SERENA®

DIMENSIONS® RM 2010 R1

Integration Guide for IBM® Rational® Software Modeler

Serena Proprietary and Confidential Information

Copyright © 2001–2010 Serena Software, Inc. All rights reserved.

This document, as well as the software described in it, is furnished under license and may be used or copied only in accordance with the terms of such license. Except as permitted by such license, no part of this publication may be reproduced, photocopied, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, recording, or otherwise, without the prior written permission of Serena. Any reproduction of such software product user documentation, regardless of whether the documentation is reproduced in whole or in part, must be accompanied by this copyright statement in its entirety, without modification.

This document contains proprietary and confidential information, and no reproduction or dissemination of any information contained herein is allowed without the express permission of Serena Software.

The content of this document is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by Serena. Serena assumes no responsibility or liability for any errors or inaccuracies that may appear in this document.

Trademarks

Serena, TeamTrack, StarTool, PVCS, Collage, Comparex, Dimensions, RTM, Change Governance, and ChangeMan are registered trademarks of Serena Software, Inc. The Serena logo, Professional, Version Manager, Builder, Meritage, Command Center, Composer, Reviewer, Mariner, and Mover are trademarks of Serena Software, Inc.

All other products or company names are used for identification purposes only, and may be trademarks of their respective owners.

U.S. Government Rights

Any Software product acquired by Licensee under this Agreement for or on behalf of the U.S. Government, its agencies and instrumentalities is "commercial software" as defined by the FAR. Use, duplication, and disclosure by the U.S. Government is subject to the restrictions set forth in the license under which the Software was acquired. The manufacturer is Serena Software, Inc., 1900 Seaport Blvd., Redwood City, CA 94063.

Credits

The following screen images are credited with the statement "Reprint Courtesy of International Business Machines Corporation copyright 2007 ©International Business Machines Corporation:" “Dimensions RM View” on page 9, “Subcategories” on page 11, “Category Properties” on page 11, “Class Properties” on page 11, “Linked Object” on page 12, “Filtered Requirements” on page 14, and “Requirement Attributes” on page 14.

Publication date: September 2010

Contents

Preface **5**
Audience. 5

Integrating Dimensions RM and RSM **7**
Prerequisites 8
Defining the Schema 8
Installing and Activating the Dimensions RM Plug-in 9
Logging in to Dimensions RM 10
Navigating Requirements in the Dimensions RM View. 10
Running Filters from the Dimensions RM View 12
Linking to RSM Objects. 14
    Adding a Link 14
    Using Links. 15
    Removing a Link 15
Working with Impacted Links 15
    Checking for Impacted Links. 15
    Validating Impacted Links 16
Opening Dimensions RM from RSM 16
Opening RSM from Dimensions RM 17
    Adding an "Open in RSM" Action Attribute to the Schema. 17
    Adding the Action Attribute to the Class Form. 18
Engineering RSM Information within Dimensions RM 20
    Creating Links between Objects 20
    Finding Links 21
    Displaying the History of an Object 21
    Scripting 21
    Using Impact Analysis 21
Getting Help 21
Viewing Version Information 22

Preface

This document describes how to link IBM® Rational® Software Modeler (RSM) design models such as use cases to Serena® Dimensions® RM requirements. The RSM plug-in is the interface you use to perform this linking. It also allows you to quickly and efficiently apply requirements changes to RSM design models.

The RM-RSM integration lets you perform the following actions:

- Browse Dimensions RM categories, classes, and requirements in RSM
- Link RSM objects to Dimensions RM requirements and unlink RSM objects from Dimensions RM requirements
- Open Dimensions RM requirements from RSM
- Open RSM from RM Concept
- Navigate from the Dimensions RM browser tree to the RSM Model Explorer
- Run filters to return requirements that meet the criteria of the filter

Audience

This manual is intended for RSM users who want to link RSM design models to Dimensions RM requirements. The audience for this manual is assumed to have extensive domain knowledge about RSM and Dimensions RM.

Integrating Dimensions RM and RSM

Prerequisites	8
Defining the Schema	8
Installing and Activating the Dimensions RM Plug-in	9
Logging in to Dimensions RM	10
Navigating Requirements in the Dimensions RM View	10
Running Filters from the Dimensions RM View	12
Linking to RSM Objects	14
Working with Impacted Links	15
Opening Dimensions RM from RSM	16
Opening RSM from Dimensions RM	17
Engineering RSM Information within Dimensions RM	20
Getting Help	21
Viewing Version Information	22

Prerequisites

The following requirements must be met before you can use the RM/RSM integration:

- Both Serena® Dimensions® RM and IBM® Rational® Software Modeler (RSM) installed on the same machine
- Dimensions RM version 10.1.1 or higher
- RSM version 6.0 or higher
- RSM class type defined in Dimensions RM project

Defining the Schema

You must create a new class in Dimensions RM so requirements can be displayed in RSM and so links to RSM objects can be stored. The RSM class is used to store RSM design model information so that links can be created between RSM artifacts and Dimensions RM requirements.

To create a new class:

1. Start RM Manage.
2. Expand the database containing the project you want to use with RSM.
3. Right-click the project and select **Define Project Schema**.
4. Add a class type named *RSM* based on the *Generic* class type and assign it the attributes shown in the following table.

Type	Display Name	Attribute Name	Properties
Alphanumeric	RSM Item Name	RSM_ITEM_NAME	Attribute Mandatory Attribute Editable Display for Entry
Alphanumeric	RSM Item Type	RSM_ITEM_TYPE	Attribute Mandatory Attribute Editable Display for Entry
Alphanumeric	RSM Model Name	RSM_MODEL_NAME	Attribute Mandatory Attribute Editable Display for Entry
Alphanumeric	RSM Unique ID	RSM_UNIQUE_ID	Attribute Mandatory Attribute Editable Display for Entry
Alphanumeric	RSM Qualified Name	RSM_QUALIFIED_ NAME	Attribute Mandatory Attribute Editable Display for Entry

5 Add a class named *RSM* based on the RSM class type to the Class Definition diagram.

IMPORTANT! Make sure that no other user-defined attribute for the RSM class has the Attribute Mandatory property defined.

6 Create relationships from all classes that should be visible in RSM to the RSM class.

IMPORTANT! Each class that is visible in the Dimensions RM view must have a relationship defined with the RSM class in the Class Definition diagram. The RSM class should be the secondary class in each relationship (that is, the direction of the relationship must be from the requirement class to the RSM class).

Installing and Activating the Dimensions RM Plug-in

To install and activate the Dimensions RM plug-in:

1 Select the **Plugin for IBM Rational Software Modeler** component when you install Dimensions RM. For more information, see the *Serena Dimensions RM Installation Guide*.

2 Open RSM.

3 Select **Window** > **Show View** > **Other**.

The **Show View** dialog opens.

4 Expand the **Serena** category.

IMPORTANT! If the **Serena** category is not present, then RSM was not started (or restarted) after you copied it. The plug-in is only recognized after you open RSM.

5 Select **Dimensions RM**.

6 Click **OK**.

The Dimensions RM view is displayed on the right side of the RSM interface. From this view, you can access Dimensions RM projects.

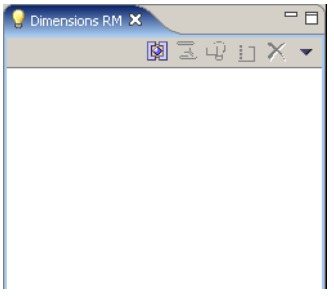

Figure 3-1. Dimensions RM View

Logging in to Dimensions RM

Before you can use the Dimensions RM plug-in, you must log in to Dimensions RM, which initiates the communication between Dimensions RM and RSM. The project you select when you log in is used to obtain the requirements from Dimensions RM and to store the links to RSM objects.

NOTE You can change projects at any time by clicking the **Open RM Project** icon at the top of the Dimensions RM view.

To log in to Dimensions RM:

1 Click the **Open RM Project** icon at the top of the Dimensions RM view. The **Dimensions RM Login** dialog opens.

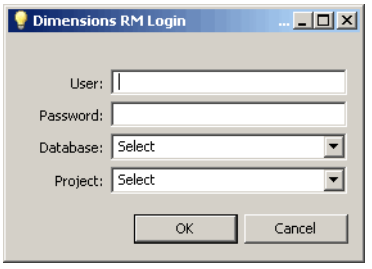

Figure 3-2. Dimensions RM Login

2 Type your user name and password.

3 Select the database associated with the project.

4 Select the project.

NOTE The project you select should have been configured by a Dimensions RM administrator to accept and store links to RSM objects.

5 Click **OK**.

Navigating Requirements in the Dimensions RM View

After you log into Dimensions RM, the project and root category are displayed in the Dimensions RM view.

To view categories, classes, and requirements in the Dimensions RM view:

1 Expand the root category.

All subcategories for the project and the classes that were related to the RSM class in "Defining the Schema" on page 8 are displayed.

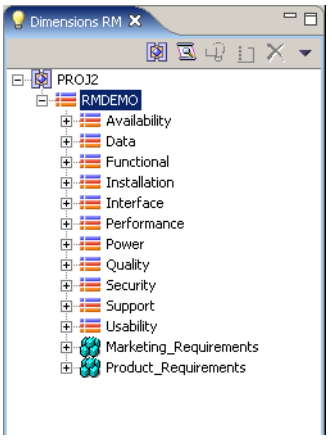

Figure 3-3. Subcategories

2 Select a category. The Properties view shows the attributes associated with the category.

NOTE If the Properties view is not open, select **Window** > **Show View** > **Properties**.

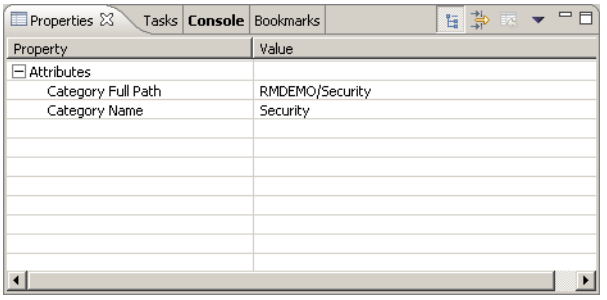

Figure 3-4. Category Properties

3 Expand the category and select a class in the category. The Properties view shows the attributes associated with the class.

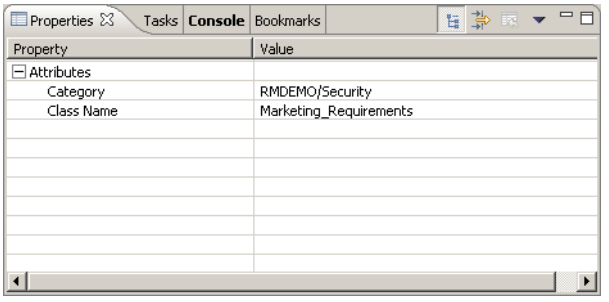

Figure 3-5. Class Properties

4 Expand the class. All requirements that belong to the selected class and that have the status "current" are displayed in a tree-like structure below the class name. If any requirement has a link with an RSM object, the requirement will have a plus sign (+) sign next to it. When you click the plus sign, the linked objects are displayed below

the requirement. For information about linking objects, see "Linking to RSM Objects" on page 14.

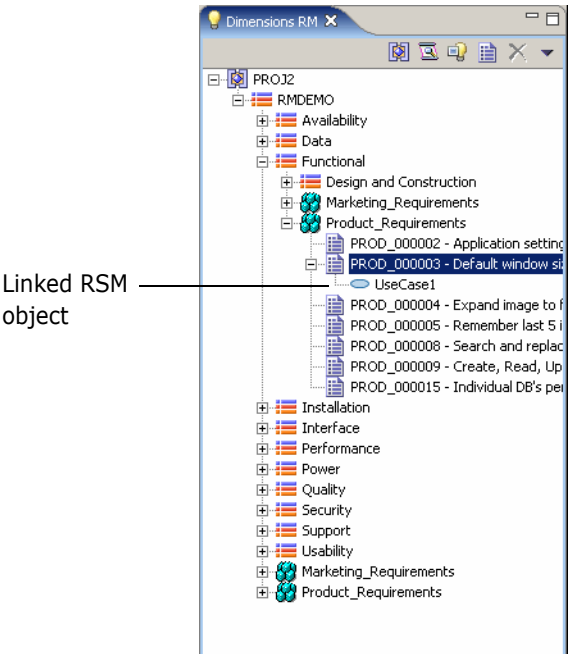

Figure 3-6. Linked Object

5 Select a requirement. The Properties view shows the attributes associated with the requirement.

NOTE All mandatory attrbutes are displayed for unfiltered requirements. For information about filtered requirements, see "Running Filters from the Dimensions RM View" on page 12.

Running Filters from the Dimensions RM View

You can run a user-defined filter that returns requirements that meet the criteria of the filter. You can perform the **Link RSM Object**, **Unlink RSM Object**, **Check Links**, **Validate Links**, and **Open in RM** commands from the filter view. You can also perform these operations from the default requirement view.

To run a filter from the Dimensions RM view:

1 Click the **Select Filters** icon on the toolbar. The **RM Filters** dialog opens.

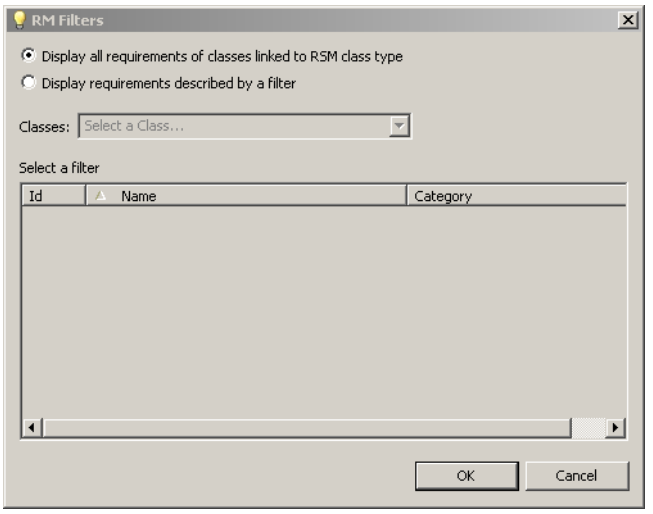

Figure 3-7. RM Filters

2 Select **Display requirements described by a filter**. The **Classes** list and **Select a filter** table become enabled.

3 Select a class in the **Classes** list. The **Select a filter** table displays all of the filters defined in that class.

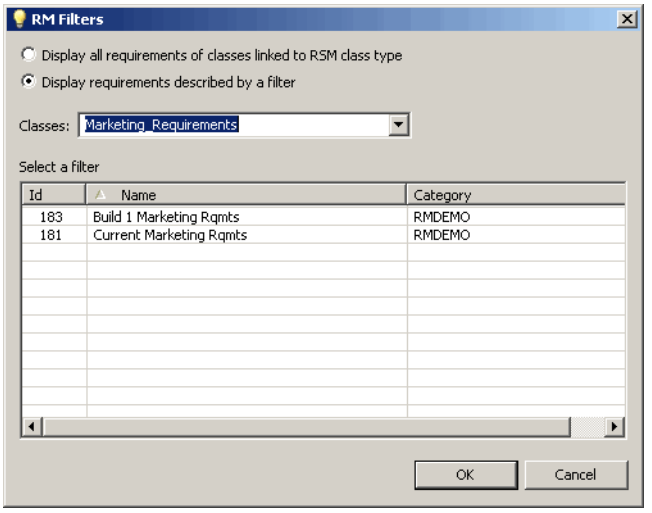

Figure 3-8. RM Filters—Classes

4 Select a filter and then click **OK**. The filter view is displayed in the Dimensions RM view.

5 Expand the filter node. The requirements returned from the filter are displayed.

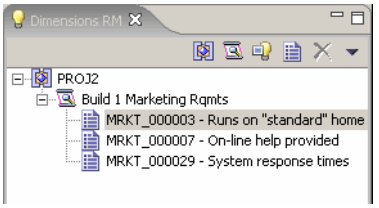

Figure 3-9. Filtered Requirements

6 Select a requirement in the filter results. The Properties view shows the attributes associated with the requirement.

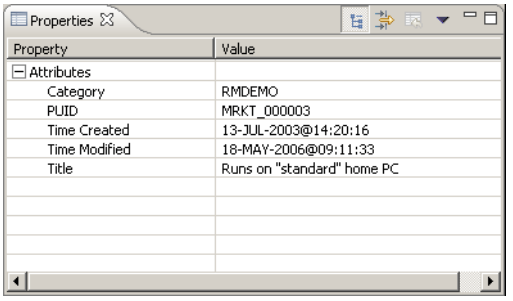

Figure 3-10. Requirement Attributes

NOTE The only attributes that are displayed for filtered requirements are Category, PUID, Time Created, Time Modified, and Title.

7 To return to the default requirement view with the categories displayed, click the **Select Filters** icon on the toolbar. In the **RM Filters** dialog that opens, select **Display all requirements of classes linked to RSM class type** and click **OK**.

Linking to RSM Objects

The following sections describe how to manage the links between RSM objects and Dimensions RM requirements.

Adding a Link

To link an RSM object to a Dimensions RM requirement:

1 Select the RSM object in the Model Explorer.

2 Select the requirement in the Dimensions RM view.

3 Do one of the following:

- Click the **Link RSM Object** icon .
- Right-click and select **Link RSM Object** from the context menu.

The linked RSM objects are displayed below the Dimensions RM requirement in a tree-like structure.

Using Links

Using the links, you can easily see which requirements are not covered by RSM objects, and can easily navigate in RSM.

To navigate to an RSM object:

1. Click the plus sign (+) to the left of the requirement. The RSM objects that are linked to the requirement are expanded below the requirement in a tree-like structure.

> **NOTE** If there is no plus sign (+) to the left of the requirement, then there are probably no RSM objects linked to this requirement. Therefore, the requirement is not covered by the models.

2. Do one of the following:
   - Right-click a linked RSM object and select **Open in Model Explorer** from the context menu.
   - Double-click a linked RSM object.

   The Model Explorer automatically navigates to the linked RSM object.

Removing a Link

To remove a link between a Dimensions RM requirement and an RSM object:

1. Select the linked RSM object in the Dimensions RM view.
2. Do one of the following:
   - Click the **Unlink RSM Object** icon in the shortcut bar of the Dimensions RM view.
   - Right-click and select **Unlink RSM Object** from the context menu.

   The Dimensions RM requirement and RSM object are now unlinked. Note that neither the Dimensions RM requirement nor the RSM object are affected by this action. If you accidentally remove a link, simply add a new link to correct the error.

Working with Impacted Links

After requirements change in Dimensions RM, the links between those requirements and any linked RSM objects are marked as "impacted." You can check for impacted links, evaluate them, and validate the ones that are still legitimate.

Checking for Impacted Links

To check for impacted links:

1. Select a linked RSM object in the Dimensions RM view.
2. Right-click and select **Check Links**.

An impacted link icon ⚠ is displayed next to Dimensions RM requirements and RSM objects with impacted links.

NOTES

- To check for multiple links at once, select a requirement or a class instead of a single RSM object.
- Because this mechanism is based on timestamps, the links are marked as impacted after they are loaded from the database (for example, after changing the class or project).

Validating Impacted Links

To validate impacted links:

1. Evaluate how the requirement changed.
2. Evaluate whether the change affects the RSM objects.
3. Edit the RSM objects as required to accommodate the Dimensions RM requirement change.
4. Select the RSM object with the impacted link marker.
5. Right-click and select **Validate Links**.

   The impacted link marker is removed from the RSM object. The impacted link marker is removed from the requirement after you validate all of the RSM objects linked to the requirement.

NOTE To validate multiple links at once, select a requirement or class instead of a single RSM object.

Opening Dimensions RM from RSM

You can open Dimensions RM directly from RSM. When you open Dimensions RM, the RM Concept tool starts. In RM Concept, you can create custom forms and select them as the default. When an "Open in RM" command is executed in RSM, the requirement is displayed in the default form for the class.

To open a requirement in Dimensions RM:

1. Select the requirement.
2. Do one of the following:
   - Click the **Open in RM** icon on the shortcut bar.
   - Right-click and select **Open in RM** from the context menu.

   RM Concept opens to the selected requirement. From RM Concept, you can edit the requirement in the normal manner.

Opening RSM from Dimensions RM

You can open RSM from the form view of a requirement in RM Concept. This functionality requires you to perform the following two tasks:

- In Class Definition, add an action attribute that calls the RSM .exe file.
- In RM Concept, add a button in the RSM class form that the user clicks to open RSM.

Adding an "Open in RSM" Action Attribute to the Schema

An action attribute is a program, which, in this case, is invoked by a user pressing a button on the RSM class form in RM Concept. It is a pointer to the RSM .exe file, and its definition includes the location of the file.

To add an "Open in RSM" action attribute:

1. Open Class Definition.
2. Double-click the RSM class icon in the project schema. The **Definition of class** dialog opens.

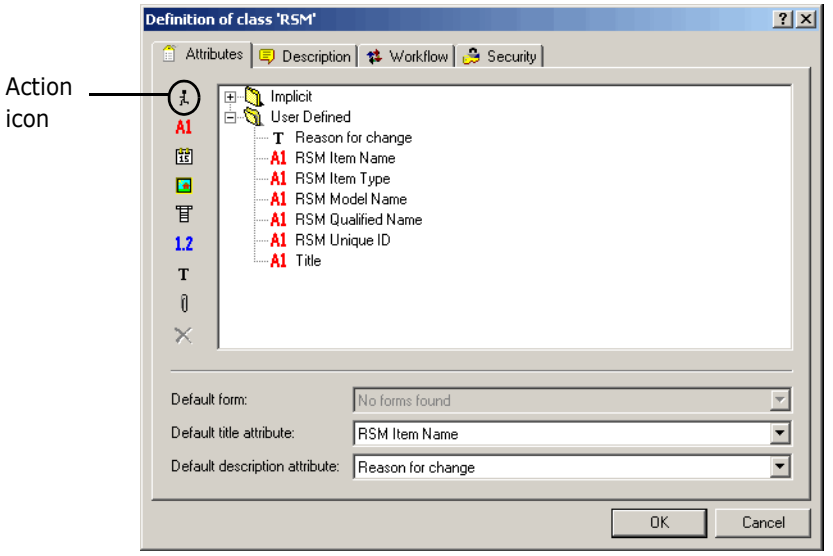

Figure 3-11. Definition of Class

3 Click the **Action** icon . The **Definition of attribute dialog** opens.

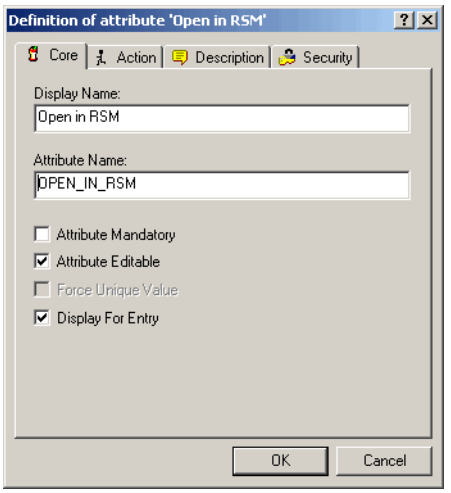

Figure 3-12. Definition of Attribute

4 In the **Display Name** box, type **Open in RSM** or another appropriate display name.

5 Press the Tab key. An associated name automatically appears in the **Attribute Name** box.

6 Click the **Action** tab.

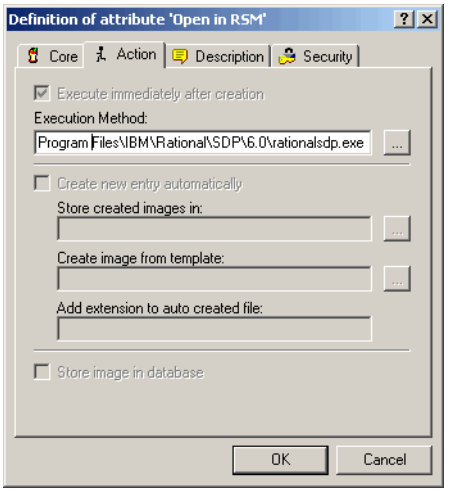

Figure 3-13. Action Tab

7 Click the browse (...) button next to the **Execution Method** box, and locate the RSM executable file (`rationalsdp.exe`).

8 Click **OK** on the **Definition of attribute** dialog.

9 Click **OK** on the **Definition of class** dialog.

10 Select **File > Save** to save the project schema.

Adding the Action Attribute to the Class Form

In RM Concept, you add a button associated with the action attribute to the class form. When a user clicks the button, RSM opens.

To add the Open in RSM action attribute to the class form:

1. Open RM Concept.
2. Expand the **Classes** node.
3. Expand the **RSM** class.
4. Select **Generated Form**.
5. Click **OK**.
6. Select **View > Layout**.
7. Select **Open in RSM** in the **Attribute Chooser** dialog, and drag it to an empty area of the form.

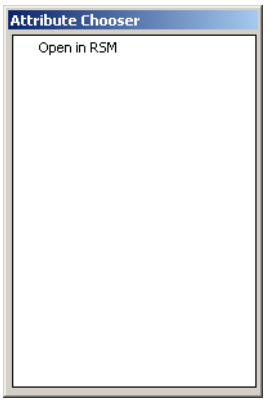

Figure 3-14. Attribute Chooser

8. Release the mouse.
9. Pressing the mouse down, drag a rectangle to form a button, and then release the mouse.
10. Select **View > Form**.
11. When prompted to save the form, click **Yes**.

12 In the **Save Form** dialog, type the name of the form and click **OK**. The original form is replaced by the form with the **Open in RSM** button.

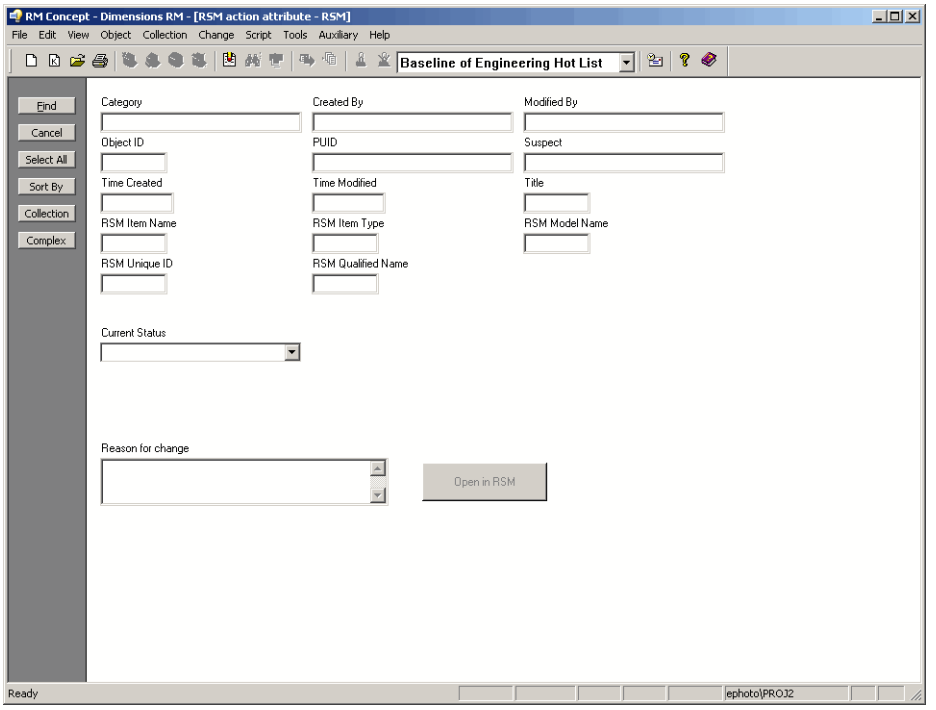

Figure 3-15. RM Concept Form View

Engineering RSM Information within Dimensions RM

After RSM data is in a Dimensions RM project database, you can use the Dimensions RM tools to manipulate the data.

You can perform impact analysis and show traceability throughout the project lifecycle. You can create reports that show the system attributes affected by a particular change proposal, and use action attributes to extend the capabililties of Dimensions RM. Action attributes allow you to open RSM from Dimensions RM to quickly view analysis and design in RSM, and open a word processor to view use case documents.

The following sections provide information about linking and how it can be used to perform impact analysis and traceability. For more information, and for information about other Dimensions RM functionality, see the *Serena Dimensions RM User's Guide* and the *Serena Dimensions RM Administrator's Guide*.

Creating Links between Objects

In Dimensions RM, you can create links between objects that belong to classes in a relationship. These links are the paths you follow to perform traceability and impact analysis. For example, links record that a given requirement is allocated to an element in a software design specification, or that the requirement is verified using a test case. If a change is made to a requirement, you may need to modify any design element or test case to which it is linked.

Links can be created in Dimensions RM using RM Browser, Visual Network Tool (VNT), RM Concept, or RM Explorer. For more information, see the *Serena Dimensions RM User's Guide*.

Finding Links

Using RM Concept, you can view and modify the links between data stored in different classes using a relationship form with a split screen. For example, RM Concept displays in red all objects of the Requirements class that are linked to a use case. A use case object that does not have a link to the Requirements class indicates an incomplete set of requirements.

Using RM Browser, you can view and modify the links between data stored in different classes in either the form view or the **Edit Attributes** dialog. You can also view and modify links from the **Link Requirements** dialog. You run a relationship query from this page, and in the results, a link icon indicates that a specific object in another class is linked to the object from which the query was run.

Displaying the History of an Object

In Dimensions RM, you can create, modify, and replace objects. A parent/child relationship is created when an object is replaced with a newer version of itself. Visual Network Tool (VNT) can be used to graphically show the change history for an object such as a requirement or a design element.

Scripting

In Dimensions RM, you can create SQL-like scripts to generate reports that show the lineage or traceability between objects. You can create the scripts from the command line, by using wizards or dialogs, or by using Traceability View in RM Browser. For example, you could generate a report that lists the requirements that are linked to use case objects.

Using Impact Analysis

You can use Visual Network Tool (VNT) to access the full impact of a proposed change to the system. An object, its links, and objects linked to it (directly and indirectly, and both upstream and downstream), can be displayed as a tree diagram. This straightforward graphic representation of dependencies makes impact analysis easy to perform. For example, you could see that if you change an object in a class, a requirements object and two design elements would be impacted.

Getting Help

The information provided in this guide is available online from within RSM.

To access the online Help:

1. Select **Help > Help Contents**. The **Help** window opens.
2. In the left pane, click **Serena Dimensions RM Plug-in**.

3 Expand the topics in the **Contents**.

4 Double-click an entry to view its content in the right pane.

Viewing Version Information

You can view version information for both the Serena Dimensions RM plug-in and the Help plug-in.

To view version information:

1 Select **Help > About IBM Rational Software Development Platform**.

2 Click the **Plug-in Details** button.

3 Scroll down the **Provider** column until you see **Serena Software, Inc.** There should be two entries: one for the Help plug-in and one for the Dimensions RM plug-in.

4 Look in the **Version** column for the version of the plug-ins.