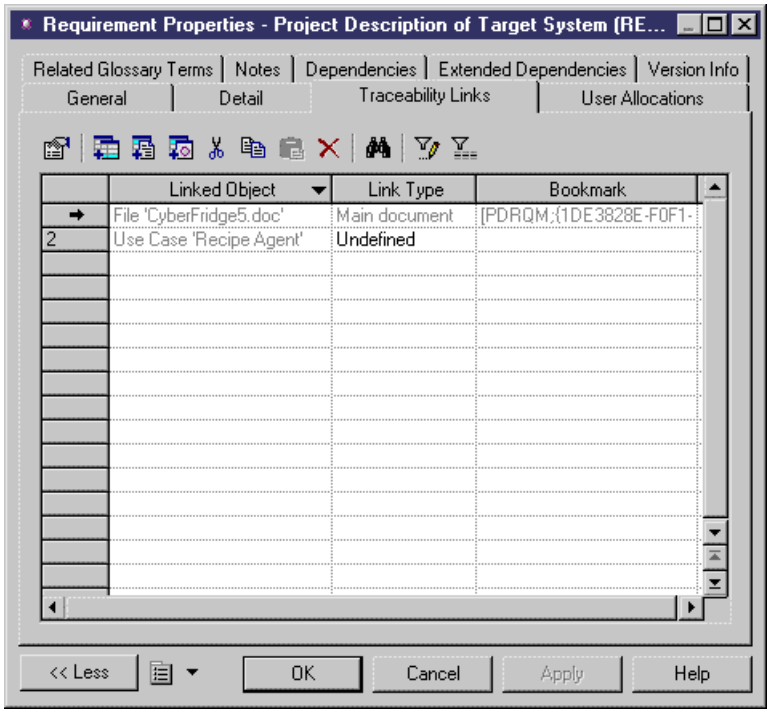
For example:



Note: The Files folder of the model item contains the model file and a shortcut for each package file.

Traceability Links

The link to the document is also shown on the Traceability Links tab of the property sheet of the model and each of the individual requirements:

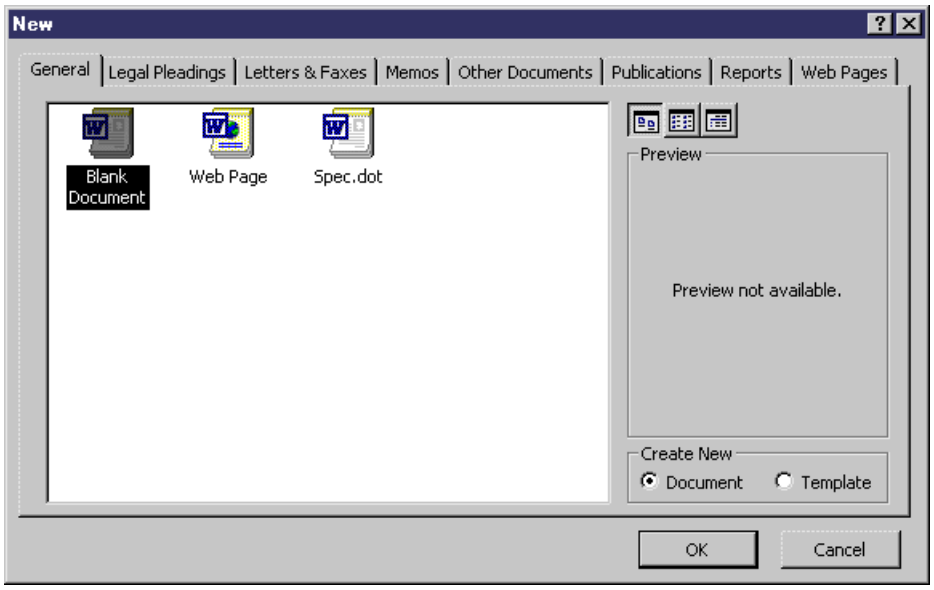


Creating a Word Document from an RQM

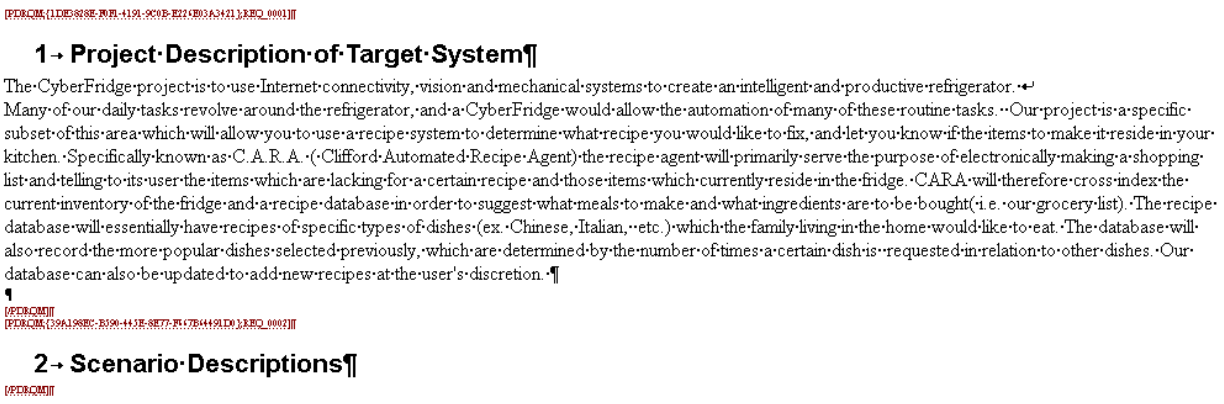
You can export an RQM (or a package containing at least one requirement) into Word format to produce a document in a more portable format.

The following procedure assumes you have an RQM open in the workspace. Word need not be open.

1. In PowerDesigner, select **Tools > Export as Word Document** .
2. [If the RQM has not been saved] The Save As dialog box will open. Select a directory and enter a file name for the model, and then click Save.
3. Word opens with the New dialog box:



4. In the General tab, click Blank Document or a template icon (with a .dot extension - you might want to use a template for predefined Word heading styles), and click OK.
5. The Save As dialog box opens. Select a directory and enter a file name for the document, and then click Save.
6. The Export Table Mapping dialog opens. You can choose to:
   - Export composite requirements as headings and subheadings, or
   - Export composite requirements as table rows – you can additionally select which properties to export in this mode, by selecting or deselecting the checkboxes to the left of the list, and the titles of table columns by editing the text in the Table Header column.
7. Click OK to begin the export. The requirements are written to the document. Each requirement is placed between a [PDRQM] tag with a unique ID to indicate its start, and a [/PDRQM] tag to indicate its end:


[PDRQM:{1DD3818E-B0FB-4191-9C0B-B224E03A3421};REQ_0001]

1 Project Description of Target System

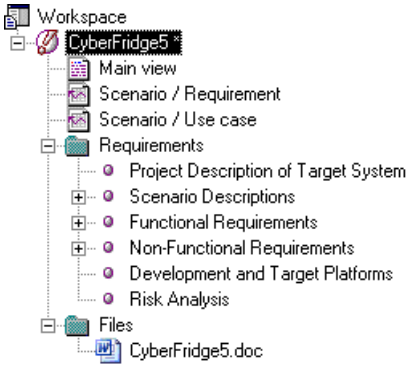
The CyberFridge project is to use Internet connectivity, vision and mechanical systems to create an intelligent and productive refrigerator.
Many of our daily tasks revolve around the refrigerator, and a CyberFridge would allow the automation of many of these routine tasks. Our project is a specific subset of this area which will allow you to use a recipe system to determine what recipe you would like to fix, and let you know if the items to make it reside in your kitchen. Specifically known as C.A.R.A. (Clifford Automated Recipe Agent) the recipe agent will primarily serve the purpose of electronically making a shopping list and telling to its user the items which are lacking for a certain recipe and those items which currently reside in the fridge. CARA will therefore cross index the current inventory of the fridge and a recipe database in order to suggest what meals to make and what ingredients are to be bought(i.e. our grocery list). The recipe database will essentially have recipes of specific types of dishes (ex. Chinese, Italian, etc.) which the family living in the home would like to eat. The database will also record the more popular dishes selected previously, which are determined by the number of times a certain dish is requested in relation to other dishes. Our database can also be updated to add new recipes at the user's discretion.

[/PDRQM]
[PDRQM:{396198EC-B390-4435-8E77-B47E6449LD0};REQ_0002]

2 Scenario Descriptions

[/PDRQM]

The RQM and the Word document are automatically linked, and the Word file is attached to the model (or the package), in the Files folder in the Browser:



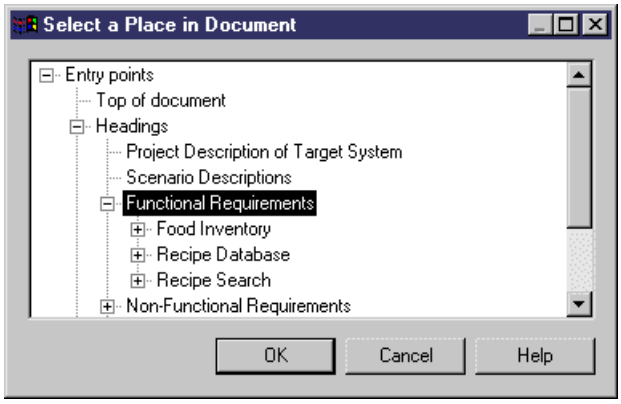
Inserting an RQM into an Existing Word Document

You may want to insert an RQM or one of its packages into an existing Word document. This would allow you to insert a list of requirements maintained in an RQM into a more general project document.

The following procedure assumes you have an RQM open in the workspace, which is not linked to an existing document. Word need not be open.

1. In PowerDesigner, select **Tools > Merge with an Existing Word Document** to display the Open dialog box.
2. Navigate to the required Word file and click Open. Note that, if Word is already open, you may need to click its blinking taskbar button.

   PowerDesigner parses the document to determine its structure and then the Select a Place in Document dialog box opens:
3. Expand the Entry points node and all its sub-nodes, and select a title beneath which you want to insert the requirements:



4. Click OK to begin the insertion of the RQM in the document. When the process is complete, the RQM and the Word document are automatically linked, and the Word file is attached to the model (or the package), in the Files folder in the Browser.
5. Double-click the Word file in the Browser tree view to open it and view the added requirements.

Updating Linked RQMs and Word Documents

Once your document and RQM are linked, you can make changes in either one and update the other.

Note: If you add graphics to a linked Word document, do not try to update the document from the RQM, you will lose the graphics. Modify the document and then update the model from the document.

Updating a Word Document Linked to an RQM

To update a Word document linked to an RQM:

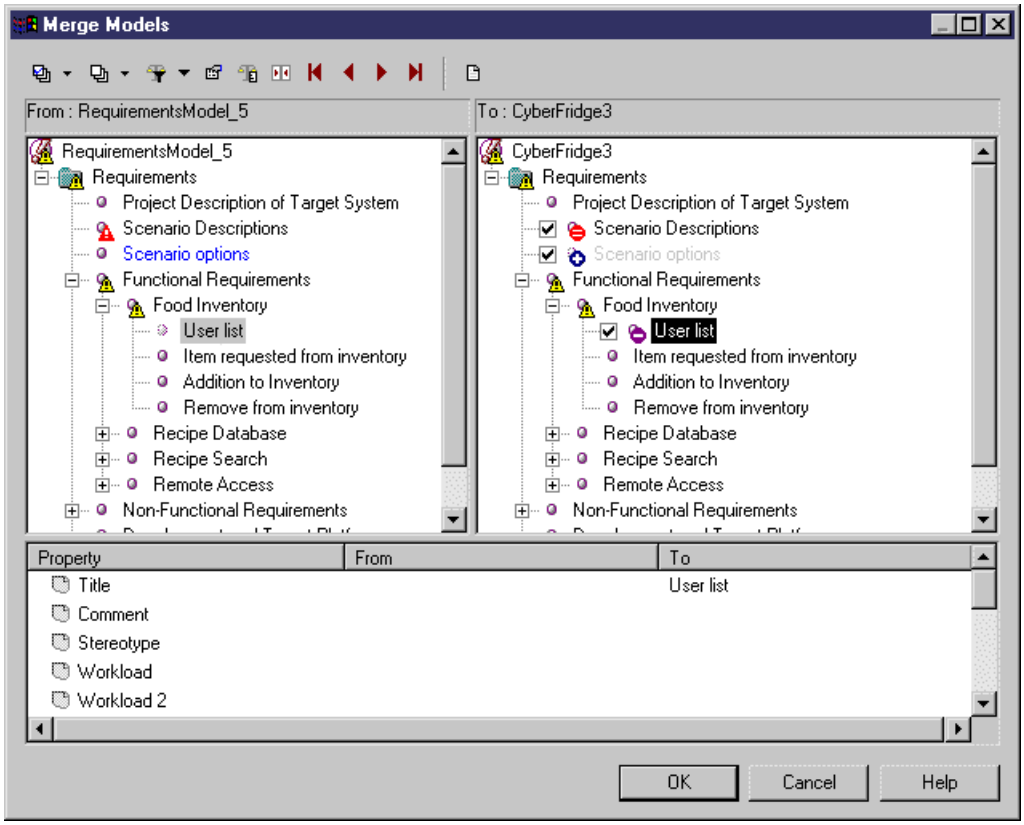
1. In PowerDesigner, open an RQM previously linked to a Word document and make any necessary changes.
2. Right-click the model or package entry in the Browser and select Update Word Document from the contextual menu. Word is launched and the document is parsed and updated.

Updating an RQM Linked to a Word Document

To update an RQM linked to a Word document :

1. In Word, open a document previously linked to an RQM and make any necessary changes.

   Note: When editing a Word document linked to an RQM we strongly recommend that you make visible the Field Codes (select **Tools > Options** , and select Field Codes in the Show group box). Edits to an existing requirement must be made within its [PDRQM] tags, and new requirements must be added outside of these tags.
2. Select **Requirements > Create/Update a Requirements Model** to open the Import Requirements Wizard to step 3, which displays all the requirements titles in a tree format. The titles already linked to a requirement have their check box selected and grayed. You cannot deselect them. Any new requirements are selected but not grayed and requirements that have been deleted are no longer visible-.
3. Select or deselect headings to import as required, and then click Finish to begin the update. The Merge Models dialog box opens, with the structure of the modified Word document displayed in the left panel, and the existing RQM displayed in the right panel:



4. Review your changes and then click OK to update the RQM.

Detaching Linked RQMs and Word Documents

You may want to detach an RQM and a Word document, which were previously linked.

Detaching a Word Document from an RQM:

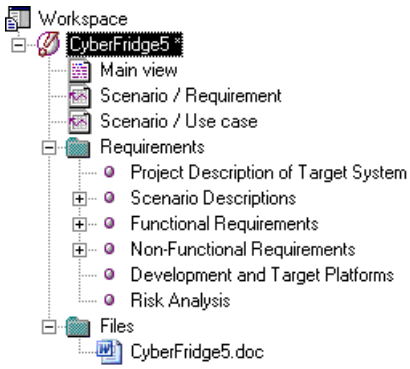
To detach a Word document from an RQM:

1. In Word, select **Requirements > Detach the Document from the Requirements Model**
2. The requirement tags are deleted from the Word document.

Detaching an RQM from a Word Document:

To detach an RQM from a Word document:

In PowerDesigner, select and delete the Word file in the Files folder in the Browser:



1. Once the file is deleted in the Browser, it will also disappear from the Traceability Links tab of the model and requirements property sheets.

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