



Creating Interactive Illustrated Parts Catalogs

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Introduction

This document gives practical recommendations on how to create the IPC (Illustrated Parts Catalog) publications using the RapidAuthor tools.

The IPC publication is the RapidAuthor publication of IPC type. The IPC publication is a documentary unit that usually contains two components: illustrations and Detailed Parts List (DPL) table. Several IPC publications can be compiled together to make an interactive IPC.

The following RapidAuthor tools are used to create the IPC publication:

RapidCatalog is a powerful authoring application that provides a visually oriented approach to allow the user to rapidly build interactive IPC publications. The IPC publications can include either 2D or 3D data or both, and provide the user with drill-down mechanisms and a page-based navigation system similar to traditional 2D and text. RapidCatalog uses a set of customizable components (specification components) for authoring the IPC publications in accordance with various information standards (for example, ATA iSpec 2200, S1000D Issue 2.3 IPD, S1000D Issue 4.0 IPD).

RapidGenerator is an application that is used to preprocess and import data exported from CAD/PLM systems. The preprocessed 3D models are used in RapidManual, RapidLearning and RapidCatalog. To import 3D data, RapidGenerator uses a set of customizable components (plug-ins) designed for different CAD systems. A customer-specific plug-in can be developed by ParallelGraphics on demand. This tailored plug-in can import the customer's source data (including PDM data) in the most effective way. Provided that the source data contains the required information, the plug-in can generate a preliminary DPL table and automatically link it with the corresponding graphics.

RapidAdministrator is a helper application that provides the advanced abilities to manage projects and working spaces for RapidAuthor.

NOTE: Compiling an interactive IPC of separate IPC publications is out of scope in this document.

1 Process Layout and Basic Operations

To create the IPC publication, the author should perform the following basic steps:

1. Preparing input data for the RapidAuthor project.
3D data and additional PDM data are obtained from CAD systems.
2. Creating the RapidAuthor project.
RapidAdministrator is used for creating a working space for the projects.
RapidGenerator is used for creating a new project and for importing the input data into the project.
3. Editing the RapidAuthor project.
RapidCatalog is used for editing the project.
4. Publishing the IPC publication.
RapidCatalog is used for publishing the IPC publication.

Note that Cortona3D technology allows reusing content across functional areas. The RapidAuthor project created using one RapidAuthor tool can be reused by other RapidAuthor tools. Once created by RapidGenerator and edited by any RapidAuthor tool, the RapidAuthor project can be reused several times to create the entire range of supported documentary units including IPC publications.

Pay attention that RapidGenerator is also available in the RapidCatalog environment. To open RapidGenerator within RapidCatalog, from the *File* menu, choose *Import Data*.

1.1 General Data Flow Diagram

The general data flow diagram for creating the IPC publication is shown in Fig. 1.

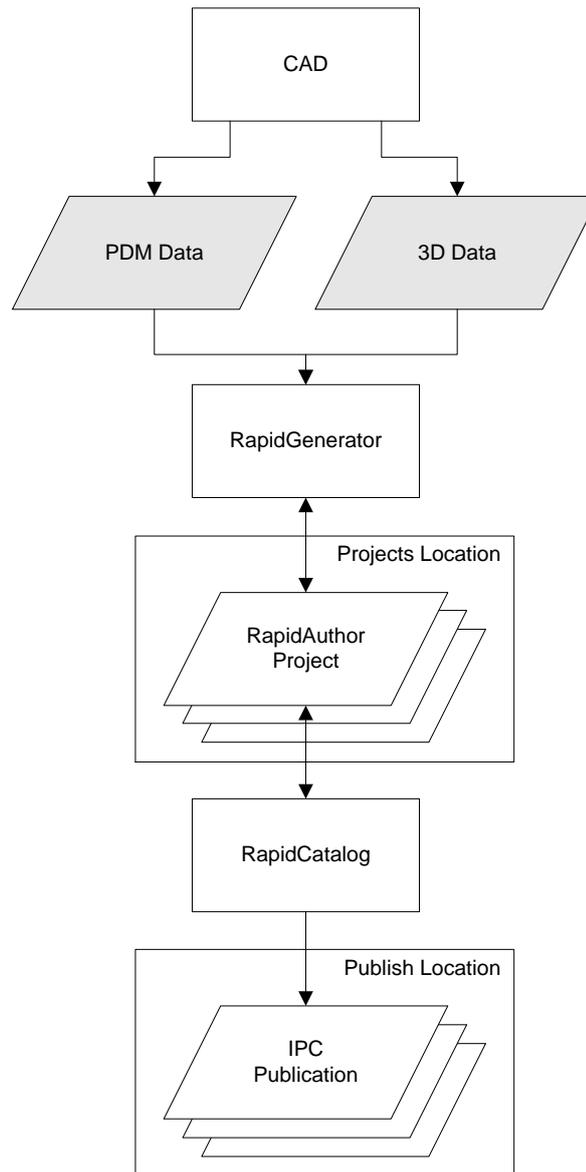


Fig.1. Data flow diagram of creating the IPC publication

Box – an application; parallelogram – data. Dimmed parallelograms – input and output data used in the development process.

1.2 Preparing Input Data for RapidAuthor Project

The following set of input data is required for creating the RapidAuthor project:

1. 3D data from CAD.
2. Additional PDM data that can be used for automatic generation of DPL table.

1.3 Creating RapidAuthor Project

The RapidAuthor project can be created using the following basic steps:

1. Creating a working space.

2. Creating an empty project.
3. Adding data to the project.

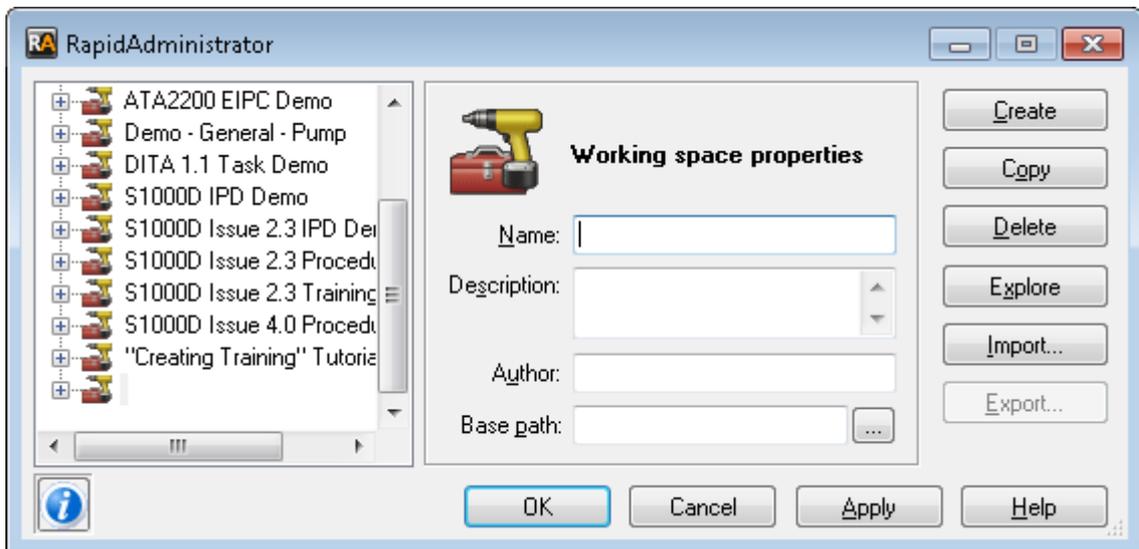
RapidAdministrator should be used to create a working space. To start RapidAdministrator, choose **Start > All Programs > Cortona3D > RapidAdministrator**.

RapidGenerator is used to create an empty project and to add data to the project. To start RapidGenerator, choose **Start > All Programs > Cortona3D > RapidGenerator**.

The RapidAuthor project stores 3D models and other related data such as images, metadata and technical documents. A working space is a specially organized set of working folders that contain RapidAuthor projects. The working space has a descriptive name. In the working space the author creates a new project and fills the project with the input data.

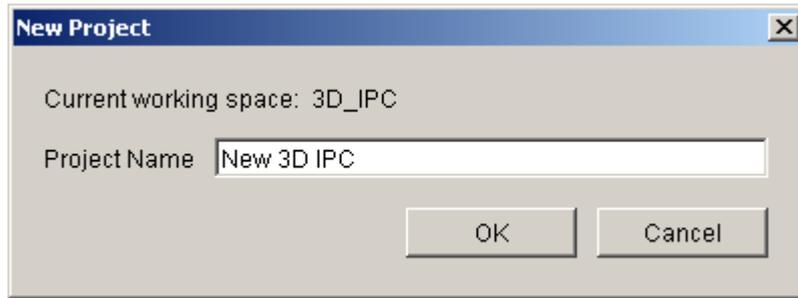
Procedure

1. To create a working space:
 - Start **RapidAdministrator**.
 - Click **All Configurations**, and then click **Create**.
 - In the Working space properties area that appears, type name, description (optionally), and author (optionally).
 - In the Base path, specify the location where you want to locate the folders of the working space. You can also click the button to specify the existing folder.
 - Click **Apply**.



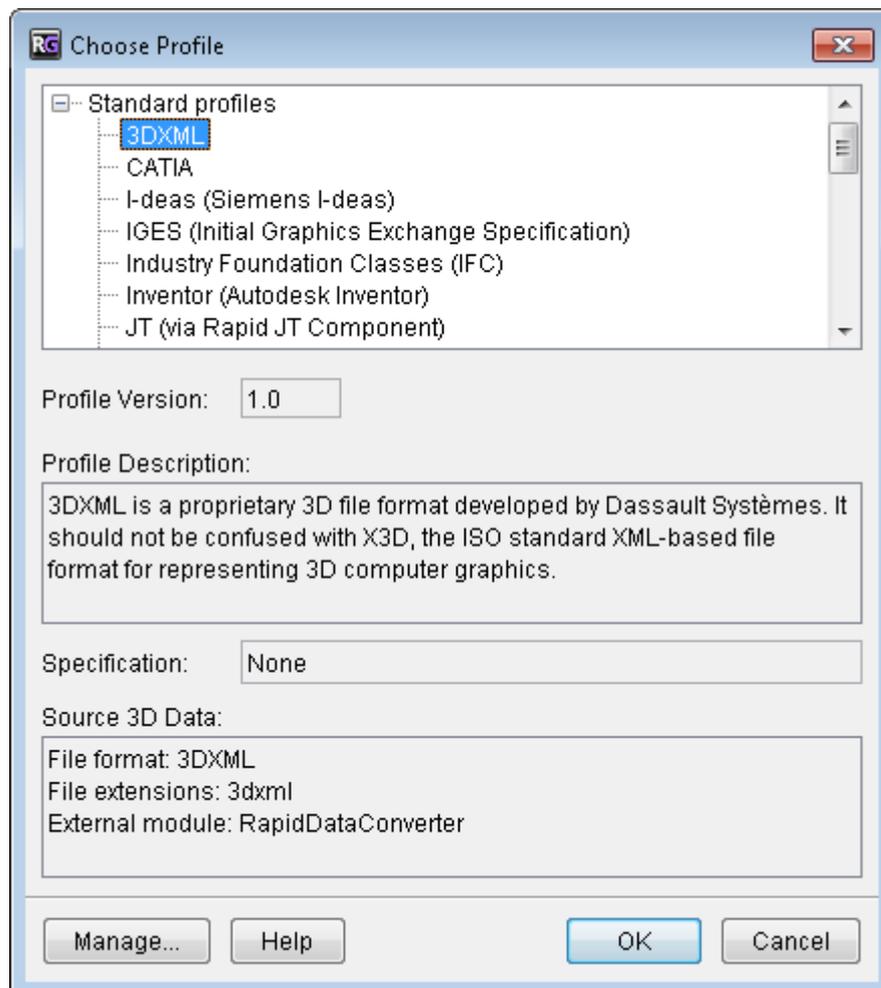
See the RapidAdministrator help system for more information about managing the working folders.

2. To create a new project:
 - Start **RapidGenerator**.
 - From the **Tools** menu, choose **Select Working Space**.
In the **Select Working Space** dialog box, choose the desired working space, and then click **OK**.
 - On the **File** menu, click **New Project**.
The New Project dialog box appears.
 - In the **Project Name** box, type the descriptive name for the project. Make sure that the dialog box shows the proper working space for the new project, and then click **OK**. This creates a new empty project (that is a project without any geometric data and DPL data) in the current working space.



3. To import data to the project:

- Start **RapidGenerator**.
- Choose the **RapidDataImportTool** plug-in by clicking its name in the in the **Plug-in name** box.
- To choose the required import profile, click **Settings**. The Choose Profile dialog box appears.
- In the Choose Profile dialog box, click the name of the required profile. For more information about the current dialog box, click the **Help** button.



- To start importing the input data, click **Start**.
- In the dialog box that appears, select the supported geometry file to be imported, and then click **Open**.
NOTE: The options available in the dialog box depend on the chosen profile. In general, the dialog box allows you to select 3D data and additional PDM data (optionally).
- The time required for the import procedure depends on the amount of input data. RapidGenerator saves the project when the import is finished. If no default import setting are used, be sure to save the project when the import is finished (**File** menu > **Save**).

2 Editing RapidAuthor Project

The RapidAuthor project can be edited using RapidCatalog. To start RapidCatalog, choose **Start > Programs > Cortona3D > RapidCatalog**.

NOTE: When RapidCatalog is started on virtual machine for the first time, it could be required to change the renderer for proper display of 3D model. To change the renderer, click **Tools > Options > 3D View > Renderer**.

The following basic steps are used for editing the RapidAuthor project:

2.1 Step 1: Opening RapidAuthor Project

Once the RapidAuthor project has been created using RapidGenerator, it can be opened in RapidCatalog.

Procedure

To open the project:

- On the **File** menu, click **Open Project**. In the upper section of the **Open Project** dialog box, choose the same working space that was specified in RapidGenerator for the project, then in the lower section click the project to be opened, choose the language and click **Open**.

NOTE: If the name of specification component is not specified for the project, the Select Specification dialog box appears. This allows choosing a specification component for the project.

- When 3D data is imported into a project, it is initially hidden in the 3D View window. To display the hidden Items, select them in the Item Tree and make the Items visible by using the **Show Solid** command (on the **3D View** menu, point to **Hide/Show Selection**, and then click **Show Solid**).
- Use the **Save Project** command from the **File** menu to save your work.

2.2 Step 2: Creating and Editing DPL Table

If DPL table was not automatically generated using RapidGenerator, it can be created manually using RapidCatalog. The DPL table is created and edited in the DPL Table window.

FIG-ITEM	PART NUMBER	NOMENCLATURE	USAGE CODE	UNITS PER ASSY
-110	2322M55P01	. BOLT-D-HEAD		69
120	J200P02	. NUT-SLFLKG-HEX		69
130	NO-NUMBER	. COMP CASE		1
140	2311M74G02	. SEAL COMPR-S4		2
-150	2311M74P02	. SEAL-RAIL		1

Diagram labels: **Header** (points to the top row), **Row** (points to the first data row), **Column** (points to the first column), **Cell** (points to a cell in the first data row).

Follow the sub-steps below to create and/or edit DPL table.

2.2.1 Add a New DPL Row

Empty DPL table has only a header that is why it is necessary to add rows to the DPL table.

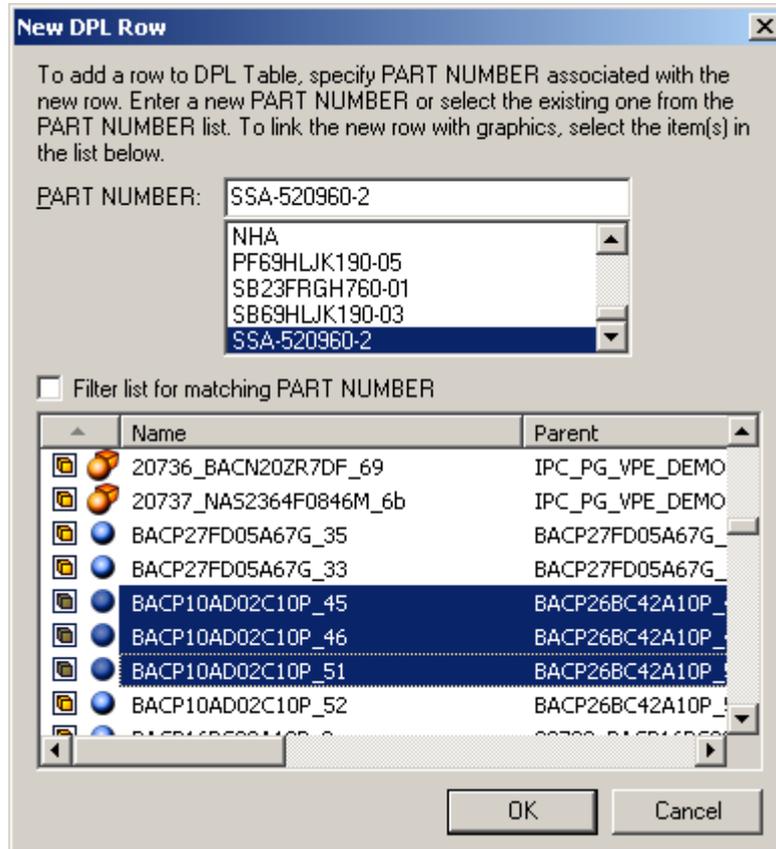
Procedure

To add a new row to the DPL table:

- Right-click a DPL row, and then click **New DPL Row** to open the **New DPL Row** dialog box.

NOTE: A new DPL row can be added by clicking **Click here to add a new row** at the end of DPL table.

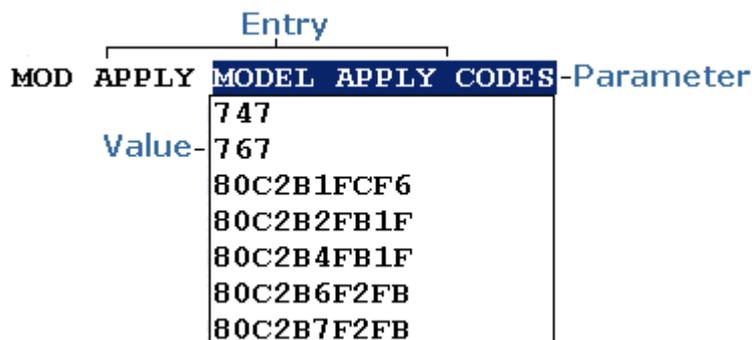
2. Enter a new unique part number in the **PART NUMBER** box or select the existing one from the list below the box. If the part number for the new row is undefined or is unnecessary, leave the box empty allowing RapidCatalog to specify unique ID that begins from "NO-NUMBER".
3. The new DPL row can be linked with the corresponding Item by selecting the required Item(s). To do this, clear **Filter list for matching PART NUMBER**, and then select one or several Items from the list below.



4. Click **OK**.
The new DPL row will appear at the end of the DPL table.
NOTE: The linkage can be established later (see section 2.2.3).

2.2.2 Fill DPL Data

Once the rows have been added, the next step is to populate them with data.
The DPL data are represented in the form of entries.



An **Entry** is a coded element used to provide different types of information. There are entries with parameters (for example, **ALT PART NUMBER**) and entries without parameters (for example, **MATCHED PART**). You can add a new entry by choosing one from a list of predefined entry templates.

A **Parameter** is a highlighted underlined element that can take on different values.

A **Value** is data of specific type assigned to a parameter. A value can be entered by either typing a value or choosing the necessary value from a list of predefined values.

NOTE: A list of some values and their descriptions can be added and edited using the Reference Tables command (see section 4.6 for editing reference tables).

To start editing DPL data, switch to the edit mode by double-clicking the required data. In this mode entries can be added or deleted and values can be changed, typed, copied or pasted. To exit the edit mode, click anywhere in the DPL table.

Procedure

- Double-click any column to switch to the edit mode.



To assign a value to a parameter:

- Click the parameter and then type or choose the required value.

FOR EXAMPLE:

To assign a value to the KEYWORD parameter:

1. Click the KEYWORD parameter.



2. Type the required value.

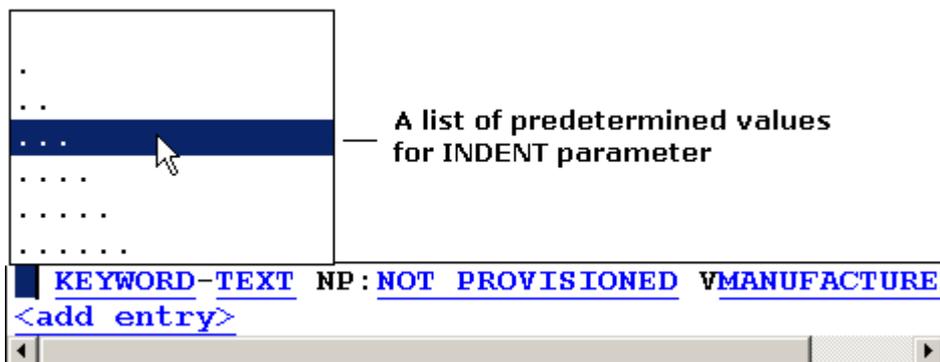


To assign a value to the INDENT parameter:

1. Click the INDENT parameter.



2. Choose the required value from a list of predetermined values.



To add a new entry:

1. Click the <add entry> field. A list of available entries appears.
To insert a new entry above the chosen entry, right-click any entry, and then choose **Insert Entry**.

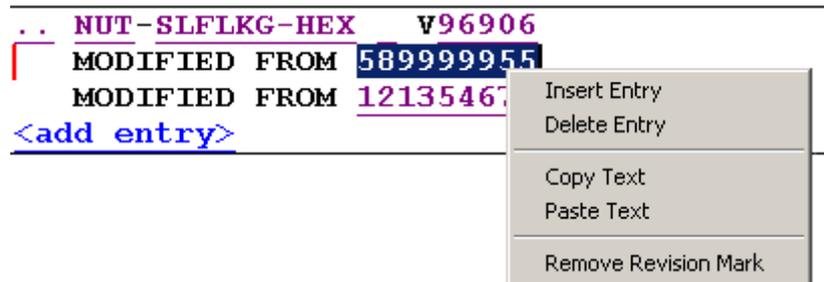
2. Choose the required entry from the list of available entries.
The entry will appear at the end of the cell (the [<add entry>](#) command) or above the chosen entry (the Insert Entry command).

To delete an entry:

- Right-click the required entry, and then choose **Delete Entry**.

To change the parameter of an entry:

1. Click the parameter, and then type the required value.



2. Click anywhere outside the edited cell to switch off the edit mode.

2.2.3 Establish Links between DPL Rows and Items

After creating the DPL table, the author should establish links between the DPL rows and Items. Each Item should be assigned to the corresponding DPL row.

The links are established and edited in the DPL Table window.

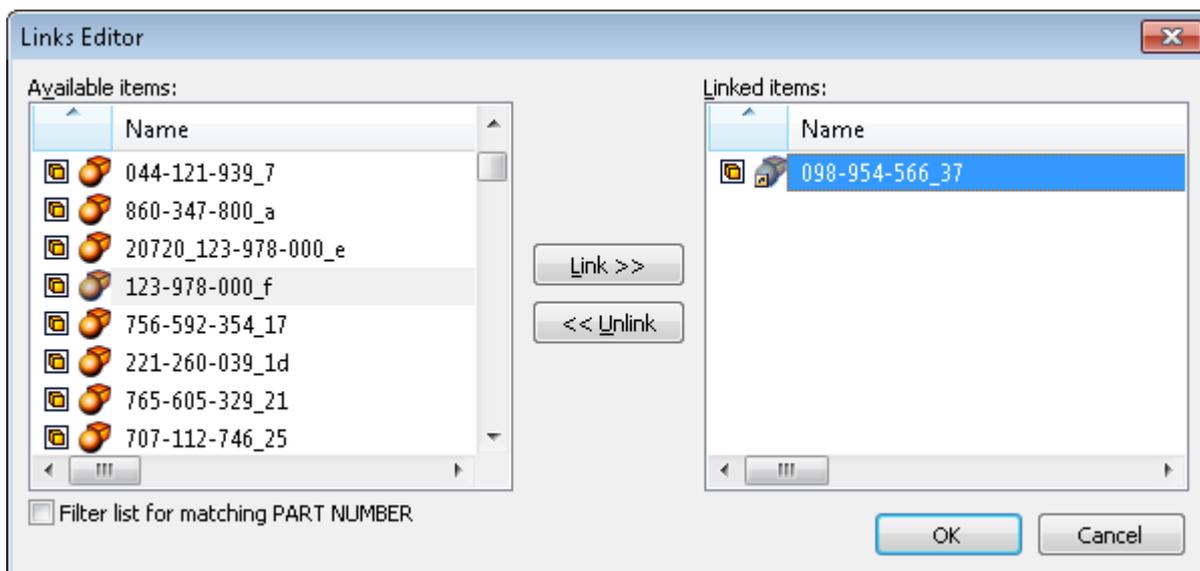
The  sphere icon beside a DPL row indicates that the row is linked with the corresponding Item.

See the RapidCatalog help system for more information about DPL table (topics: **DPL Table Window: Overview**, **DPL Editor**).

Procedure

To establish/edit links between a DPL row and Item:

1. Select the Items to be associated with a particular DPL row. This step is optional but might be helpful.
2. Right-click the required DPL row, and then click **Edit Links with Items** to open the **Links Editor** dialog box. You can also double-click the sphere icon of the required DPL to open the **Links Editor** dialog box.
3. Select the required Item(s), and then click **Link**. The Items in the list of **Available Items** can be selected directly or using any method available (See section 4.10 for selecting Items.)
4. Once the selected Items have appeared in the list of **Linked Items**, click **OK**. The sphere icon appears beside the DPL row to indicate that this row is linked with the corresponding Item.



NOTE: The DPL row can also be linked with Item by dragging the Item(s) from the Item Tree window and dropping it on the required DPL row.

2.2.4 Validate DPL Table

There are mandatory metadata whose values must be filled in to ensure that the IPC publication is valid. The author can check and correct, if necessary, the DPL table using the Validate command.

Procedure

To validate DPL table:

- Right-click any DPL row, and then click **Validate**.
If the DPL table contains any missing mandatory metadata, the **Validate DPL Table** dialog box displays the DPL rows in which these mandatory metadata are omitted.
- In the **Validate DPL Table** dialog box, switch to the edit mode and enter the missing values.
- Once all missing metadata have been filled in, click **Close**.

NOTE: Any changes or selection made in the **Validate DPL Table** dialog box are applied synchronically to the DPL Table.

As soon as the missing mandatory metadata have been entered in the required DPL row, the row disappears from the **Validate DPL Table** dialog box.

2.3 Step 3: Editing Items

Once the required links have been established between DPL rows and Items, the author should edit Items in the Base. This may include deleting irrelevant Items, choosing and changing the representations of Items. To start editing, activate the Base (in the IPC Pages window, double-click **Base**). The Base contains all Items of the project.

Procedure

To delete Item:

1. Select the Item(s) to be deleted in the Item Tree or Item List or 3D View windows.
2. On the **Edit** menu, click **Delete**.

There are two ways to choose representations for one Item or a group of Items: by name or weight. The first method allows the author to choose the most suitable representation of the previously selected Items by specifying the name that was assigned to each Item during the step of data preparation in RapidGenerator. The second way uses the percentage parameter that is the number of triangles in the polygonal mesh. The

first method is preferable for groups of Items since RapidGenerator uses robust simplification algorithms comprising a visual quality check.

Procedure

To choose representations by name:

1. Select Item(s) for which you want to change the representation.
2. Click **Choose Representations by Name** from the **Edit** menu or click **Choose Representations by Name** on the Standard toolbar.
3. In the Choose Representation by Name dialog box, choose the name of representation, and then click **OK**.

To choose representations by weight:

1. Select Item(s) for which you want to change the representation.
2. Click **Choose Representations by Weight** from the **Edit** menu.
3. In the Choose Representation dialog box, specify the Weight parameter. The closer parameter to 0, the more simplified mesh of Item is selected from the list of different representations. Click **OK**.

To edit the current representation properties for one or more Items:

1. In the Item Tree window, select the Item(s), whose representation you want to edit.
2. From the **Edit** menu, choose **Change Representation Properties**.

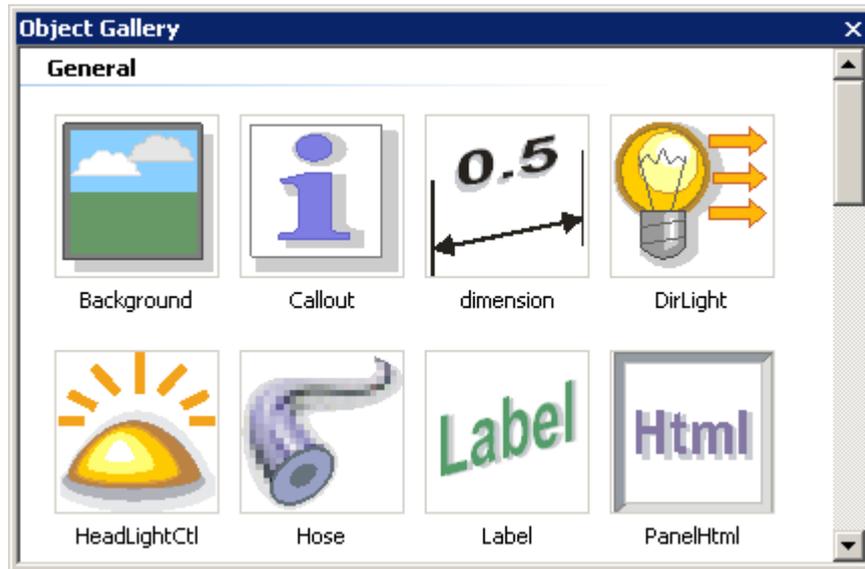
The Edit Representation Properties dialog box appears.

3. Set the required parameters and click **OK**.

The changed representations are saved as a new representation for each selected Item and the representation becomes current for each selected Item.

See the RapidCatalog help system for other operations on editing Items (topics: **Working with 3D Model**).

The 3D model can be enhanced by adding objects from the *Object Gallery* window (**View menu > Object Gallery**). The gallery objects can be added to the 3D model of the project using the context-sensitive command *Add to Project* in the Object Gallery window.



See the RapidCatalog help system for more information about the object gallery (topics: **Working with Object Gallery**).

2.4 Step 4: Creating and Editing IPC Pages

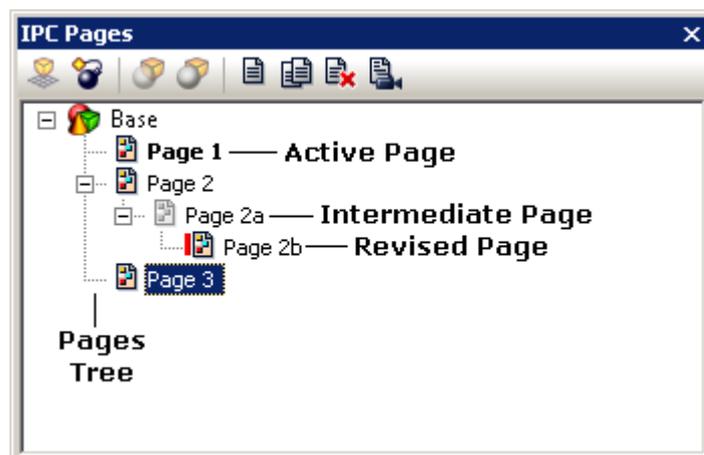
The next step is to add pages to the project and fill them with the required data.

An IPC page contains information about:

- A set of DPL rows that are shown when the author activates the IPC page (active DPL table rows);
- Corresponding subset of Items with their defined positions that are visible when the author activates the page;
- Viewpoint (camera position) from which the author sees the Items when the IPC page is activated;
- Name that is shown as the corresponding IPC page description in the IPC publication.

2.4.1 Creating an IPC Page

The IPC pages are created in the IPC Pages window and are arranged in a tree-like hierarchical structure. To start working on the new IPC page, the author should name the page and activate it.



Procedure

To create an IPC page:

- Right-click somewhere in the IPC Pages window, and choose **Insert New**.

NOTE: The newly created page has the same set of Items as the Base and has no active DPL rows.

To rename an IPC page:

1. Right-click the page and choose **Rename**.
2. Type the desired name.

To activate an IPC page:

- Either right-click the page name and select **Activate** or double-click the page name.

2.4.2 Creating a New Page Based on an Existing Page

Any IPC page can be duplicated in order to use the clone as a base for a new page. The clone page contains the same Items and same active DPL rows as the page it was cloned from. In the IPC pages tree, the clone page always appears as a child of the page it was cloned from.

Procedure

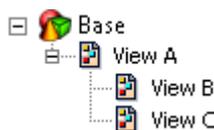
To clone a page:

- Right-click the desired page in the IPC Pages window, and choose **Clone**.

NOTE: Activate the newly created page to start working on it.

2.4.3 Creating Multi-Step Animated Transitions

The IPC pages hierarchical structure is used for creating animated transitions between pages in the IPC publication. An animated transition is a smooth transition from one page to another that gives the user's eyes a chance to track the location while the view changes. The animated transition is achieved if IPC pages have a common parent page, as shown in the figure below.



In this case, transition between two child pages (View B – View C) of one common parent (View A) is animated and is made through their common (nearest) parent (View B – View A – View C). Here View A is an intermediate view between View B and View C.

When creating an animated transition with several intermediate views, it is better to use intermediate pages. Intermediate pages are used only for creating the multi-step animated transitions and the intermediate pages are not included in the list of available pages in the IPC publication.

Procedure

To insert an intermediate page:

- Right-click the page that will be a child of the intermediate page, and then click **Insert Intermediate**.

To mark/unmark a page as intermediate:

- Right-click the page to be marked/unmarked as intermediate, and then click **Intermediate**.

See RapidCatalog help system for more information about creating animated transitions (topic: **Creating Animated Transitions**).

2.4.4 Recommending an IPC Page

Item can be displayed differently on different IPC pages. A particular IPC page on which Item is best displayed can be chosen and marked as recommended. The recommended page provides the best view of Item linked with a DPL row. By default, none of IPC pages are marked as recommended (the **None** option is selected). There are two commands that allow marking an IPC page as recommended: *Recommend this*

Page and *Set Recommended Page*. The *Recommend this Page* command allows marking the active IPC page as recommended for the chosen DPL row linked with the corresponding Item. The *Set Recommended Page* allows marking one of the IPC pages as recommended by choosing the required IPC page from a list of IPC pages. The list of IPC pages includes only those IPC pages on which the chosen DPL row is active.

Procedure

To set the recommended page, do one of the following:

- Select one or more DPL rows, right-click them, and then choose **Recommend this Page**. The active page becomes recommended.
- Right-click the required DPL row, point to **Set Recommended Page**, and then click the required page in the list.
- Drag the page from the IPC Pages window and drop it on the required DPL row.

2.4.5 Setting IPC Page Viewpoint

A viewpoint should be assigned to each IPC page. This viewpoint will be shown whenever the IPC page is activated, in both RapidCatalog and IPC publication. The viewpoint contains information on:

- Camera position from which the user views the 3D model.
- Center of rotation which is used when the user rotates or moves closer/further 3D model.

NOTE: When switching between the IPC pages the current viewpoint can be used instead of the viewpoint of the activated page. To do this, use the *Freeze Camera* command from the *3D View* menu.

Procedure

To set the viewpoint for an IPC page:

1. Activate the IPC page.
2. Select Item(s) whose center will be the center of rotation. If there is no selected Item, the center of all currently visible Items is considered.
3. Using the mouse and keyboard, choose the camera position, so that the desired view is achieved in the 3D View window.
4. On the 3D View menu, click Set Page Viewpoint.

See the RapidCatalog help system for setting the rotation center (topic: **Navigation Types: SPIN**).

2.5 Step 5: Editing Views on IPC Pages

On the active IPC page you can customize the DPL table and the 3D model of the project, create and edit 2D images. For editing views on IPC pages, use the following actions:

2.5.1 Deleting Items

It is possible to remove Items from an IPC page.

Procedure

To delete Item:

1. Select the Item(s) to be deleted in the Item Tree or Item List or 3D View windows.
2. On the **Edit** menu, click **Delete**.

To see the deleted Item(s) in the Item Tree or Item List windows:

- On the Edit menu, click **Show Deleted Items**. The deleted Item appears with its icon crossed .

To restore deleted Item(s):

1. Select the deleted Item(s) in the Item Tree or Item List windows.
2. On the **Edit** menu, click **Restore**.

2.5.2 Setting Items as Background

Items that represent the outer environment to the main Items can be made semi-transparent on the active IPC page. To do this, use the *Set as Background* command.

Procedure

To set Item(s) as background:

1. Select Item(s) in the Item Tree or Item List or 3D View windows.
2. On the **Edit** menu, click **Set as Background**.

To restore the initial appearance of the background Item(s):

1. Select the background Item(s) in the Item Tree or Item List or 3D View windows.
2. On the **Edit** menu, click **Remove from Background**.

2.5.3 Activating DPL Rows on IPC Pages

The author can customize the DPL table by activating or deactivating the required DPL rows on each IPC page. **Active DPL rows** are those rows that are visible on the active IPC page. **Inactive DPL rows** are those rows that are invisible on the active IPC page and are not displayed when the IPC page is viewed in the IPC publication. By default, the DPL rows of a new IPC page are inactive. The text is dimmed in the inactive DPL rows. When DPL rows are activated on the page, the activated rows change their color to black.

	15	2301M17P01	. . HOUSING-DAMPER	1	Active DPL Rows
	20	2301M99P01	. . DAMPER SLEEVE	1	
	25	J1074P12	. . STUD-LOCKED IN	ALT	Inactive DPL Rows
	30	J1308P12	. . STUD-LOCKED IN	3	

Procedure

To activate a DPL row on the IPC page, do one of the following:

- Right-click the required DPL row, and then click **Activate on this Page**.
- Drag the page from the IPC Pages window and drop it on the required DPL row. The dragged page is marked as recommended for the chosen DPL row.

NOTE: All DPL rows whose linked Items are visible on the active page can be activated. To do this, right-click the active page in the IPC Pages window, point to **DPL Rows**, and then click **Activate with Visible Geometry**.

To deactivate those DPL rows whose linked Items have been deleted from the active page, right-click the active page in the IPC Pages window, point to **DPL Rows**, and then click **Deactivate with Deleted Geometry**.

2.5.4 Creating Exploded Views

Exploded views can be created on the active IPC page. **Exploded view** is an illustration of an object that shows the relationship or order of assembly of various parts. It shows the components of an assembly slightly separated by distance, or suspended in surrounding space. Exploded views are often a good way of showing detail.

Exploded views can be created either manually using the **Set Position** command or with the help of the multi-step **Explosion Wizard**. The wizard can explode assemblies linearly (see Fig. 2. Linear Explosion) and radially (see Fig. 3. Radial Explosion). Use the  **Explosion Axial Lines** command from the **3D View** menu to view the explosion direction in the exploded views.



Fig. 2. Linear Explosion

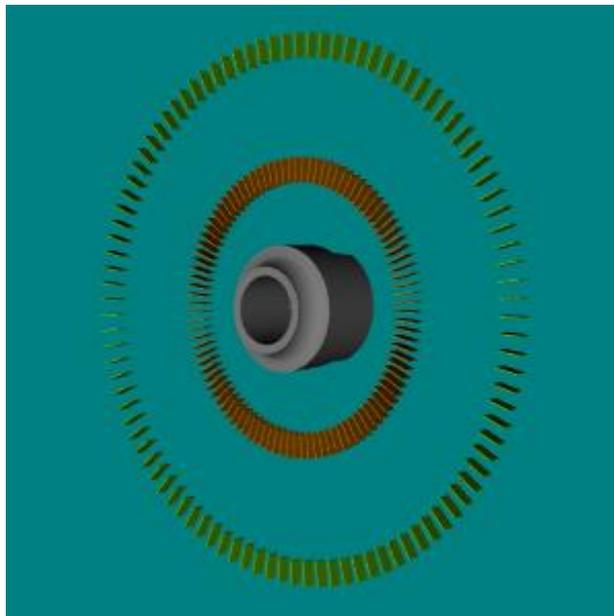


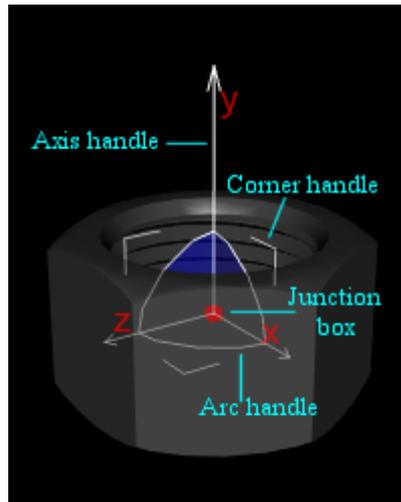
Fig. 3. Radial Explosion

Procedure

To change the position of Items using the Set Position command:

1. Select the Item(s), whose position should be changed.
2. From the **Edit** menu, choose **Set Position**.

The **Edit Position** dialog box opens and the manipulator appears in the 3D View window.



3. Change the position of the selected Item(s) using the options of the **Edit Position** dialog box and moving the manipulator in the 3D View window.

See the RapidCatalog help system for more information about the Set Position command (topics: **Setting Position**).

To start the Explosion Wizard:

- On the **Edit** menu, click **Explode Assemblies**.

See section 4.8 for more information about creating the exploded views.

2.5.5 Creating 2D Image

A 2D image can be created for the active IPC page. There are two ways of creating a 2D image.

1. Using the *Create 2D Image for Current Page* command (2D Image menu). The command allows creating a vector image in CGM file format.
2. Using the *Capture 3D* command (2D Image menu). The *Capture 3D* command allows capturing the image of Items currently visible in the 3D View window and saving the image either in the chosen location or in the current project. In the current project the captured image is saved as a raster image in JPEG format. See the RapidCatalog help system for more information about capturing 3D (topic: **Capturing 3D**).

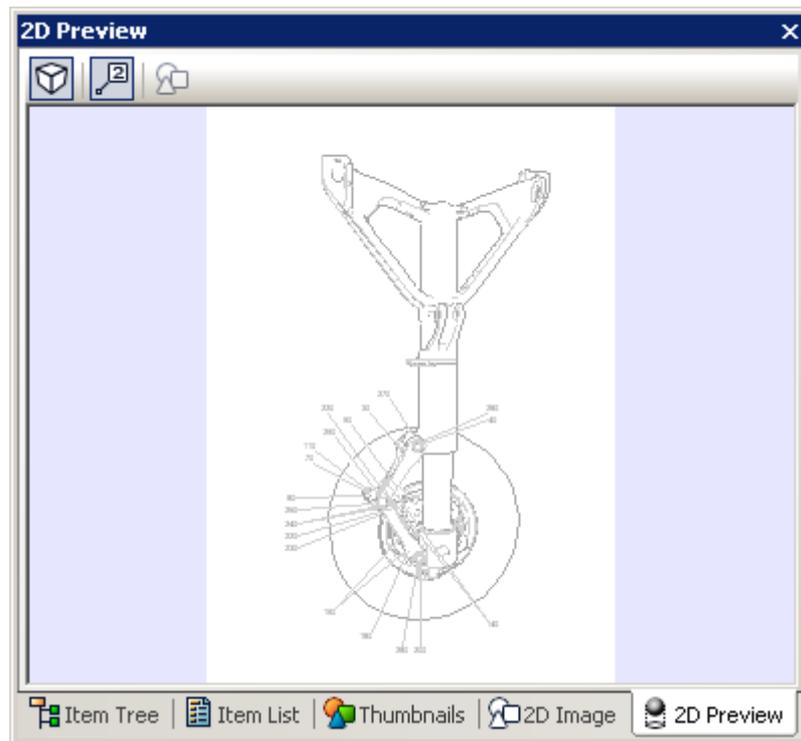
The below procedure describes how to create a 2D image using the *Create 2D Image for Current Page* command.

Procedure

To create a 2D image for an IPC page:

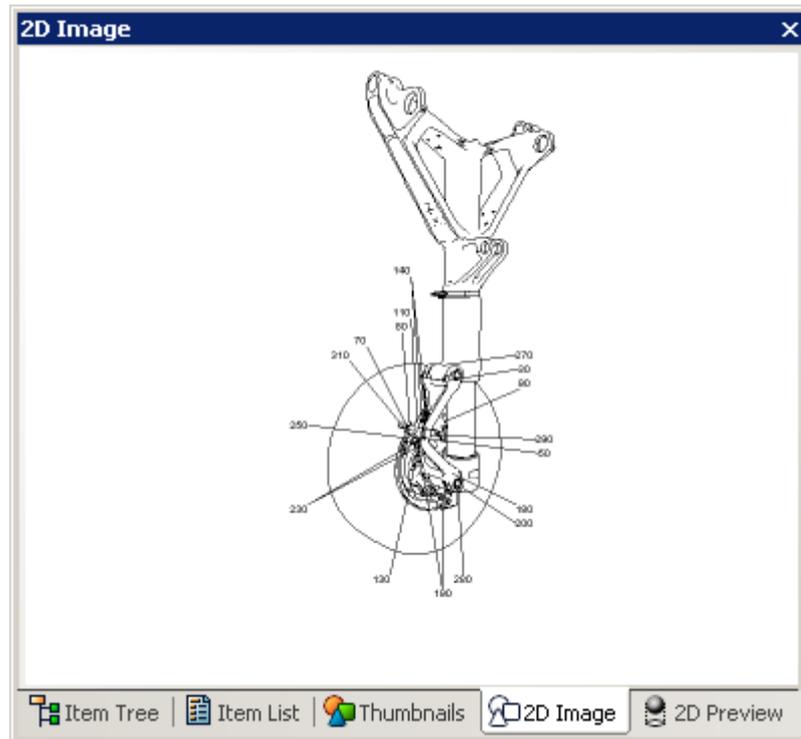
1. Activate the page for which a 2D image is created.
2. Click the **2D Preview** tab to activate the 2D Preview window and to see the 2D image preview.

The 2D Preview window renders an outline of the view currently displayed in the 3D View window. The window is used for preparing and previewing a view that can be exported as a 2D image.



3. Choose the position and orientation of Items by navigating in the 3D View window.
4. If necessary, add callouts to the 2D preview image. To do this, on the **2D Image** menu, click **Generate Callouts**.
5. If necessary, change the appearance of the 2D preview image and its callouts. To do this, on the **Tools** menu, click **Options**, and then click **2D Image**. See the RapidCatalog help system for more details about changing the appearance of 2D image options (topic: **2D Image Options**).
6. Once the 2D preview image has been prepared and previewed, generate the 2D image. To do this, on the **2D Image** menu, click **Create 2D Image for Current Page**. The **Edit 2D Image** dialog box appears.
7. In the **Edit 2D Images** dialog box, type the image name and description in the Project images box and Image description box, respectively, and then click **OK** (see section 2.5.6 for more information about editing 2D images).

NOTE: The name of the image represents the name of the image file used to store 2D image.
8. Click the **2D Image** tab to activate the 2D Image window and to view the ready-made 2D image.

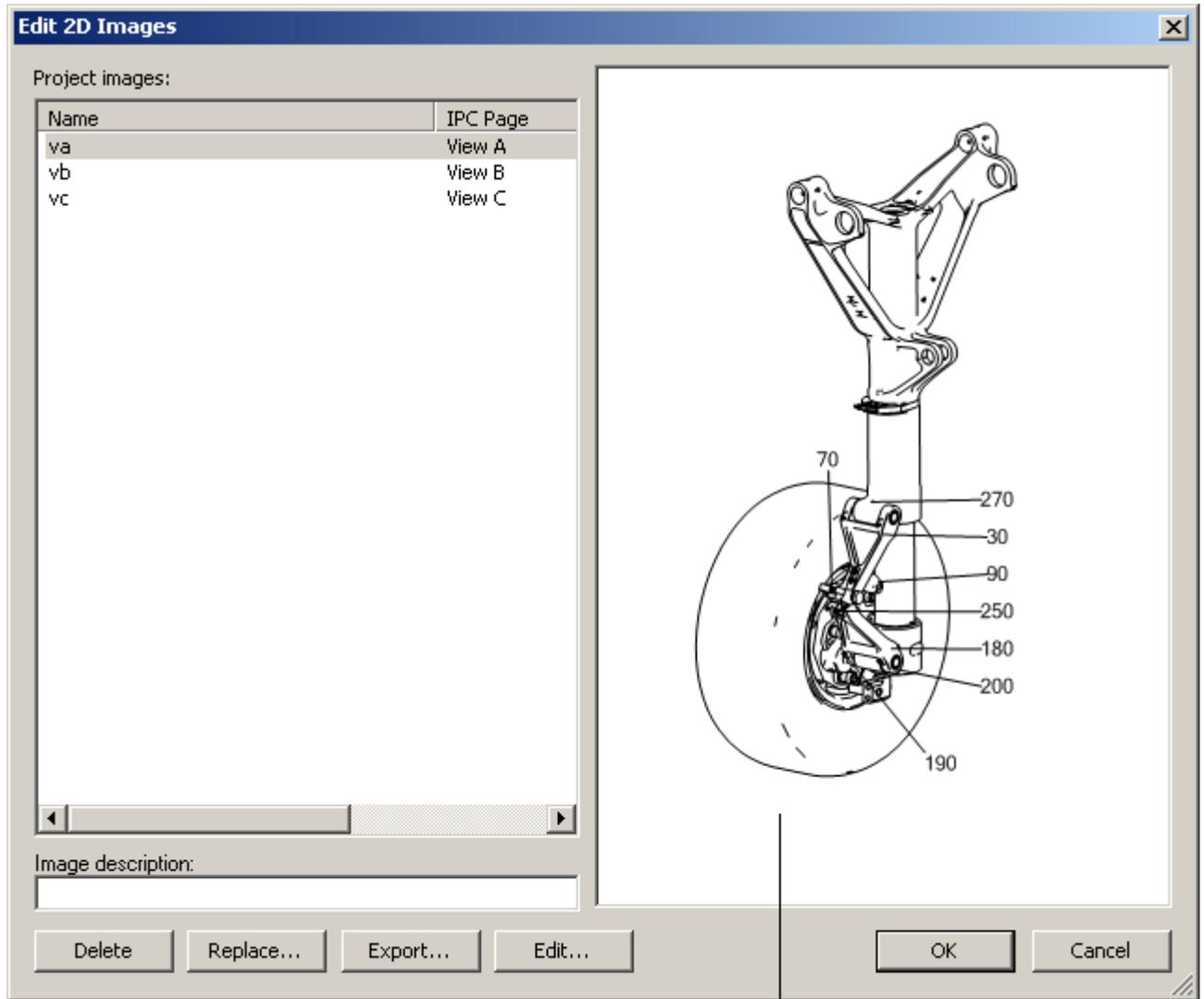


9. If necessary, use the commands available in your 2D image viewer to interact with the ready-made 2D image.

NOTE: Before creating a 2D image you can choose a viewpoint for the image by navigating in the 3D View window. But after using the *Update 2D Images* command (*2D Image* menu), the 2D image viewpoint changes to the predefined viewpoint of the IPC page associated with the 2D image for which the image is created.

2.5.6 Editing 2D Image

The *Edit 2D Images* command (**2D Image** menu > **Edit 2D Images**) allows deleting unnecessary 2D images, editing the images name and description, replacing and exporting 2D images that need to be edited using the external tools and then replacing existing images with their corrected versions.

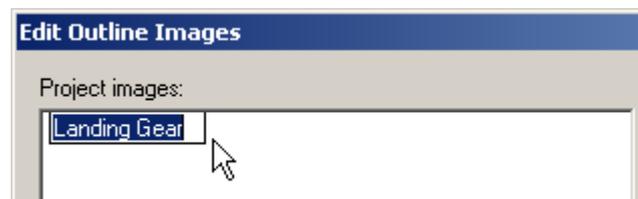


2D Image window

Procedure

To edit an image name:

1. In the **Project images** box, select the image name.
2. Click the selected image name to switch to the editing mode.



3. Change the image name and click somewhere in the **Project images** box to exit the editing mode.

To edit an image description:

1. In the **Project images** box, select the image name.
2. In the **Image description** box, enter the description for the selected image.

To delete a 2D image:

- In the **Project images** box, select the name of image to be deleted, and then click **Delete**.

To replace a 2D image with another 2D image:

1. In the **Project images** box, select the name of image to be replaced, and then click **Replace**.
2. In the **Select 2D Image** dialog box, select a 2D image for replacement, and then click **Open**.

To export a 2D image:

1. In the **Project images** box, select the name of image to be exported, and then click **Export**.
2. In the **Export 2D Image** dialog box, select a location for the exported image, and then click **Save**.

To edit a 2D image in an external editor:

1. In the **Project images** box, select the name of image to be edited, and then click **Edit**.

The image will be opened with an external editor that was previously specified in the **Options** dialog box (Tools> Options> External Editors > Vector 2D Images or Raster 2D Images). If no external editor is specified, the built-in Cortona 2D Editor Pro is used as a CGM editor. See the RapidCatalog help system for more information about choosing an external editor (**topic: Choosing an External Editor for 2D Images**).

2. Save the edited image and close the external editor.

2.5.7 Attaching 2D Image

A ready-made 2D image (CGM file format) can be attached to any IPC page (**2D Image** menu > **Attach 2D Image to Current Page**).

Procedure

To attach a 2D image to an IPC page:

1. Activate the page for attaching a 2D image to it.
2. On the **2D Image** menu, click **Attach 2D Image to Current Page**.
The Attach 2D Image dialog box appears.
3. In the **Attach 2D Image** dialog box, select an image file to be attached, and then click **Open**.
The Edit 2D Images dialog box appears.
4. In the **Edit 2D Images** dialog box, in the **Project image** box, change the name of the newly added image (if necessary) and in the **Image description** box, enter the image description. See section 2.5.6 for more detailed description of the Edit 2D Image dialog box.
5. Click **OK** to save the changes and to close the Edit 2D Images dialog box.

2.6 Previewing IPC Publication

At any stage of the editing procedure, the IPC publication can be previewed using the *Preview* command in RapidCatalog. The *Preview* command saves the IPC publication in a temporary folder and opens it in MS Internet Explorer.

Procedure

To preview the IPC publication:

- On the **File** menu, click **Preview**.

2.7 Publishing IPC Publication

Once the editing procedure has been completed and the preview is satisfactory, generate the IPC publication using the *Publish* command in RapidCatalog.

NOTE: The appearance and visualization mode of the IPC publication are defined by the specification component used. The appearance and the mode can be edited using a set of options in the Publish Options dialog box (**Tools > Publish Options**). The detailed description of publish options for each specification component is available by clicking the **Help** button in the Publish Options dialog box.

See section 3 for more information about specifications. See also section 4.12.3 for creating the IPC publication in 2D mode.

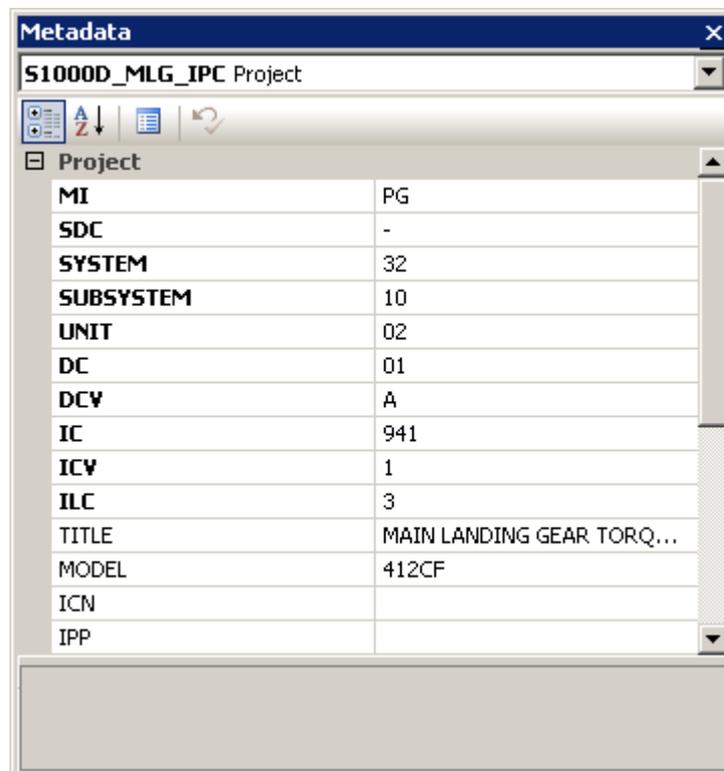
2.7.1 Validating Project Metadata

Before starting the publish process, check and fill the project metadata. There are mandatory project metadata whose values must be filled in to ensure that the IPC publication is valid. The metadata can be edited and added in the *Metadata* window. See the RapidCatalog help system for more information about the Metadata window (**topic: Metadata Window: Overview**).

Procedure

To add/edit project metadata values:

- Click any blank space in the 3D View window or Item Tree, and then activate the **Metadata** window by clicking it.
- In the **Metadata** window, in the *Project* category, type a value for the required metadata.



- Click somewhere in the window to apply the changes.

NOTE: Mandatory metadata is marked bold. Read-only metadata (marked gray) is data whose values cannot be edited.

2.7.2 Publish Process

Use the *Publish* command to generate the IPC publication.

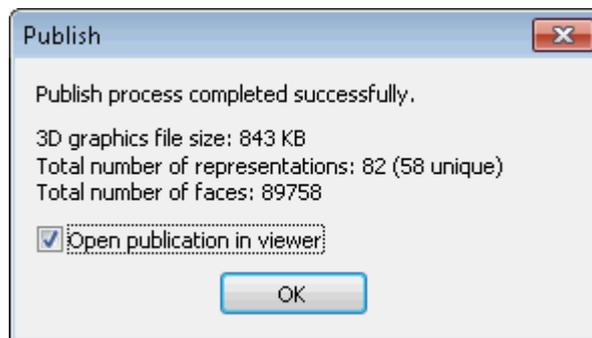
The *Publish* command:

- Saves the current project.
- Validates the current project.
- Saves the IPC publication in a folder specified.
- Optionally runs the IPC publication.

Procedure

1. On the **File** menu, click **Publish**.
2. If some mandatory metadata is missing, a message appears allowing the publish process to be stopped and the missing mandatory metadata to be filled in in the corresponding editor. Click **No** to correct the metadata.
If all mandatory metadata is valid, the **Publish Location** dialog box appears.
3. If necessary, in the **Publish Location** dialog box, change the path for the IPC publication, and then click **OK**.
After the publish process is completed, the **Publish** dialog box appears.

The **Publish** dialog box displays the status of the publish process, size of 3D data in the IPC publication, total number of faces and representations, and allows the user to immediately run the IPC publication. Knowing the total number of faces and representations allows the user to estimate the weight and complexity of 3D data used in the IPC publication: the more faces, the heavier the IPC publication.



4. Click **OK** to run the IPC publication.

3 Working with Specifications

3.1 Specifications: Overview

RapidAuthor uses a set of customizable components (specification components) for authoring the RapidAuthor publications in accordance with various information standards (for example, ATA iSpec 2200, S1000D Issue 2.3 IPD, S1000D Issue 4.0 IPD).

Each RapidAuthor project contains information about the specification component used for creating or opening the project. When creating a new project, the user should choose a specification component for the project.

A set of specification components can be extended for each RapidAuthor tool.

RapidCatalog uses the specification components of IPC type (IPC specifications). Currently, RapidCatalog uses the following IPC specifications: ATA 2200 EIPC, ATA 2200 AIPC, S1000D Issue 2.3 IPD, S1000D Issue 4.0 IPD and Generic IPC. The user can choose a language for the specification.

Each IPC specification is designed for a particular information standard and defines the following:

- Set of metadata fields required in accordance with the standard.
- Set of declarations which describe the DPL table appearance (for example, set of columns, set of possible data entries for each column).
- Set of additional software components that allow the table authoring in accordance with the standard.
- Set of additional software components that allow publishing the IPC publication in formats required by the standard or additional formats requested by a customer.
- Set of resource files (for example, images, styles, scripts, etc.) that define the appearance and functionality of the IPC publication.

A project created using one specification can be opened using another specification. But this operation may result in some data loss. This is true for the projects created by RapidCatalog as well as for the project created by other RapidAuthor tools.

For example, a project created using Procedure specification (by RapidManual) can be copied and then opened in RapidCatalog using one of the IPC specifications. This operation will result in loss of procedure data but 3D data will not be lost and can be reused.

3.2 Changing Specifications

To change the current specification component for a project, use the *Open As* command (**File > Open Project > Open As** button).

NOTE: The name of the current specification is displayed in the status bar.

Use the *Open As* command:

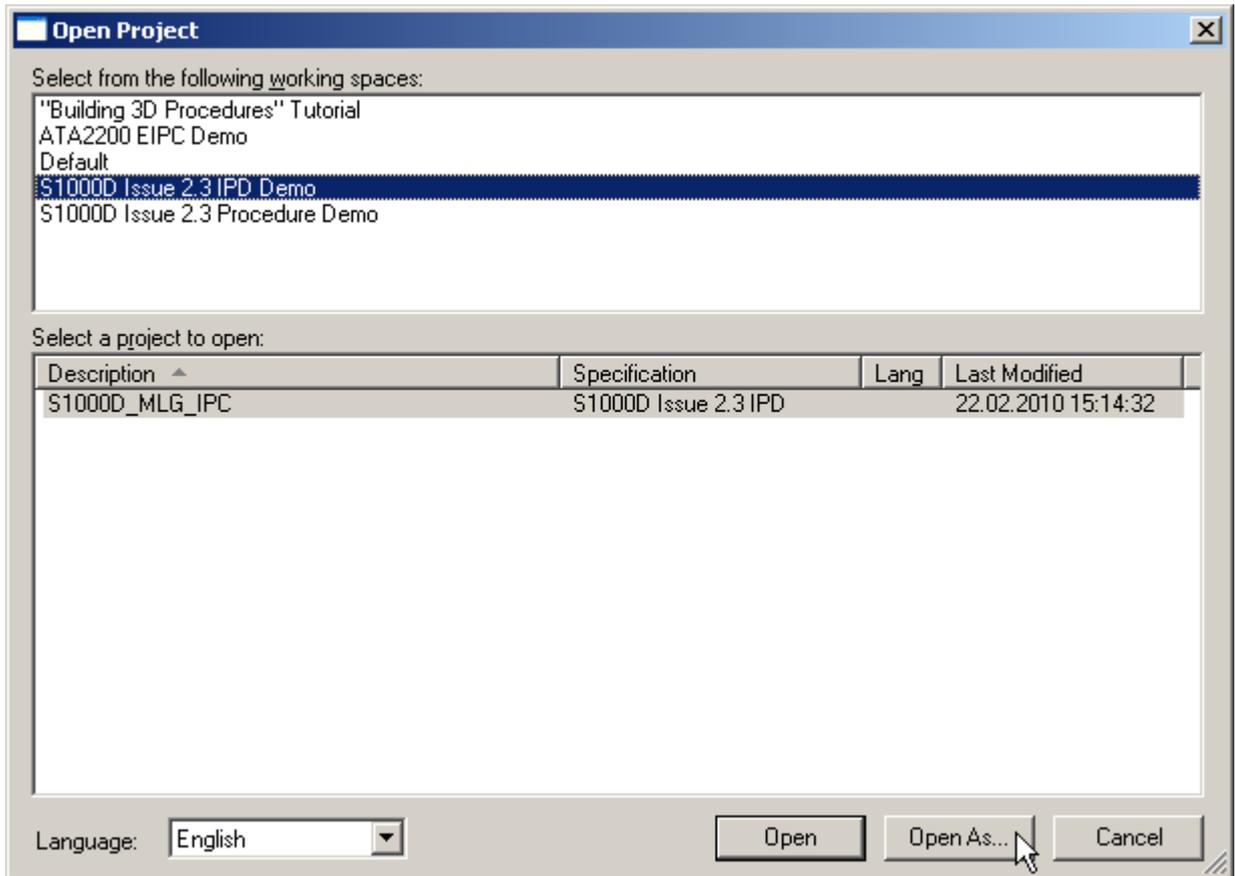
- If the required specification component of the project is not installed on the computer. The command allows you to open the project using the available specifications.
- If the project to be opened is created using another RapidAuthor tool (for example, RapidManual). This allows reusing the 3D data of the project for creating the IPC publication.
- If you want to reuse the data of the project created in accordance with a certain specification for creating a new project in accordance with another specification.

Procedure

To choose a specification for the existing project:

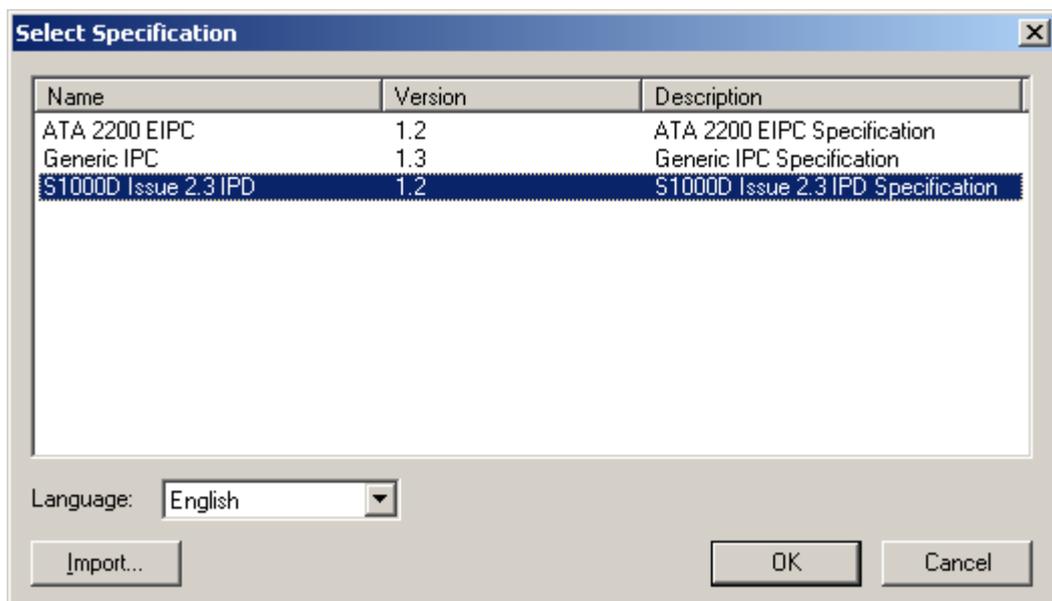
1. On the **File** menu, click **Open Project**.
The Open Project dialog box appears.

- In the corresponding boxes, click the name of the working space and the name of the project for which you want to choose a new specification, and then click **Open As**.



The Select Specification dialog box appears.

- Choose the required specification, by clicking its name in the **Name** column, and then choose a language for the specification.



- Click **OK** to save the choice and close the dialog box.

To choose a specification for a new project:

- On the **File** menu, click **New Project**.
The New Project dialog box appears.

2. In the **Use specification** box, choose the required specification by clicking its name in the **Name** column, and then choose a language for the specification.
3. Click **OK** to save the choice and close the dialog box.

For reusing the data of the existing project in order to create a new project with other specification, it is recommended that the user should create a new working space for such project and use the export-import procedure for creating a new project as follows:

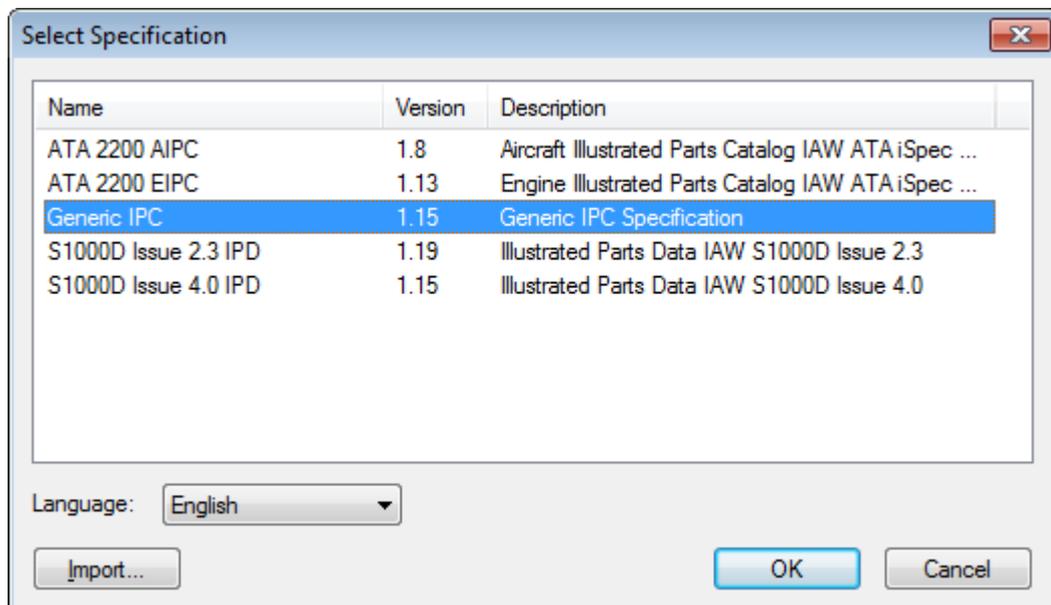
1. In RapidCatalog, create a new working space for a project created with an IPC specification (**Tools > Select Working Space > New** button).
2. Import the project to the newly created working space (**Tools > Manage Projects > Import** button). It is supposed that the project was previously exported from RapidCatalog or other RapidAuthor tool.
3. Open the project using the desired specification as described above (**File > Open Project > Open As** button).

3.3 Validating Specifications

When opening a project (**File > Open Project**), RapidCatalog validates the project specification to prove that the specification meets the required conditions and the project can be successfully opened.

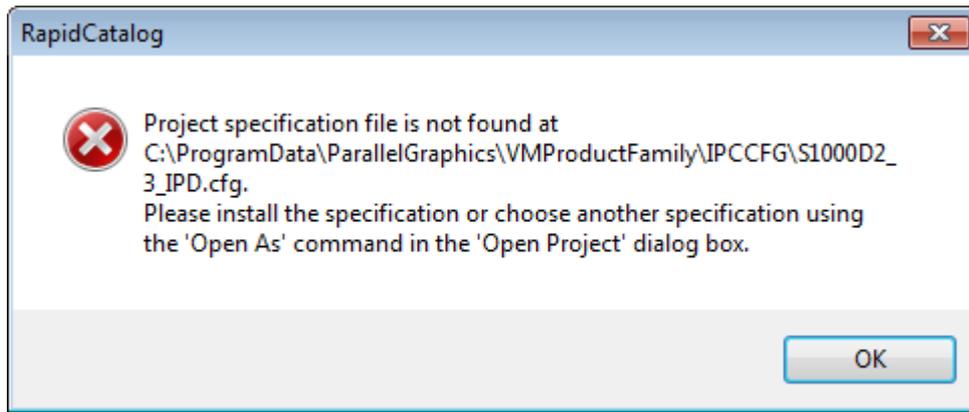
The possible warning messages and recommended actions are described below.

- If RapidCatalog detects that the specification for the project is not specified (the Specification field is empty in the Open Project dialog box), the Select Specification dialog box appears.



Recommended actions: choose the specification from a list of available specifications or install the required specification, if it is not currently available.

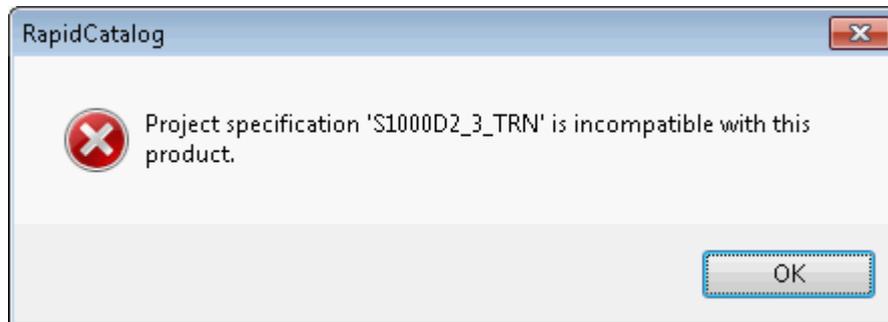
- If no IPC specifications (designed to use by RapidCatalog) are installed on the computer, a warning message appears instead of the Select Specification dialog box:



Recommended actions: install the required specification component on the computer and try opening the project once more or use the *Open As* command to change the specification of the project.

- If RapidCatalog detects that the specification component of the project to be opened is not of IPC type (the project is created using another RapidAuthor tool), a warning message appears indicating this situation.

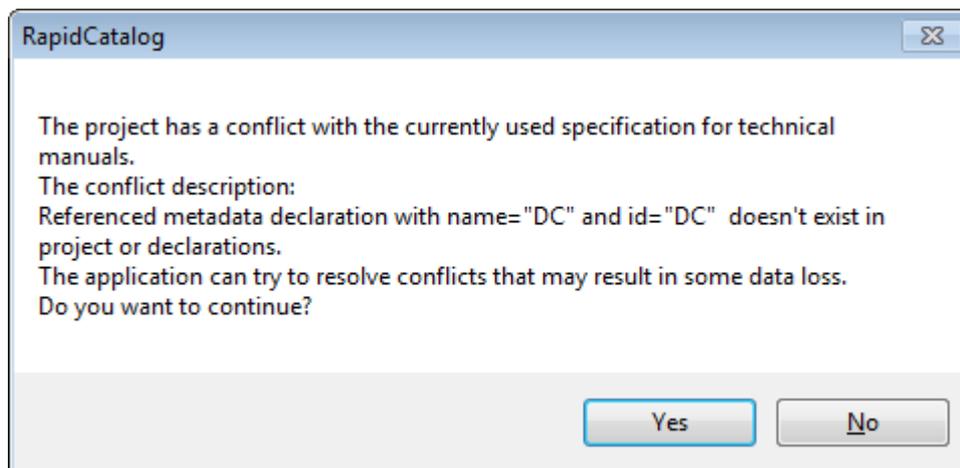
For example:



Recommended actions: try to open the project with the other RapidAuthor tool (RapidManual/RapidLearning) or use the *Open As* command for changing the specification.

- When opening a project with the *Open As* command (**File > Open Project > Open As** button), RapidCatalog may detect that the project cannot be opened without data loss because the metadata of two specifications (the current and the newly chosen one) does not coincide. The message appears indicating that the conflict between two specifications is detected and it can be solved but warns that this can result in some data loss from the project being opened.

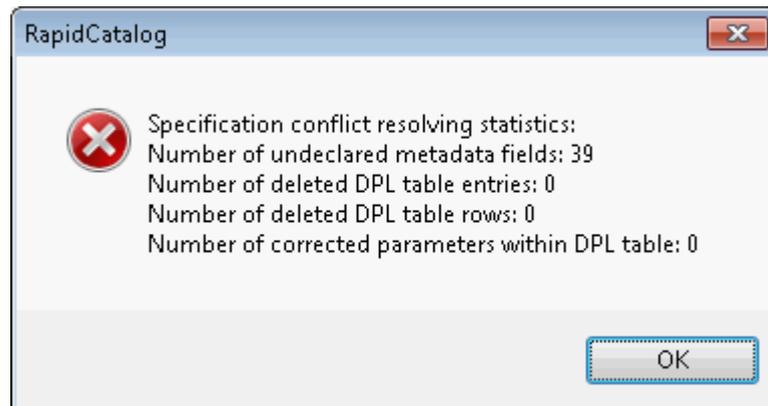
For example:



Recommended actions: Click **Yes** to continue opening the project, click **NO** to stop opening the project.

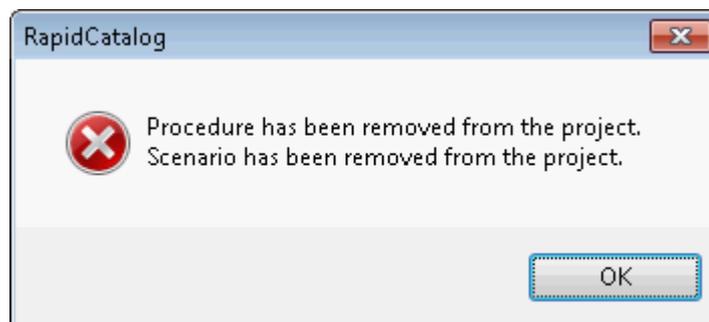
After clicking **Yes**, a message appears showing the problem-solving results and RapidCatalog goes to the next step of validation.

For example:



Recommended actions: Click **OK** and the project will be opened.

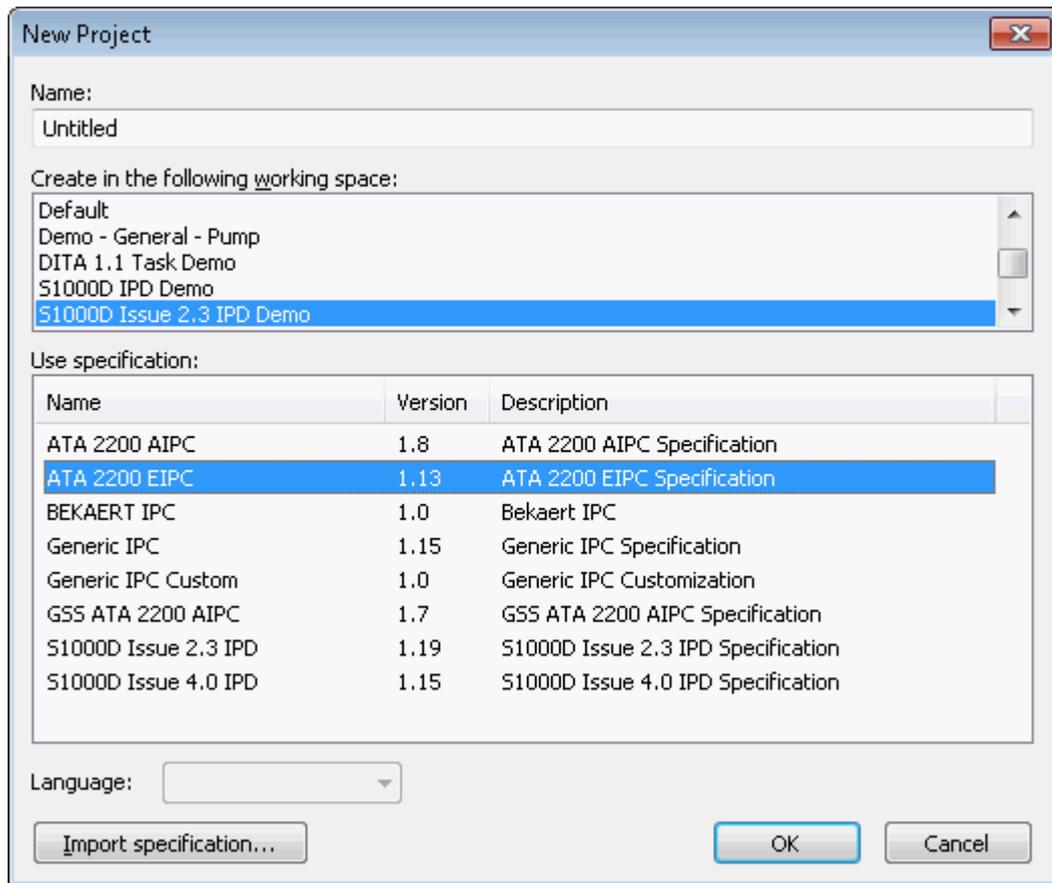
- If the types of the two specifications are incompatible, RapidCatalog removes the incompatible data from the current specification of the project and a message appears:



Recommended actions: Click **OK** and the project will be opened.

3.4 Adding Specifications

The *Import specification* button is used for adding a new specification (in VMS file format) to the list of available specifications.



Procedure

To import a new specification:

1. On the **File** menu, click **New Project**.
The New Project dialog box appears.
2. In the New Project dialog box, click **Import specification**.
The Import Specification dialog box appears.
3. Choose the specification file and click **Open**.
The name of the new specification appears in the Use Specification area of the New Project dialog box.

4 Useful Operations

4.1 Adding Input Data to Existing Project

To add input data to the existing project, follow the procedure below:

Procedure

1. Start RapidGenerator.
2. From the **Tools** menu, choose **Select Working Space**.
In the **Select Working Space** dialog box, click the desired working space, and then click **OK**.
3. To choose the existing project, from the **File** menu, click **Open Project**.
4. In the **Open Project** dialog box, click the desired project, and then click **OK**.
5. Choose the RapidDataImportTool plug-in by clicking its name in the **Plug-in name** box.
6. To choose the import profile, click **Settings**.
In the **Choose profile** dialog box, select the required import profile.

7. In the **Choose Profile** dialog box, click the name of the required profile. For more information about the current dialog box, click the **Help** button.
8. To start importing the input data, click **Start**.
9. In the dialog box, select the supported geometry file to be imported, and then click **Open**.

NOTE: The options available in the dialog box depend on the chosen profile. In general, the dialog box allows you to select 3D data and additional PDM data (optionally).
10. The time required for the import procedure depends on the amount of input data. RapidGenerator saves the project when the import is finished. If the import setting other than the default ones are used, be sure to save the project when the import is finished (**File** menu > **Save**).

4.2 Additional Optimization of Existing Project

If no suitable representation for significant amount of Items can be chosen from a standard set of representations automatically generated by RapidGenerator, a new level of detail (LOD) can be added for each Item of the existing project. To do this, process the project in RapidGenerator with the settings specified below.

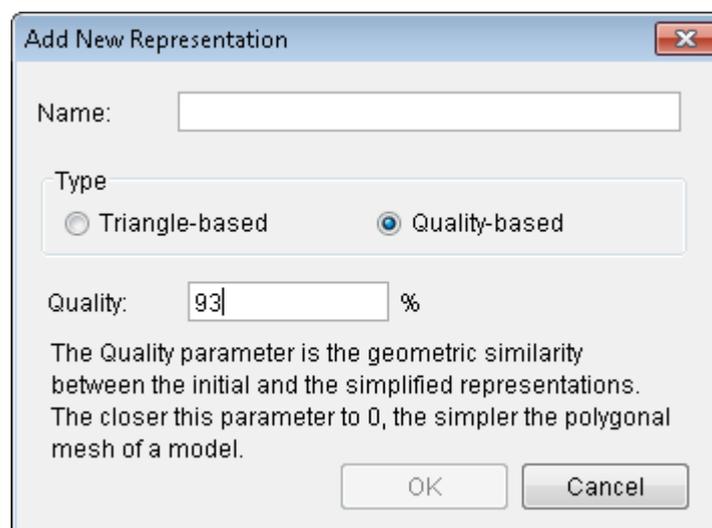
Procedure

To add an additional LOD for all items of the existing project:

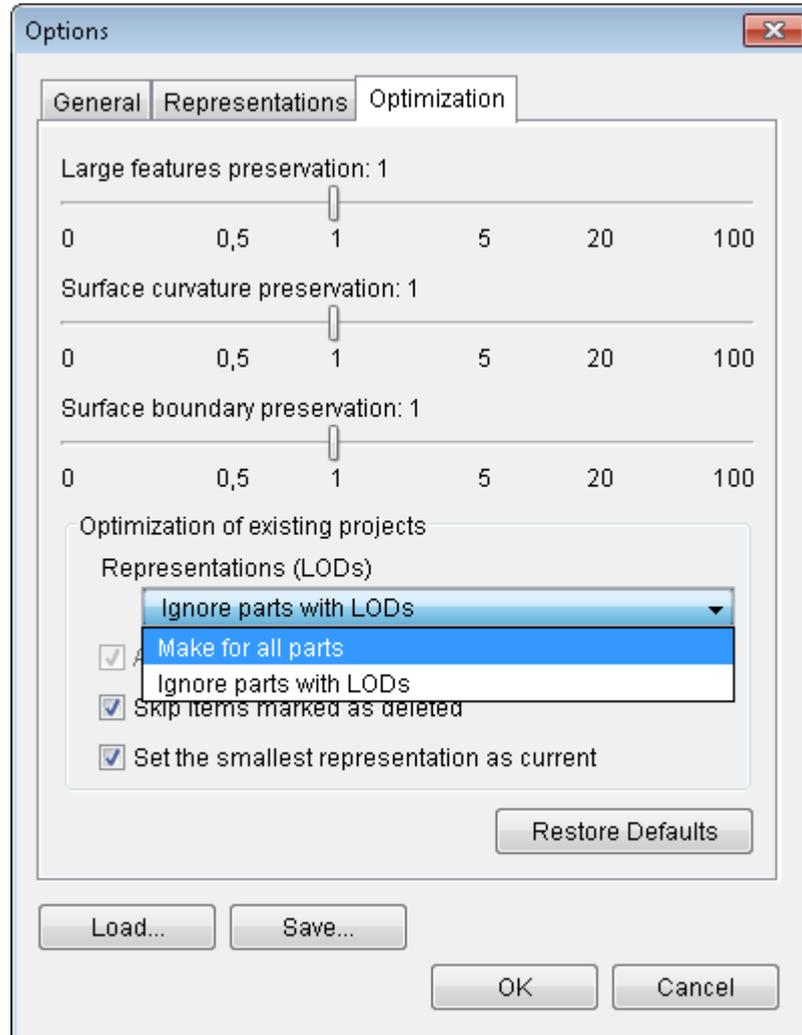
1. Start **RapidGenerator**. Choose the RapidDataImportTool plug-in.
2. Select the working space **Tools > Select Working Space**.
3. Open the project **File > Open Project**.
4. Specify the settings for additional optimization. Choose **Tools > Options** and click the **Representations** tab.



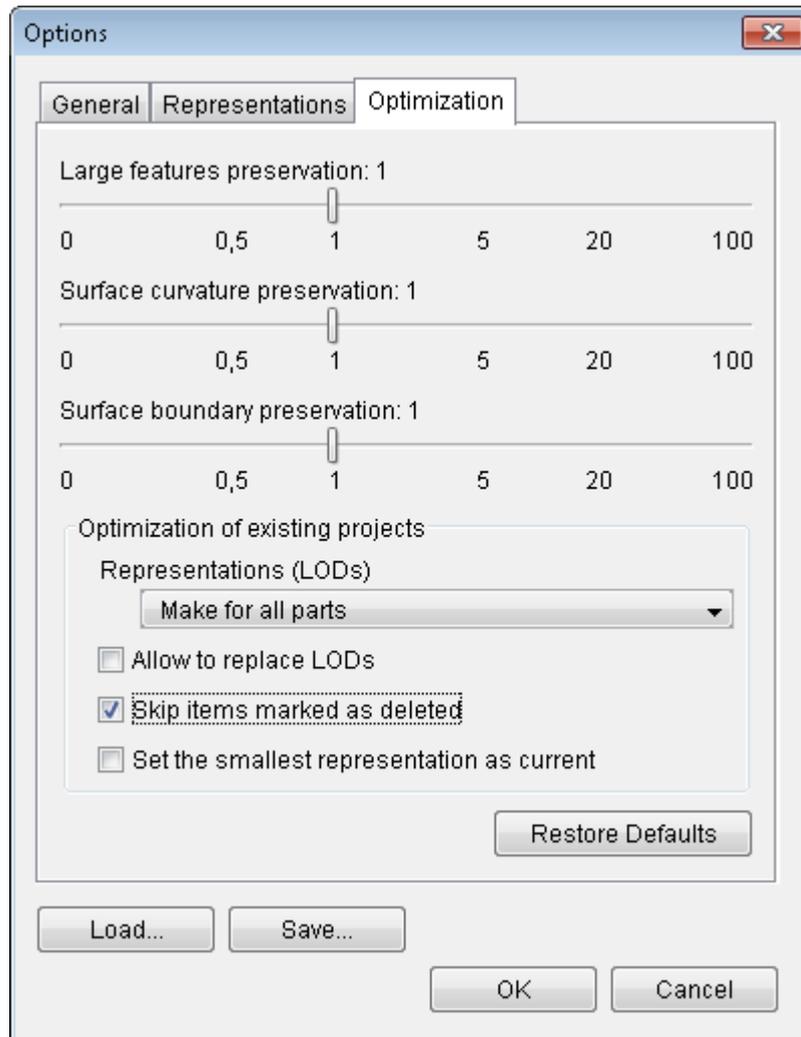
5. In the **Representations** list, choose the **Super quality** level, and then click **Remove**. Repeat this for all existing levels.
6. Click **Add** and enter a name for a new level of detail.
7. Select the **Quality-based** type and enter a reasonable quality value. Click **OK**.



8. Click the **Optimization** tab and in the **Optimization of existing projects** field, choose **Make for all parts** option as shown below.



9. Clear the **Allow to replace LODs** box and the **Set the smallest representation as current** box as shown below.



10. To use the specified settings for updating the projects later on, save the settings into a file. To do this, click **Save**, and then specify a new file name and location.

The saved file includes information about all RapidGenerator settings that can be specified via the **Tools > Options** command. The file can be used to restore the specified settings in the future (Choose **Tools > Options** and click **Load**).

11. Click **OK** to close the **Options** dialog box.
12. Choose Action > Start Optimization.
13. When the optimization is completed, save the project (**File > Save**) if the project has not been saved automatically in accordance with the default value of the **Automatically save processed project** setting (**Options > General tab > Automatically save processed project**).

To restore the default settings:

1. Choose **Tools > Options**, click the **Representations** tab, and then click **Restore Defaults**.
2. Choose **Tools > Options**, click the **Optimization** tab, and then click **Restore Defaults**.

4.3 Viewing Discrepancy Log

If the RapidGenerator plug-in imports 3D data and PDM data simultaneously, it automatically links the 3D data with associated Parts List data and generates the discrepancy log. The discrepancy log is needed to understand whether the links between the 3D data and Parts List data have been correctly established.

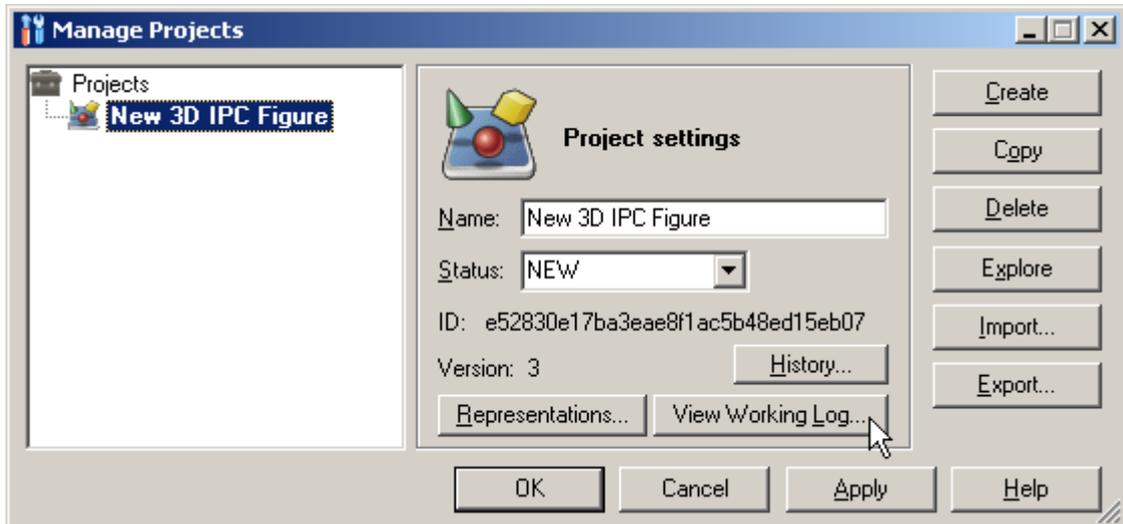
The discrepancy log can be viewed using either RapidGenerator or RapidCatalog.

This functionality can be demonstrated by selecting one of the demo working spaces that contains a ready-made RapidAuthor project. Refer to the Installation Instruction document for the particular working space name.

Procedure

To view the discrepancy log:

1. Start RapidGenerator or RapidCatalog.
2. On the **Tools** menu, click **Manage Projects**.
3. In the Manage Projects dialog box, in the **Projects** box on the left, click the name of required project.
4. In the Project settings area, click **View Working Log**.



The discrepancy log appears. Each row of the log marked as “Assembly” or “Part” corresponds to a DPL table row.

In the discrepancy log, click **Legend** to open the discrepancy log help system.

5. In the **Manage Projects** dialog box, click **Cancel**.
The discrepancy log window remains visible and the information it contains can be used for analyzing the import results. The window can be closed at any time.

If the links are not established or are established incorrectly, they can be corrected manually by editing the DPL table (see section 2.2.3 for more information about editing links between DPL rows and Items).

4.4 Exchanging Projects between Authors

This section describes the mechanism that RapidCatalog and RapidGenerator applications provide for exchanging data.

Procedure

To export project(s):

1. Start RapidCatalog or RapidGenerator.
2. Select the working space that contains the project(s) to be exported. To do this, click **Tools** and choose **Select Working Space**. In the **Select Working Space** dialog box, choose the name of working space by clicking it. Click **OK**.
3. On the **Tools** menu, click **Manage Projects**.
4. Select the project to be exported from the **Project** box on the left, and then click **Export**. Please note that all projects can be selected by clicking **Projects**.
5. Specify the location where the selected project(s) will be saved in the **Save in** field.
6. In **File name**, type a name for the project archive (VMP file), and then click **Save**.
7. Click **OK** to close the **Manage Projects** dialog box.

To import project(s):

1. Start RapidCatalog or RapidGenerator.
2. Select the working space to contain the project(s).
3. On the **Tools** menu, click **Manage Projects**.
4. Click **Projects** in the **Project** box on the left, and then click **Import**.
5. In the **Import Project** dialog box, choose and open the folder containing the project archive (VMP file). Select the project archive by clicking it, and then click **Open**.
6. If the project archive contains several projects, the **Import Multiple Projects** dialog box appears. In the **Projects** list, select the project(s) to be imported. Click **OK**. Please note that, by default, all projects in the **Projects** list appear selected.
7. Click **OK** to close the **Manage Projects** dialog box.

Authors can also exchange 3D data of the projects.

To export a subset of the project 3D data:

1. Open the desired project in RapidCatalog.
2. Select the Items to be exported in the Item Tree or Item List or 3D View windows.
3. On the **File** menu, click **Export Selection**.
4. Specify the location where the selected part of project will be saved in the **Save in** field.
5. In the **File name** box, type a name for the part of project archive (VMP file), and then click **Save**.

NOTE: The archive does not contain DPL table.

To add 3D data to a project from other project archive (VMP file):

1. Open the project in RapidCatalog.
2. Select the working space that you wish to contain the project(s).
3. On the **File** menu, click **Add Project**.
4. In the **Add Project** dialog box, choose and open the folder containing project archive (VMP file). Select the project archive by clicking it, and then click **Open**.
5. Save the updated project.

4.5 Revision Support

RapidCatalog allows tracking changes for the RapidAuthor project during the editing process.

Procedure

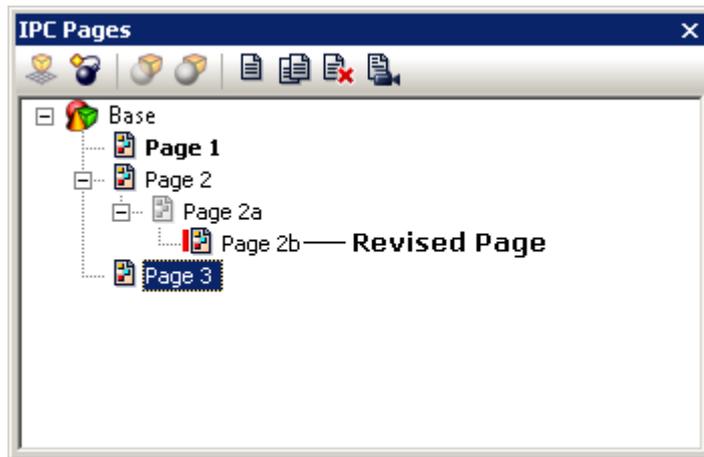
To initiate the revision cycle manually:

1. From the **File** menu, click **New Revision**.
2. In the **Revision Parameters** dialog box, type the required data, and then click **OK**.

Once the revision process has been enabled, all changes made to the project appear marked with a red revision mark:

IPC Pages

The modified IPC pages appear marked with a revision mark as shown in the figure below.



Any IPC page can be manually marked as *New*, *Revised*, *Unchanged*, *Deleted* using the context-sensitive command *Revision Status*.

Procedure

To mark/unmark IPC pages as revised:

- Right-click the page, and then click **Revised**.

NOTE: In the IPC publication, the **R** revision mark near the *Sheet* box indicates the revised pages.

DPL Table

All changes made in the DPL table are marked with a vertical red line as shown in the figure below.

1A	2322M55P02	. . BOLT-D-HEAD
		MATCHED PART
		MATCHED PART ORDER NHA

If necessary, the revision mark can be removed.

Procedure

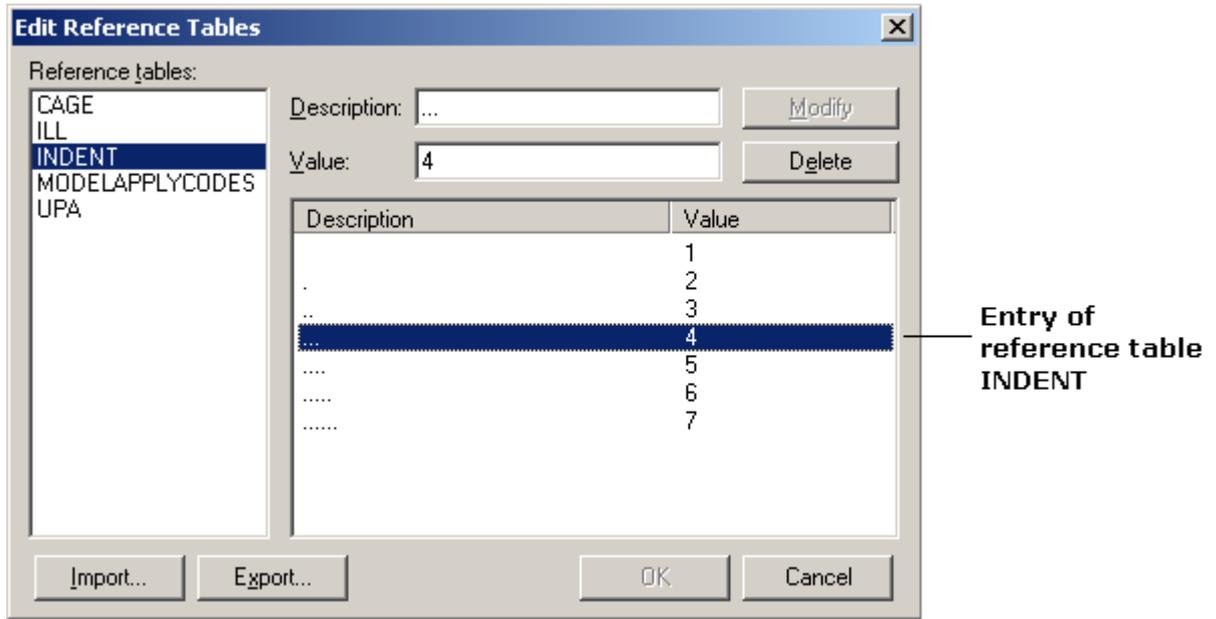
To remove the revision mark:

1. In the DPL table, double-click the cell containing the revised data.
2. Right-click the revised data and then click **Remove Revision Mark**.

4.6 Editing Reference Tables

The reference tables (**Tools > Reference Tables**) show a list of reference values and their descriptions. The table is used for filling in the values of metadata or the parameters of DPL entries in accordance with the specification (see section 2.2.2 for more information about parameters and values). The reference tables can be imported and exported in the *.reftbl file format.

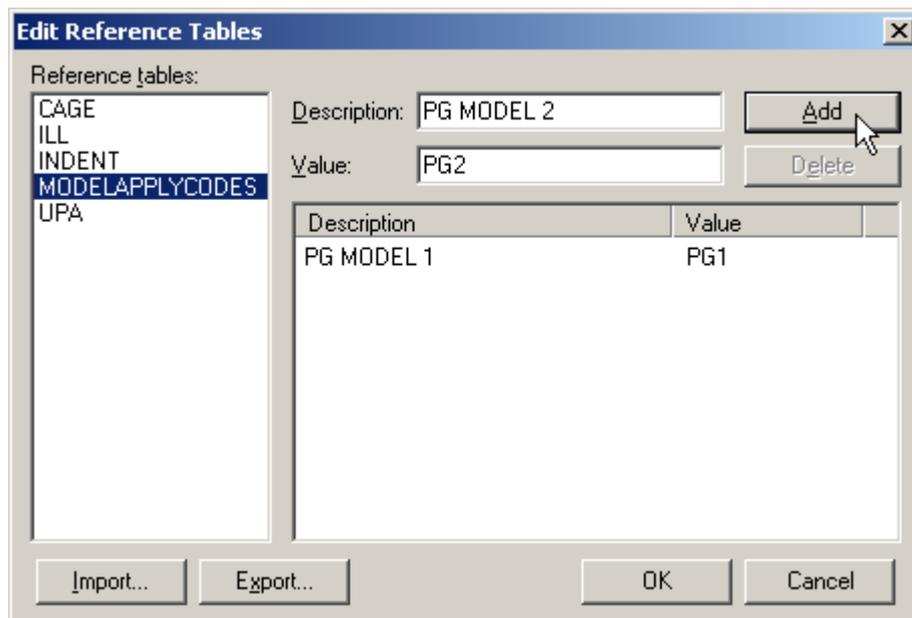
Each reference table contains two columns: Value and Description.



Procedure

To add a new value and its description to the chosen reference table:

1. In the **Reference Tables** box, click the name of the required reference table.
2. In the **Description** box, enter the required information.
3. In the **Value** box, enter the required value.
4. Click **Add**.



The new value and its description appear in the chosen reference table.

To modify a value or description in the chosen reference table:

1. In the **Reference Tables** box, click the name of the required reference table.
2. In the reference table, click the entry to be modified.
The value and its description appear in the **Value** box and in the **Description** box, respectively.
3. In the **Description** box, change the information.
4. In the **Value** box, change the value.

5. Click **Modify**.

The value and its description appear changed in the chosen reference table.

To remove an entry from the chosen reference table:

1. In the **Reference Tables** box, click the name of the required reference table.
2. In the reference table, click the entry to be deleted.
3. Click **Delete**.

4.7 Specifying Axes for 3D View Window

The axis tripod shows the direction and orientation of 3D model in the 3D View window. The axes required for the project can be selected from a list of available types or you can add a custom axis tripod.

Procedure

To add an axis tripod:

1. On the **Tools** menu, click **Options**, click **3D View**, and then choose **Axes**.
2. In the Axes types area, click **Add**.

The Add Axes dialog box appears.

3. In the Add Axes dialog box, choose the desired VRML file and click **Open**.

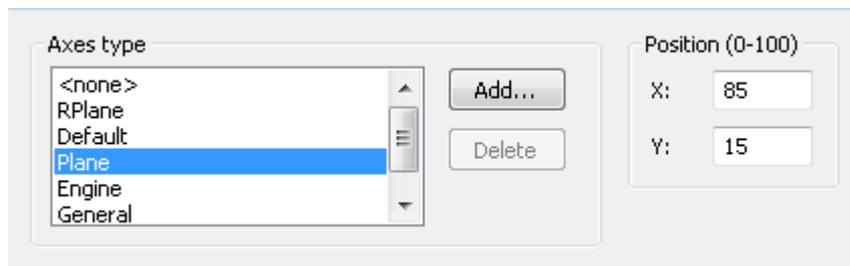
The name of new axis tripod appears in the list of available axis tripods.

To choose an axis tripod from a list of available tripods:

1. On the **Tools** menu, click **Options**, click **3D View**, and choose **Axes**.
2. In the Axes types area, select the desired axis tripod and click **Apply** in the Options dialog box.

NOTE: Certain specifications limit the axis types available for use and the option to change may not be available.

To set the position of the chosen axis tripod, in the **Position** area, enter the required percentage (from 0 to 100) of the 3D View window width and length along the X and Y axes, and then click **Apply**. The default coordinate system has origin (0, 0) in the top-left corner of the 3D View window.



4.8 Creating Exploded Views

This section describes how to create an exploded view on an IPC page.

Several steps are required for exploding an assembly:

1. Select Items for exploded view in Item Tree or Item List or 3D View windows.
2. Start Explosion Wizard. To do this on the **Edit** menu, click **Explode Assemblies**.
3. Follow the instructions of wizard:

4.8.1 Select Item Collection to Explode

The *Select Item Collection to Explode* window of the wizard allows creating a new collection or to choose the existing collection for explosion. A collection is a set of Items that can be subjected to different operations - for example, explosion or implosion. A list of available collections is displayed in the *Collections* window. For

more information about collections, see the program help system (topics: **Editing a Collection**, **Creating a Collection** and **Collections Window: Overview**)



Procedure

To create a new collection:

1. Select the Items for the exploded view in the Item Tree or Item List or Thumbnails or 3D View windows.
2. Choose **Create new collection** and enter a name for a new collection.

or

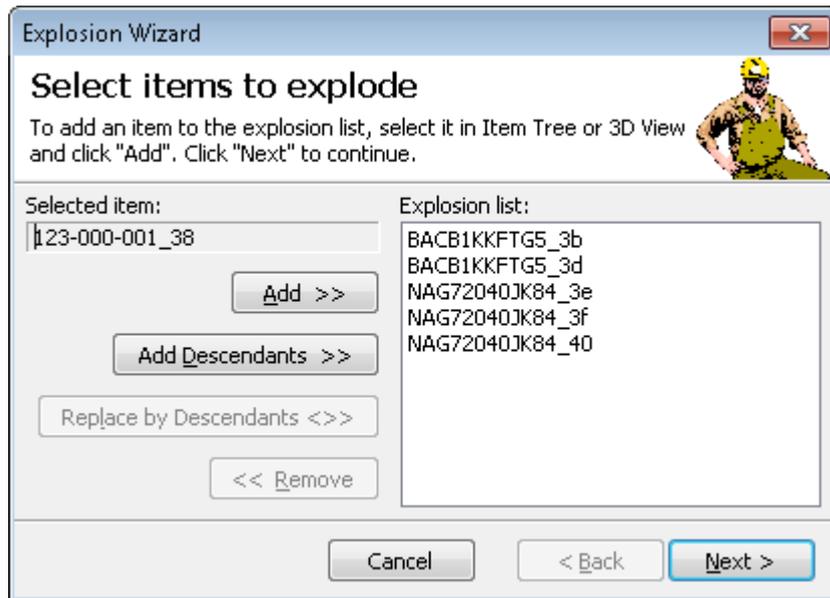
1. Select the Items for the exploded view in Item Tree or Item List or Thumbnails windows.
2. Drag the selected Items from the windows and drop the Items into an empty space of **Select collection** box of the wizard.

To choose an existing collection:

- Choose **Select collection** box and click the desired collection in the corresponding box.

4.8.2 Select Items to Explode

The window appears with a list of selected Items in the **Explosion list** box. The window allows Items to be added, replaced, and removed from the explosion list. To remove the Items from the explosion list, select Item(s) in the **Explosion list** box, and then click **Remove**. When the desired Items have been selected, click **Next**.



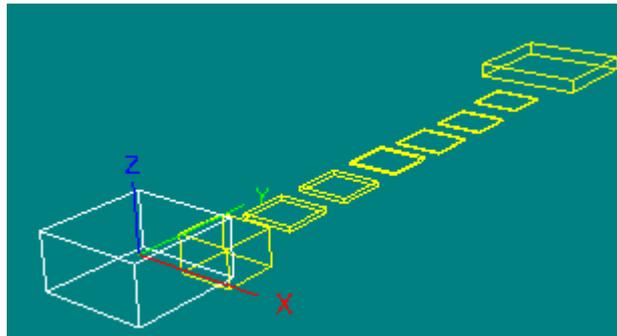
NOTE: If not all of the desired Items are selected before starting the Explosion Wizard, the Items can be added one by one to the **Explosion list** box. To add Item to the **Explosion list** box, select Item in the Item Tree, and then click **Add**.

4.8.3 Set Explosion Type

The next step is to choose the required type of explosion. It is recommended that the linear type of explosion should be used for disassembling the assemblies consisting of heterogeneous Items. Heterogeneous Items are Items that differ in size and in form. The radial type of explosion should be used for disassembling the assemblies consisting of axial-symmetric Items.

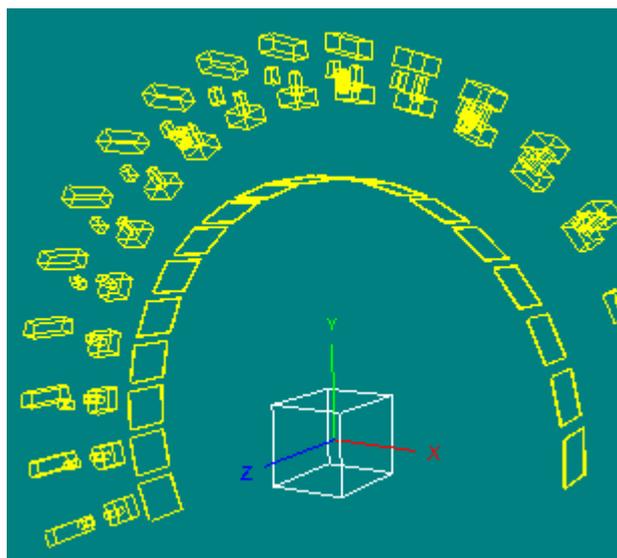


Linear explosion explodes the selected Items along the specified axis with the specified strength. The selected Items are placed equidistantly from each other along the chosen axis (see the figure below).



Linear explosion along Y-axis

Radial explosion explodes the selected Items away from the specified axis with the specified strength. The selected Items are placed equidistantly from each other along the line perpendicular to the chosen axis (see the figure below).



Radial explosion perpendicular to Z-axis

When the type of explosion is chosen, click **Next**.

4.8.4 Set Direction/Axis and Strength

For radial explosion, the next step is to set axis and strength. For linear explosion, the next step is to set direction and strength. When either of the windows opens, the manipulator appears in the 3D View window. The manipulator is a transformation icon that allows Items to be moved quickly along an axis, rotated, or translated along any two axes simultaneously.

The Set Direction and Strength window is slightly different from the Set Axis and Strength window (see the RapidCatalog help system for more information about the windows, topics: **Step 4: Set Direction and Strength**, **Step 4: Set Axis and Strength**), but in both windows the axis and strength of explosion should be chosen.

Procedure

To set the direction/axis for the explosion, do one of the following:

- Click one of the axes in the Explosion Wizard window.
- Place the mouse pointer over the required axis of the manipulator in the 3D View window. When the axis turns red, drag it.

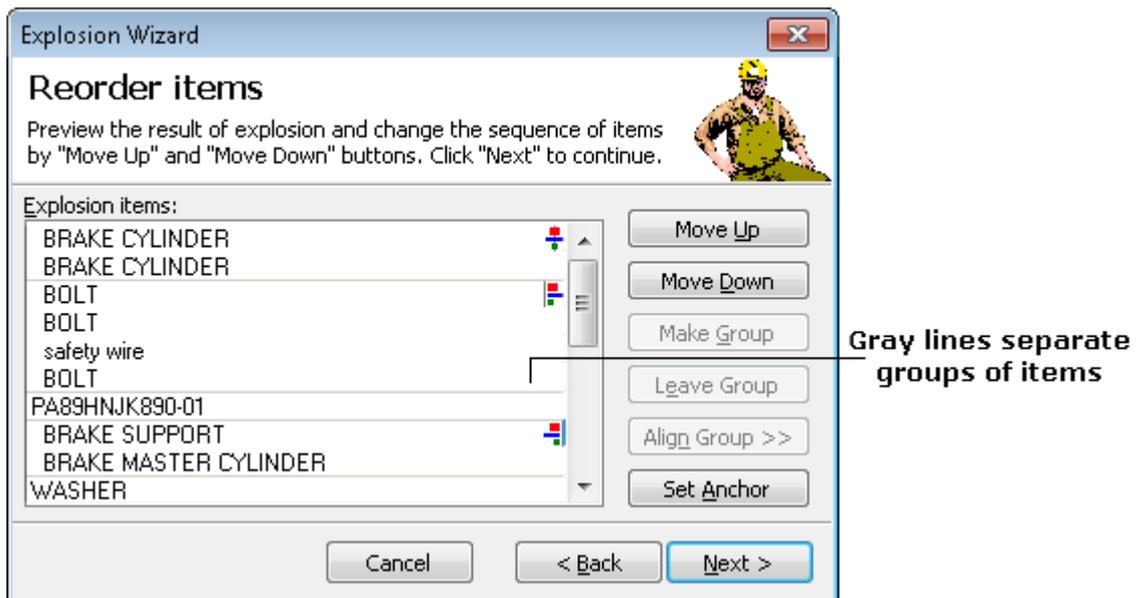
To set the strength value of explosion, do one of the following:

- Using the left mouse button, drag the slider until the desired value of strength appears in the Strength box. The range of strength values depends on the size of explosion Items: the bigger the Items, the wider the range.
- Type the desired value in the Strength box.
- Place the mouse pointer over any axis of the manipulator in the 3D View window. This axis turns red to indicate that it is active. Drag the manipulator along the selected axis. As this is done, a green line begins to track the axis, showing the distance and direction at which Items will move during the explosion. Stop dragging the manipulator in the 3D View window, when the required distance is reached.

Once the strength and direction of the explosion have been set, click **Next**.

4.8.5 Reorder Items

The next step is to change the sequence of explosion Items.



The Item in bold in the **Explosion Items** box is a default **anchor**. The anchor is the basic Item that maintains its position during explosion. The anchor serves as the epicenter of explosion: during the explosion, all explosion Items move from the anchor in the specified direction. The default anchor can be changed.

NOTE: The explosion items move from the anchor in the chosen direction, if these items lay in the positive region of the chosen axis; but the items move opposite the chosen direction, if they lay in the negative region of the chosen axis.

Procedure

To set Item as the anchor:

- Click the desired Item in the **Explosion Items** box, and then click **Set Anchor**. As a result, the explosion Items change their positions relative to the new anchor in the 3D View window.

Items can be rearranged by moving them up and down in the **Explosion Items** box.

Procedure

To move Item(s) up or down:

- Select the desired Item(s) in the **Explosion Items** box, and then click **Move Up** or **Move Down**.

For better display of some Items (couplings, fittings etc.) within the exploded view, it is necessary to make the Items equidistant from the anchor. For this effect, group the desired Items together. Groups of Items are separated from each other by a line of light gray color and are marked by an indent. Items within a group can be aligned (for more information about the alignment, see the RapidCatalog help system, topic: **Aligning Items within a Group**).

Procedure

To create a group:

- Select the desired Items in the **Explosion Items** box, and click **Make Group**.

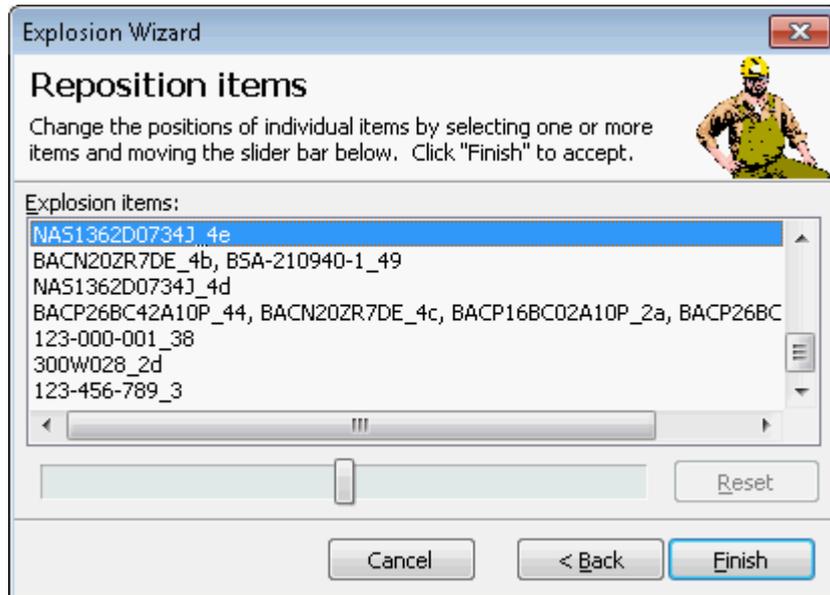
To remove Item(s) from a group:

- Select the desired Item(s) in the **Explosion Items** box, and click **Leave Group**.

Once the Items have been arranged to satisfaction, click **Next**.

4.8.6 Reposition Items

The final step is to change the position of Item(s) in the 3D View window.



Each line in the **Explosion Items** box contains a group of one or more Items. Items within a group are separated by commas. Only the entire line (group of Items) can be selected. This allows the whole group to be repositioned at a time. The selected group can be moved in the specified direction using the slider.

Procedure

To change the position of Item(s):

1. Select the required group in the **Explosion Items** box or in the 3D View window.
2. Then drag the slider, observing the changes in the 3D View window.

Once the Items have been placed to the desired positions, click **Finish** to complete the explosion.

4.9 Explosion in Two Directions

Sometimes it is required to explode groups of Items within an assembly along different axes. To do this, during the assembly explosion, group the Items to be exploded in a different direction from the rest Items of the assembly, and then explode the group of Items separately.

Procedure

To explode Items of an assembly in two different directions:

1. On the active page, delete the Items not required for explosion, and select the Items of the assembly to be exploded (see Fig. 4).



Fig. 4

2. From the **Edit** menu, choose **Explode Assemblies**. The Explosion Wizard appears.
3. Follow the instructions of the Explosion Wizard. In the **Reorder Items** window of the Explosion Wizard, select Items to be exploded in the other direction from the rest Items of the assembly, and then click **Make Group**.
4. Finish the explosion. The grouped Items remain unexploded (see Fig. 5).

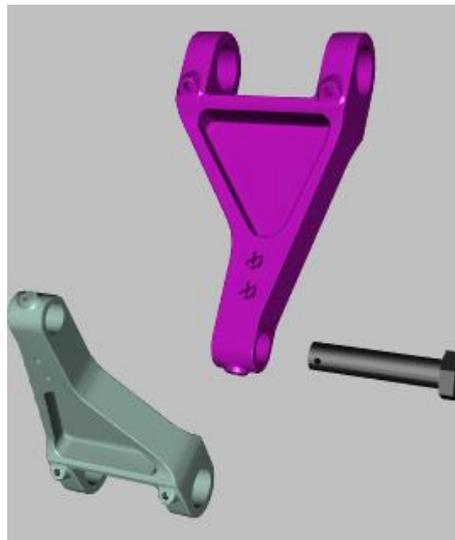


Fig. 5

5. Select the grouped Items of the exploded assembly, and explode them in the other direction (see Fig. 6).

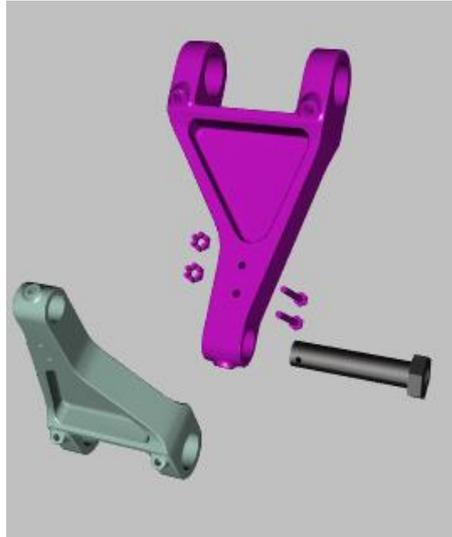


Fig. 6

4.10 Selecting Items

There are several techniques for selecting Items using different selection modes described below.

4.10.1 Selecting Items in Item Tree or Item List

Procedure

To select Item(s) in the Item Tree or Item List windows:

- Click the Item name or icon. The name of the selected Item is highlighted.
- To select multiple Items, click the Items one by one with the CTRL key pressed.
- To select a group of Items that are next to each other, click the first Item, and then click the last Item with the SHIFT key pressed.
- To select Items by a selection rectangle drawn in the Item Tree window, click somewhere in the window and drag to pull out a selection rectangle. Continue dragging until the rectangle encloses all required Items.

4.10.2 Selecting Items in 3D View Window

To select Items directly in the 3D View window, on the **Selection menu**, click **Selection in 3D** .

There are two ways for selecting Items in the 3D View window: clicking Item in the 3D View window, or drawing a selection rectangle (the Frame Selection mode).

These ways are used in the following 3D selection modes:

The **Frame Selection Mode** provides two selection options: Frame Crossing and Frame Bounding.

-  Frame Crossing selects those Items that have at least one face inside the selection rectangle drawn in the 3D View window.
-  Frame Bounding selects those Items that have all faces inside the rectangle drawn in the 3D View window.

The  **Assembly Selection in 3D** mode allows the parent assembly of Item to be selected in the 3D View window. To enable the mode, on the **Selection menu**, click **Assembly Selection in 3D**.

The  **Step-by-Step Selection in 3D** mode allows the parent Item to be selected by clicking its child Item in the 3D View window. Clicking successively the child Items navigates up the Item Tree hierarchy until the last parent Item of the hierarchy is achieved. When the last parent Item of the hierarchy is achieved, the

selection returns to the Item initially selected in the 3D View window. To enable the mode, on the **Selection** menu, click **Step-by-Step Selection in 3D**.

When the SHIFT, CTRL, or ALT key is pressed simultaneously with selecting Items,

CTRL – adds to the selection,

ALT – subtracts from the selection,

SHIFT – if in the Frame Selection mode, selects from the already selected.

Procedure

To select Item in the 3D View window:

- Click the required Item in the 3D View window.
This highlights Item if the **Highlight Selection** button is pressed.

To select multiple Items in the 3D View window:

- Press and hold down CTRL, and then click each required Item in the 3D View window you want to select.

To select Items by a selection rectangle:

1. Choose one of the available selection options – **Frame Crossing** or **Frame Bounding** by choosing the corresponding command from the **Selection** menu.
2. Click somewhere in the 3D View window and drag to pull out a selection rectangle. Continue dragging until the rectangle encloses all Items to be selected. Be sure to start dragging at a point that will enclose the Items required within a rectangle drawn from that point. Release the mouse button. The Items that fall inside the selection rectangle appear highlighted.

4.10.3 Selecting Linked Items

The  sphere icon beside a DPL row can be used for selecting linked Items in the 3D View window.

Procedure

To select Item in the 3D View window:

- Click the sphere icon beside a DPL row linked to the Item.

To select multiple Items in the 3D View window:

- Press and hold down CTRL (a plus sign appears beside the mouse pointer), and then click each sphere icon of DPL rows linked to the Items.

To subtract some Items from selection:

- Press and hold down ALT (a minus sign appears beside the mouse pointer), and then click each sphere icon of the selected DPL rows linked to the Items.

4.11 Sorting DPL Data

The DPL data can be sorted ascending by any column. The user may change the sort column and direction by double-clicking the column headings or using the *Sort Rows by {name of column}* command. This will cause a  small triangle to appear on the column heading that indicates the sort column and sort direction.

The *Auto Sort* mode can be used to automatically sort the newly entered data (or changed data) in ascending order within the chosen column.

If the *Sort Rows by {name of column}* command is used without *Auto Sort* enabled, the newly entered data (or changed data) will not be sorted automatically, but the data order can be changed afterwards by double-clicking the name of the required column. If the *Sort Rows by {name of column}* command is used with *Auto Sort* enabled, the newly entered data (or changed data) will automatically find its right place.

NOTE:

- When saving the project, any sort settings are cleared, but the sort order of rows is saved.
- When published, the DPL rows are sorted in accordance with the specification used.

Procedure

To sort the DPL data by columns:

- Right-click the DPL table header, point to **Sort Rows by**, and then click the required name of the column.

To automatically sort the DPL data:

- Right-click the DPL table header, point to **Sort Rows by**, and then click **Auto Sort**. By default, the Auto Sort command is enabled.

4.12 Recommendations on Increasing IPC Publication Performance

The following are recommendations for increasing the performance of the IPC publication.

For increasing the performance:

- Estimate the IPC publication performance by studying the performance related characteristics of the project.
- Optimize 3D data of the project.
- Publish IPC publication in 2D mode (if the optimization cannot help).

4.12.1 Estimating IPC Publication Performance

The following characteristics affect the 3D data file size and correspondingly the IPC publication loading time:

- Number of unique representations.
- Total number of faces.

The following characteristics affect 3D viewer performance that can be measured in fps (frames per second):

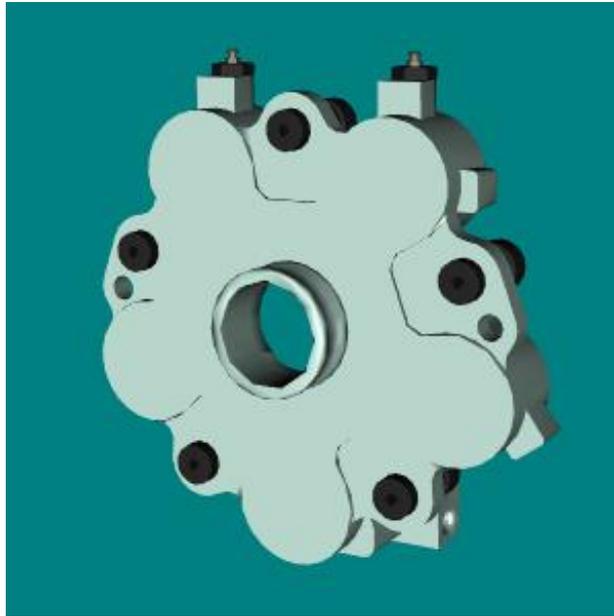
- Total number of representations.
- Total number of faces.

The greater the numbers, the lower the performance.

4.12.2 Optimizing 3D Data

4.12.2.1 Remove Unnecessary Items

Reduce the file size by removing hidden parts and small parts, e.g. screws, bolts, rivets etc., from the background assemblies. As the assemblies are used to help orientate the user, keep only the main items that will allow the user to recognize the assembly. The unnecessary parts should be deleted in the Base.



Full Assembly



Reduced Assembly

4.12.2.2 Merge Items

The performance of the IPC publication can be increased by merging the background assemblies.

The performance can also be increased by combining multiple Items, which are linked to a single DPL row, into an assembly and by merging it. This should only be done if all Items are exploded in the same direction.

Procedure

To merge Items which are children of one assembly Item:

- Right-click the assembly Item in the Item Tree window and click **Merge Assembly**.

4.12.2.3 Create a New Level of Detail

If no appropriate level of detail for 3D data can be chosen from the standard set because one LOD is too heavy whereas the next smaller LOD is too simplified, a new LOD can be added to the project using RapidGenerator. See section 4.2 for more information about adding a new level of detail.

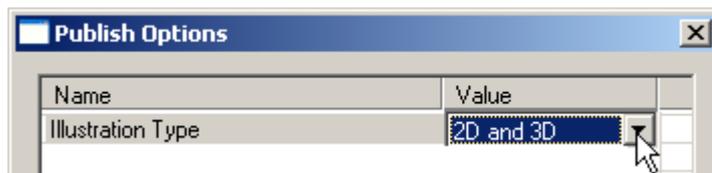
4.12.3 Creating IPC Publication in 2D Mode

If the 3D data file size is too large, the IPC publication can be created in 2D mode. When this mode is chosen, the IPC publication contains only the IPC pages with 2D data, other IPC pages are unavailable.

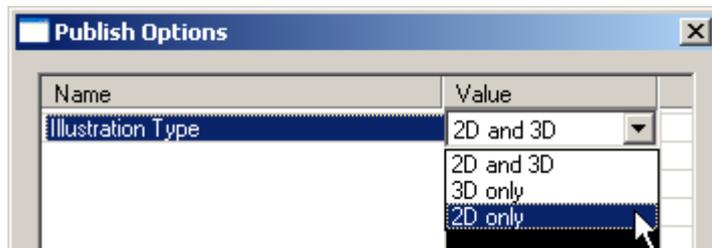
Procedure

To create the IPC publication in 2D mode:

1. On the **Tools** menu, click **Publish Options**.
The Publish Options dialog box appears.
2. Double-click the **Value** field of the **Illustration Type** option to enter the editing mode.



3. On the list of available values, click **2D only**.



4. Click somewhere in the dialog box to exit the editing mode.
5. Click **OK** to apply the changes and to close the dialog box.
6. On the **File** menu, click **Publish**.