



Creating Report Templates with Report Designer

Note:

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Creating report templates with Report Designer

WebSphere Business Modeler enables you to build report templates that you can use to generate detailed reports on your processes, resources, organizations, simulations, and other modeling elements. Using Report Designer, you can add specific fields to your report templates, creating the exact information and design that you require in your reports.

This tutorial will demonstrate a common and efficient template design practice. It will show you how to use Report Designer to build a generic report template, and then use that basic template to make a more specific template. You will add a variety of fields, polish your report's design, and include a process diagram. You will use your new template to generate a report for the Customer Order Handling process that is part of the sample ABC Project included with WebSphere Business Modeler.

First, you will learn how to create a report template and set general template preferences. You will then use Report Designer to populate your template. Report Designer provides a graphical editor and a Fields view for you to select the specific fields to include in your template. You will include the following elements in your report templates:

- Pages and page breaks
- Page headers and footers
- Tables
- Static text fields
- Data fields
- Pictures
- Table of contents
- Summary statistics fields (such as counts, sums, and averages for selected data fields)
- Report special fields (such as page numbers, print date, and record number)

You can also group reporting elements in a report template. For example, you can group a set of labels and data fields and repeat it multiple times in a generated report. If you want your report to display details about tasks, for example, you can create a group that will be repeated once for each task that is selected for inclusion in the generated report.

Report Designer also provides many options for you to customize the appearance of elements that you add to the report template. When you select an element in the report template, the Attributes view displays the editable properties for that element. You can align, size, and space multiple elements at the same time, enabling you to create polished, professional-looking reports.

Why do I need a report template?

A report template is an efficient way to create multiple reports that contain the specific information that you want to display. For example, if every report that you create requires your company name, address, and the date that the report was generated, you want to be able to include that information on each report

automatically, rather than adding it to each individual report that you generate. A report template enables you to define your required information once, and then generate it as many times as you want.

Templates are especially important when you are ready to generate more complex business reports. Although it can take some time to create and polish a template's design, the effort invested in building a template will give you the flexibility to generate any number of reports, either from the original template or by making a copy or copies and adding more specific details.

Before you begin

Before beginning this tutorial, you must import the sample ABC Project into your workspace. See the help documentation for instructions. You should also be familiar with the basic functions of WebSphere Business Modeler, such as creating catalogs, opening views, and adding elements from an editor's palette to a viewing area.

This tutorial should take no longer than 30 minutes to complete.

Setting Report Designer preferences

Report Designer preferences enable you to control the style features of your new report template.

The preferences for your report templates are similar to the preferences that you can set in most word processing programs. You can update such features as fonts, margins, and page orientation. For this tutorial, you need only update the preferences for fonts and margins, but you can set any other preferences that you choose in order to get familiar with your options.

To set preferences for the Report Designer, complete the following steps:

1. If you have not already done so, load the available fonts from your system:
 - a. On the menu bar, click **Window** → **Preferences** . The Preferences window opens.
 - b. In the tree, click **Business Modeling** → **Report Designer** → **Fonts**. The fonts preferences are displayed.
 - c. Click **Add**. The Fonts Folder window opens. In the window, browse to the folder on your machine that contains the fonts (such as C:\WINDOWS\Fonts or C:\WINNT\Fonts). Click **OK**. The fonts in the folder are displayed in the **Available Fonts** list.
 - d. Select the font that you want to use as the default font and the fonts you want to use in custom reports and then click the arrow to moves the fonts to the **Installed Fonts** list. For this tutorial, select the Lucida Sans Unicode font to move it to the **Installed Fonts** list.
2. Select a default font for your report template:
 - a. In the list of fonts, select the Lucida Sans Unicode font, then click the arrow above the **Installed Fonts** list to move it into the **Default Font** field.
3. Set the measurement unit for your report template:
 - a. In the tree, click **Report Designer** → **General**.
 - b. In the **Measurement Units** field, select **Inches**, and then click **Apply**.
4. Set the page size and margins for your report template:

- a. In the tree, click **Report Designer** → **Page Setup**. The Page Setup window opens.
- b. In the **Paper Size** list, select **Letter**.
- c. Set each of the margins to 1 inch.
- d. Click **OK** to save your changes.

Now that you have set your Report Designer preferences, you are ready to create a report template.

Creating a report template

You can choose to create a report template either with or without a data source to supply the report's fields and attributes. Your first goal is to create a generic "skeleton" template that you can use as the basis for other report templates. Later in this tutorial you will use a data source to provide specific fields but for this exercise, you will create a report template with no data source.

To create a new report template, complete the following steps:

1. If you have not already done so, create a new catalog to hold your report templates:
 - a. In the Project Tree, right click the Reports node and then click **New** → **Report Catalog**.
 - b. In the New Report Catalog window, enter a name for your new catalog. In this tutorial, we will use **My Templates** as the catalog name.
 - c. When you have entered a catalog name, click **Finish** to create the new catalog.
2. Right-click the My Templates report catalog and select **New** → **Report Template**.
3. In the **Name of new report template** field, type Generic Report Template.
4. Type a description of your report template: Generic template information for other report templates. Click **Next**.
5. For now, leave No Data Source selected in the Data Source tree. Later in the tutorial you will use a data source to create a report template.
6. Select **WebSphere Modeler** as the report designer.
7. Click **Finish**. The report template is created and is displayed in the Project Tree.

Now that you have created a report template, you can add fields and define the information that you want to include in your reports.

Building a generic report template

After you have created your report template, you can begin to populate it with various report elements. At this stage, it is a good practice to add the elements that you know you will want to display in every report that you generate. For example, regardless of what type of report you are generating, you will most likely want to include a title, page numbers, headers and footers, and a table of contents. By building a generic report template now, you will have a "skeleton" that you can copy repeatedly when you want to create more specific templates.

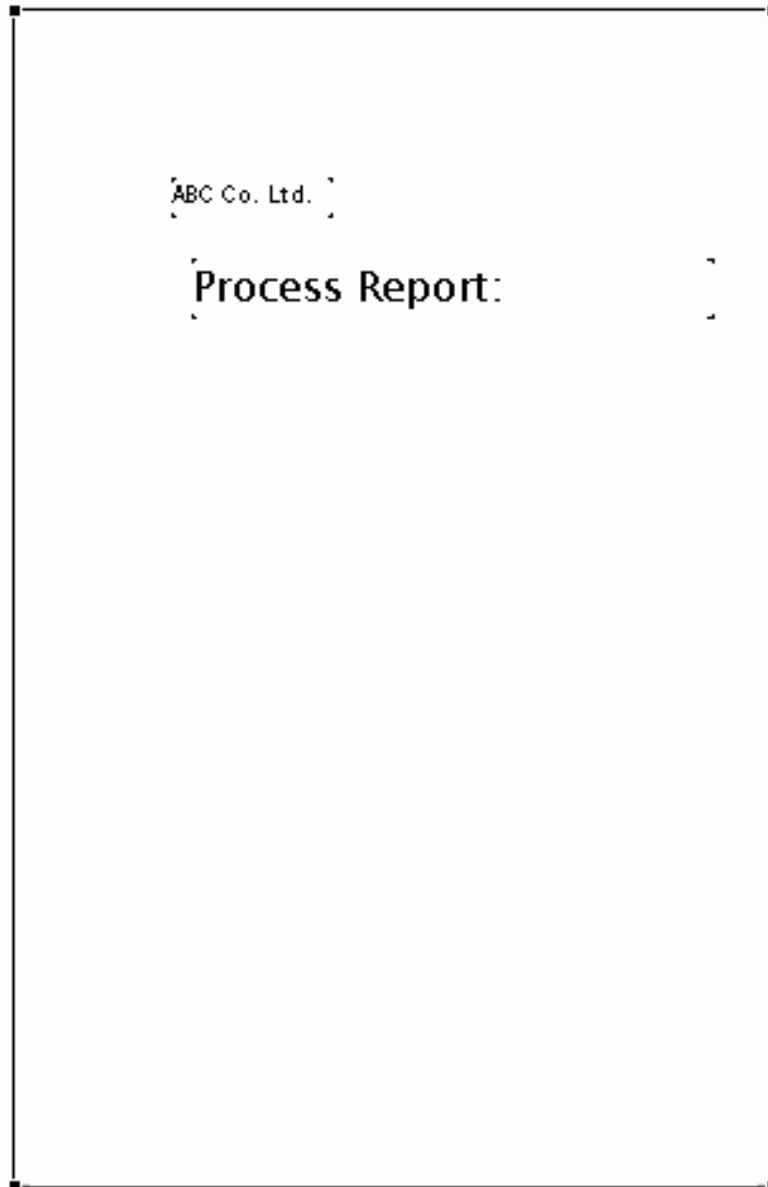
Adding text fields

Fields enable you to specify the information and data that you want to include in your template. You can add static text that will appear on each report, or you can add fields that will be updated when each report is generated. At this point in the tutorial, you are building a generic report template to act as the basis for a more specific template. First, you will add some static text fields that will be included in any report that you generate using the template.

To add static text fields, complete the following steps:

1. Click the **Create a new static text** button on the Report Designer palette.
2. Position the cursor on the report template at the position where you want the text label to begin and click to add the static text field.
3. Double-click the empty text label and then type the following: ABC Co. Ltd.. Use the text box handles to resize the box as necessary. **Note:** You can also edit the text of the text label in the Attributes view.
4. In the Attributes view, change the font size to 16 point. To increase the size of the text box so that you can see the full text that you have entered, click and drag the text box handles as required.
5. Using the same method, add another text box immediately below the one you just added and type the following text: Process Report:. In the Attributes view, change the point size to 24.

Your report template should look like the one in the following image:



6. Click **File** → **Save** to save the report template.

The two text strings that you have added to the report, "ABC Co. Ltd." and "Process Report:", will appear on every report that you generate using this template, and every copy of the template that you make.

Next, you will learn to use the layout guidelines to align your text.

Aligning elements using guidelines

Report Designer enables you to align different fields in your template by using guidelines.

The two text fields that you just added to the report template title page are probably not perfectly aligned, and this misalignment might give your reports an unpolished look and feel. You could use the Attributes view to ensure that all your fields are aligned, but that method is not always efficient, especially if you have a

large number of fields that you want to align. Report Designer provides guidelines that enable you to quickly align your fields (plus a number of convenient alignment options that you will use later in the tutorial).

To align the two text fields, complete the following steps:

1. Click a position on the horizontal ruler to add a new guideline. A guideline marker appears in the ruler. From this marker, a dashed line crosses the report template. To change the position of a guideline you have added, drag the guideline marker to the position on the ruler where you want it to appear.
2. Click the report title text box and drag it so that the left side of the text box is close to the dashed line extending from the guideline. When the text box approaches the guideline, the guideline changes from a dashed line to a solid red line, indicating that the text box will snap to position on the line. Drop the text box at the guideline.
3. Click the company name text box and drag it to the guideline. When the guideline changes from a dashed line to a solid red line, drop the text box.
4. Move your cursor back to the guideline in the horizontal ruler. Click and drag the guideline slightly to the left and drop it. Notice that the two text boxes move with the guideline when you drag it to a new position.
5. Click **File** → **Save** to save the report template.

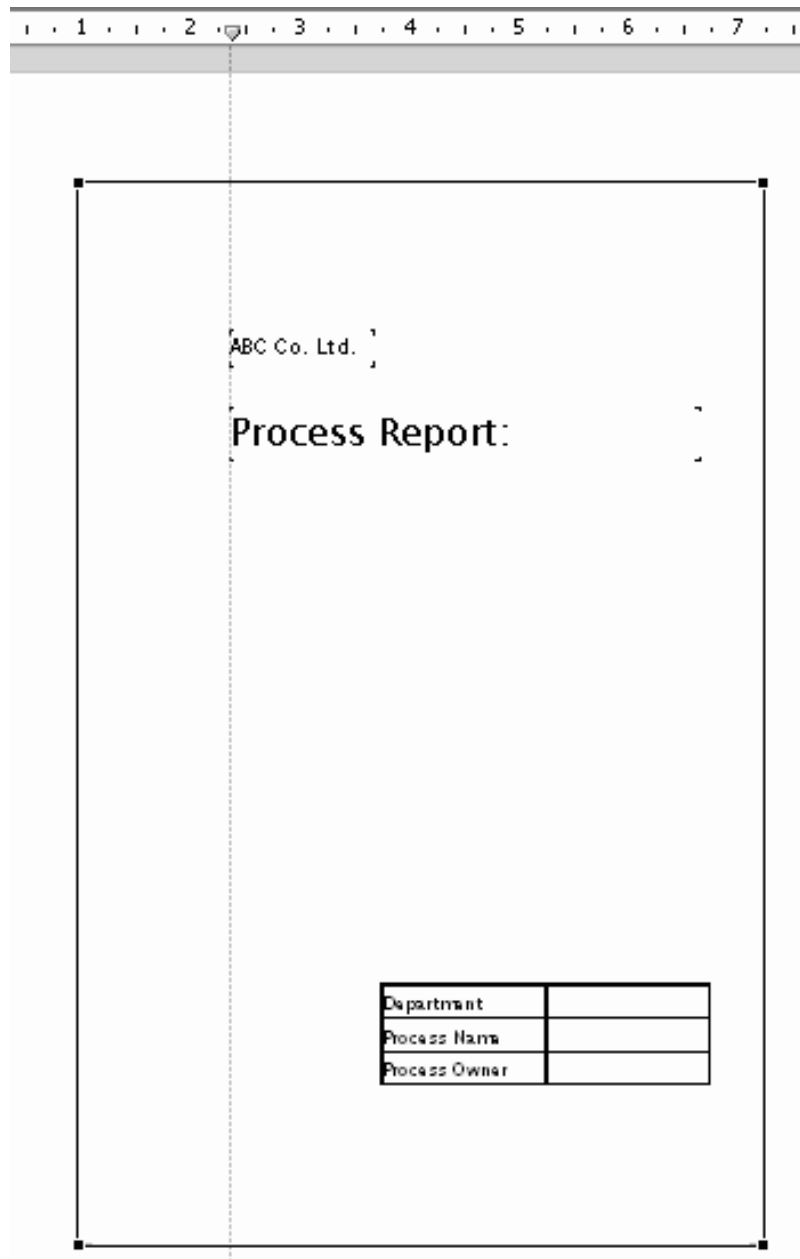
Guidelines are extremely useful when you are trying to align a large number of report elements on one or more pages. You can remove a guideline at any time by clicking it and dragging it off the ruler.

Adding tables

A table in a report enables you to group text and data in any required configuration. Just as in a spreadsheet or word processing document, tables in reports help you to organize your information to improve the presentation of your data. Table cells can include static text, parameter fields, or data fields. In this exercise you will create a table and add static text to specific cells.

To add a table to your report catalog, complete the following steps:

1. Click the **Create a new table button** on the Report Designer palette.
2. Move your cursor to the lower right corner of your template and click to add the table.
3. In the Create Table window, update the values so that your table has two columns and three rows. Click **OK**.
4. Double-click the top cell in the left column of the table and type: Department. In the Attributes view, select the **Bold** check box in the Fonts section.
5. Repeat the preceding step for the remaining cells in the first column, typing the following:
 - Process Name
 - Process Owner
6. In the Attributes view, update the formatting of each text cell by clicking on the Alignment tab and changing the vertical alignment to **Middle**. Remember that you can resize the table by first selecting it and then clicking and dragging any or the handles. Your table should now look like the one in the following image:



7. Click **File** → **Save** to save your report template.

You have added a table to your report template and populated several cells with static text. Next, you will learn how to add parameter fields to the remaining table cells.

Adding parameter fields

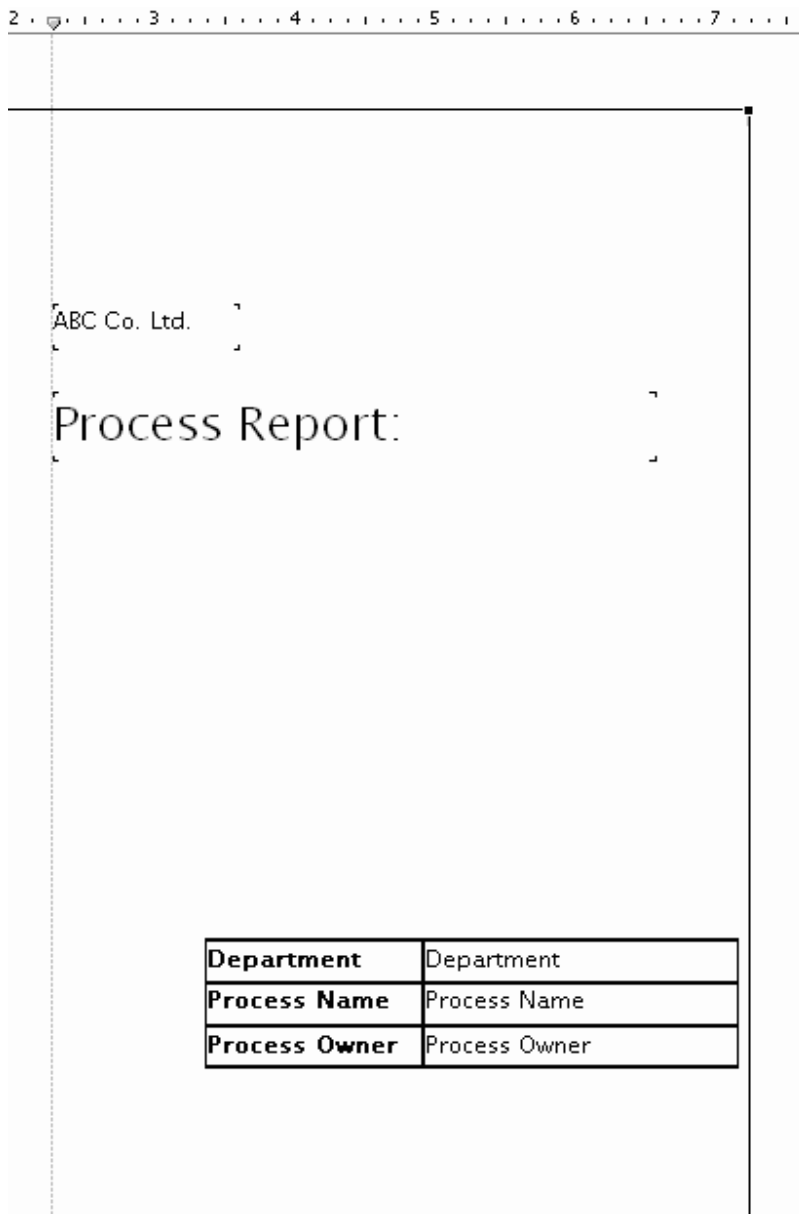
Parameter fields enable you to display a value that you specify or that the user will be prompted to supply when generating the report. You have already added static text to the left column of your table. Now, you will add parameter fields to the right side so that whoever generates a report using the template will be prompted to enter values specific to that report.

To add parameter fields, you will need to use the Fields view.

1. Right-click on the report template and select **Show** → **Fields View**. The Fields view opens. Expand the Report Fields node.
2. Right-click the Parameter Fields node and select **New** → **Parameter Field**. The Create Parameter Field window opens.
3. Type the following values:

Option	Description
Name	Department
Description	The department responsible for this report
Default Value	Sales and Marketing

4. Leave the **Prompt before generation** check box selected. By leaving this check box selected, you are indicating that the user will be prompted to supply values each time a report is generated.
5. Click **OK**. The new Department parameter field is added to the tree in the Fields view.
6. Click and drag the new Department parameter field from the Fields view to the top cell in the right column of the table, opposite the "Department" static text label.
7. Now, you need to repeat these steps to add parameter fields for the Process Name and Process Owner:
 - a. Right-click the Parameter Fields node and select **New** → **Parameter Field**. The Create Parameter Field window opens.
 - b. Type Process Name as the name of the parameter field, and then type a description: The name of the process for which this report is being generated. Leave the default value blank.
 - c. Ensure that the **Prompt before generation** check box is selected, and then click **OK**. The Process Name parameter field is added to the Fields view.
 - d. Click and drag the Process Name parameter field to the table cell in the right column opposite the static text "Process Name".
 - e. Repeat these steps to create a Process Owner parameter field. Your table should now resemble the one in the following image:



8. When you have added parameter fields to each of the cells in the right column of the table, click **File** → **Save** to save your report template.

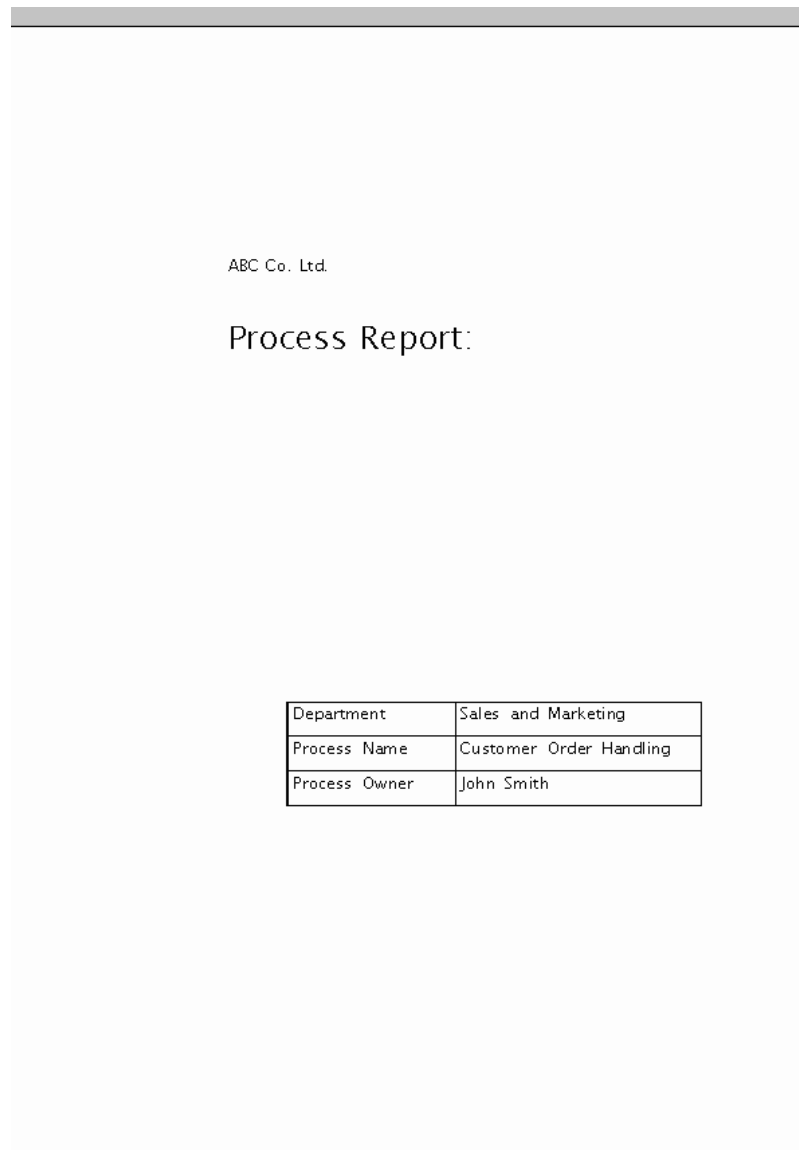
Now that you have added parameter fields, you can generate your report to see how the parameters receive values.

Generating a report

To this point, you have set up your title page and added a table with static text fields and parameter fields. To understand how parameter fields work, you can try generating your report. Obviously, you will not have any data to include in your report yet, but it is a good practice to frequently generate reports as you build your template; by generating your report periodically, you will be able to ensure that each reporting element you add is providing the intended result.

To generate a report using your new report template, complete the following steps:

1. Right-click in the report template and select **Generate**. The Parameter Values window opens.
2. Enter values for the parameter fields that you previously added to your report template:
 - a. In the Parameter Fields list, ensure that **Department** is selected and that the Parameter Field Value is **Sales and Marketing**. This is the default value that you added when you created the parameter field.
 - b. In the Parameter Fields list, select Process Name, and in the Parameter Field Value field type Customer Order Handling.
 - c. In the Parameter Fields list, select Process Owner, and in the Parameter Field Value field type your own name.
 - d. Click **OK** to generate the report. (Note that the report might take a few moments to display.) Your report should now look like the one in the following image:



You might have to resize your table and generate again to get the results that you want. Make any size, alignment, or text adjustments necessary to produce a report that is presented the way you intend. You can bold the static text to make your


labels stand out from the values, you can increase the point size of the text, or you can move the table to the other side of the page. You should get used to generating reports continually until you have the design that meets your standards.

Now you are ready to add pages and determine the content of your report template.

Adding new pages

You can add new pages when you want to change formatting options for a particular page, or add different page headers and footers. You have already created a title page for your report template; however, the formatting for the title page will not be repeated in the following pages of the report. You need to add a new page to the report template, after which you can set the formatting, headers and footers, and appropriate fields.

To add a new page to the report template, complete the following steps:

1. In the palette, click the **Create a new page**  button. Move your cursor to the lower margin of the title page and click. (Alternatively, you can right-click on the margin of the title page and select **New** → **Page Below**.) A new page is added below the page you had selected.
2. Click **File** → **Save** to save the template.

Now that you have added a new page, you can create a header and footer for the page.

Adding headers and footers

Headers and footers enable you to include fields at the top and bottom of your report template pages, so that the same information will be appear on your generated report pages. For example, you can use the header and footer to display the appropriate department name at the top of your report pages.

You must add a new header and footer to each template page that you create. If you do not add headers and footers to subsequent template pages, any report data generated from those pages will not contain your header and footer information.

To add a header and footer to your new page, complete the following steps:

1. Right-click in the margin of the page that you just added, and select **New** → **Page Header**. Note that you have to click near the top margin of your page to see the new header box that has been added to the page.
2. Right-click in the margin again and select **New** → **Page Footer**. As with the header, if you click the page near the bottom margin, you will see the footer box that you just added.

Now that you have set up your header and footer, you can add the information fields that will appear in your generated reports.

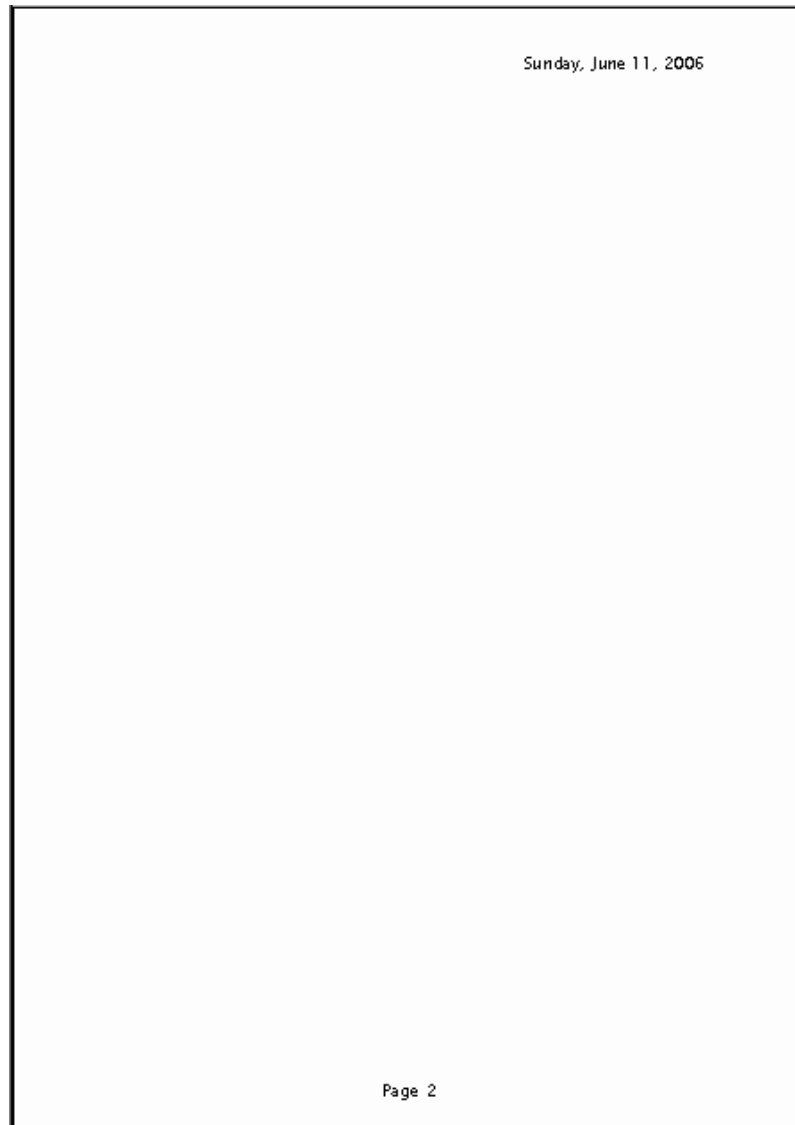
Adding information fields

Report information fields are predefined fields you can add to a report template that contain information on the report itself. These fields can provide useful information such as page numbers, the date that the report was printed, or the time the report was last modified.

For this tutorial, you will add one information field each to the header and footer. In the header, you will add a field to provide the date that the report is generated. In the footer, you will add a page number field. (Note that you can add information fields anywhere in your report template, not just in the header and footer.)

To add information fields, complete the following steps:

1. In the Fields view, expand the Special Fields node.
2. Click the Print Date field and drag it to the header section of the template page. Drop the field on the right side of the header. When you generate a report, this field will display the current date.
3. In the Fields view, click the Page Number field and then drag and drop it in the footer section.
4. Align the Page Number field:
 - a. Right-click in the Page Number field that you just added to the template and select **Format** → **Center** → **Center Horizontally**. This selection will center the field on the template page.
 - b. Right-click in the Page Number field again and select **Format** → **Text Horizontal Alignment** → **Center**. This selection will center the text within the field.
5. Click **File** → **Save** to save the template.
6. Right-click in the template and click **Generate**. (Note that you have the option of leaving your parameters empty if you are simply checking the result of the new information fields.) The second page of the report should look like the one in the following image:



Remember that you can resize the fields that you have added to the template page. For example, if the date in the header is breaking to two lines, you can make the Print Date field longer horizontally to keep the generated information on a single line.

Adding a table of contents

A table of contents can help you quickly find information in your generated reports, especially if those reports are lengthy. Because you are still setting up the generic information that will be used in all subsequent report templates that you create, a table of contents is a useful page to add at this point. Later, when you copy this generic template and create a more specific template, the table of contents will be automatically generated.

To add a table of contents to your Generic Report Template, complete the following steps:

1. Right-click in the margin of the title page and select **New** → **Page Below**. A new blank page is added below the title page.

2. Click the new page to select it. In the Attributes view, select the **Table of Contents Page** check box.
3. Click **File** → **Save** to save the template.

You will notice that the table of contents page that you just added is blank, and you may be tempted to add fields to it. However, you must not add any further content to the table of contents page. The table of contents will be generated dynamically when you generate a report using your report template; any additional fields that you add to this page will be ignored.

Building a specific report template

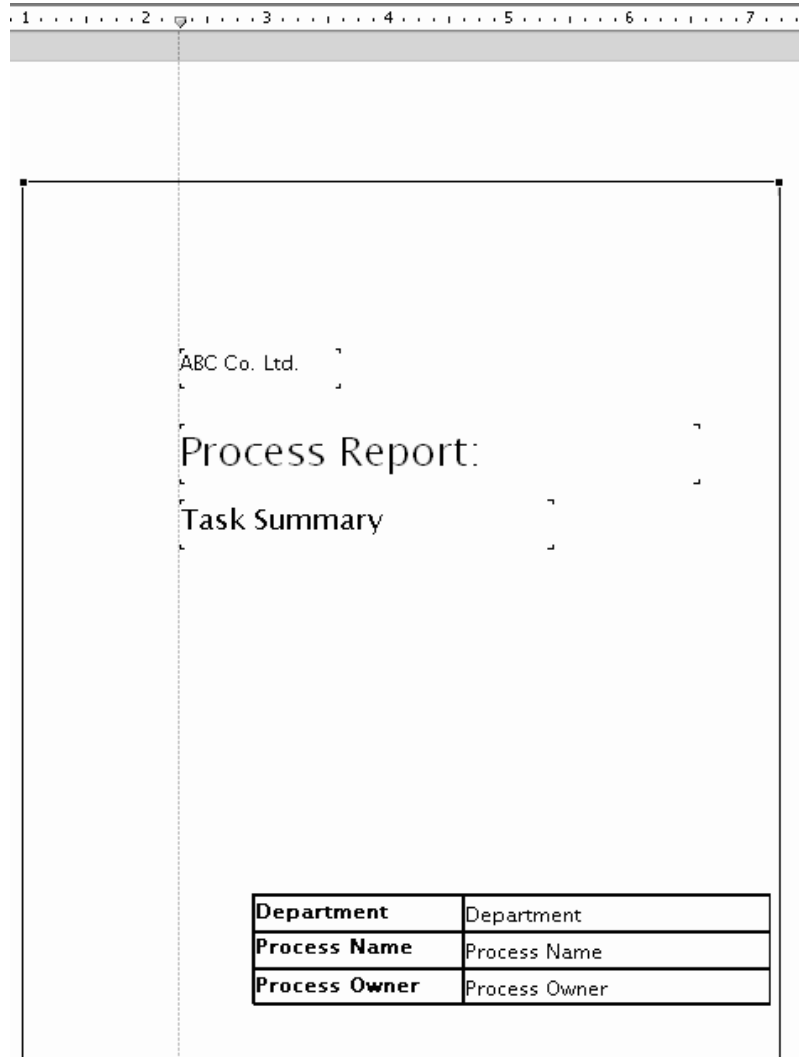
At this point, your report template contains generic information which can be applied to all your reports. You could proceed to add data fields to this template; however, if you make a copy of the template as it now stands and then add specific data fields to the copy, you can save this "skeleton" to use when you want to create more templates. This practice can save you set-up and design time, especially if you want to create a large number of report templates that contain the same generic fields.

Copying report templates

The first step in creating a more specific report template is to copy and rename the Generic Report Template that you have just built.

To make a copy of the report template that you have created, complete the following steps:

1. In the Project Tree, right-click the Generic Report Template and select **Copy**.
2. Right-click the My Templates catalog and select **Paste**. A copy of the Generic Report Template is added to the catalog.
3. Right-click the copy of the template and select **Rename**.
4. Type the following name for the new copy: Task Summary. Press Enter on your keyboard to rename the report template.
5. Double-click the Task Summary report template to open it in the Report Designer editor.
6. Add a new static text field to the title page:
 - a. Click the **Create a new static text** button on the Report Designer palette.
 - b. Position the cursor on the title page immediately below the Process Report: static text field and click to add a new static text field. Remember that you can use the template guidelines to properly align your template fields.
 - c. Double-click the empty text label and then type the following: Task Summary. Use the text box handles to resize the box as necessary. **Note:** You can also edit the text of the text label in the Attributes view.
 - d. In the Attributes view, change the font size to 18 point.
7. Click **File** → **Save** to save the report template. Your title page should now look like the one in the following image:



You can keep the original Generic Report Template and use it to create as many copies as you require. Each copy that you make will inherit all of the fields that you have added to the original, so you will not have to start from the beginning each time.

Now you can add a data source to your new Task Summary report template.

Adding a data source

Data sources are predefined sets of fields that you can use to derive information from the elements of your project. You can use data sources as the basis for defining all of your report templates.

When you first created your generic report template, you did not use a data source. Now that you have made a copy of your generic template and want to populate it with specific information, you will need to add a data source to supply the appropriate data fields. The key to choosing the right data source for your report template is in considering what information you want your reports to provide. For example, if you are creating reports only on the resources in your model, you might choose the Resource Specification Data Source. For this tutorial, you will need to add fields to provide information at a high level, plus information

on both global and local elements. For this reason, you will add the Process Specification data source. The Process Specification data source contains a broad range of data pertaining to the process as a whole, as well as to specific component elements of the process, such as global and local tasks.

To add a data source to your Task Summary report template, complete the following steps:

1. In the Fields view, right-click the Data Fields folder and click **New** → **Data Fields**. A window opens.
2. In the Data Source Selection window, click **Business Model** → **Process Specification Data Source**, and then click **OK**. The Process Specification data fields are added to the Fields view.

You can now use any of the Process Specification data fields in your report template.

Adding data fields

Data fields provide specific information about your model elements. You can add any available data field from the chosen data source to your report template.

You are going to use the Task Summary report template to generate reports about a process's tasks. To do so, you will add a number of data fields to supply that specific information.

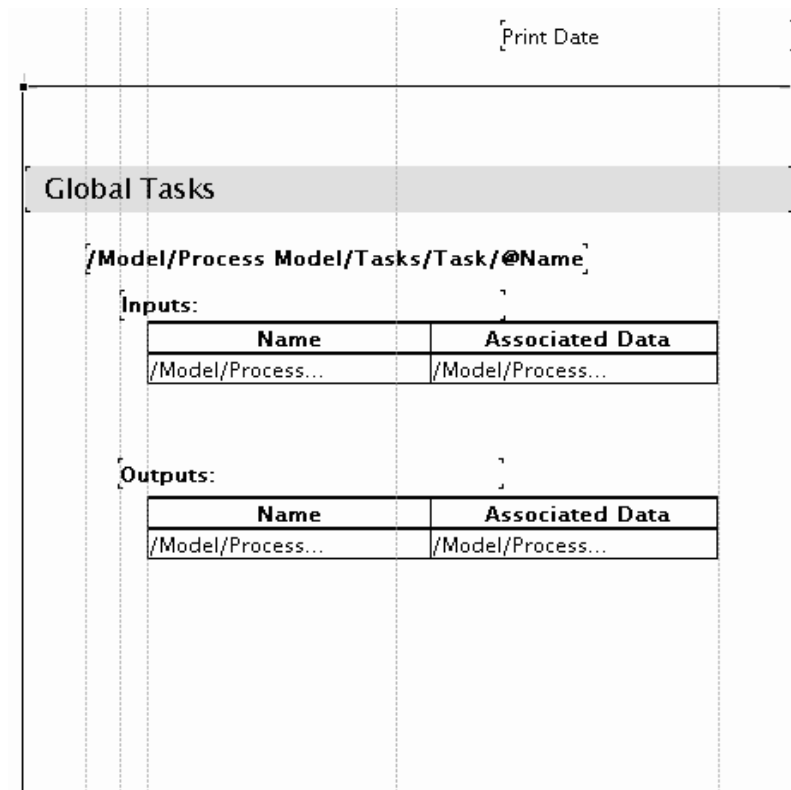
You can add data fields to a report template in any order that makes sense to you. In this tutorial, you will add the elements in the order that they will appear in your completed report, but you can revise a template by changing the order of fields, inserting pages, or adding diagrams. There is no single correct sequence to adding elements to your template. Remember it is a good practice to generate reports regularly as you build your template so that you can see the results of what you have added.

Important: Ensure that you add your data fields to the page following the table of contents page. If you add them to the table of contents, they will not appear in generated reports.

To add data fields to your Global Task Summary report template, complete the following steps:

1. Add a heading for your data fields:
 - a. Ensure that you are working on a blank content page in your template and not the table of contents page. Click the **Create a new static text** button on the Report Designer palette.
 - b. Position the cursor towards the left margin of the page and click to add the static text field.
 - c. Double-click the empty text label and then type the following: Global Tasks. Use the text box handles to resize the box as necessary. **Note:** You can also edit the text of the text label in the Attributes view.
 - d. Ensure that the static text field is still selected. In the Attributes view, select the **Use as Heading** check box on the General tab and update the heading level to 1. By making this static text field a heading, you are ensuring that it will be listed in the table of contents.

- e. On the Padding tab, update the left padding to 0.2 inches. On the Colors tab, add a text background color of light blue. **Tip:** You can adjust the formatting in any other way that you would like. Adding formatting to your headings can help them stand out in a lengthy report.
2. Add the global task name:
 - a. In the Fields view, expand the data source: **Data Fields** → **Model** → **Process Model** → **Tasks** → **Task** → **name**.
 - b. Click and drag the **name** node to the template page and drop it below the Global Tasks heading. This data field will hold the name of the global tasks in the process that you specify when you generate the report. The Data Field Path, which is displayed in the Attributes view, indicates the location in your process model where the data for this field is located. If you generate your report now for the sample ABC Project's Customer Order Handling process, the page will display the Global Tasks heading and the name of the first global task in the process, Input Customer Order.
 - c. Ensure that the data field is still selected. In the Attributes view, select the **Use as Heading** check box and update the heading level to 2. Refer to step 1, above, if you need instructions on how to specify the static text field as a heading.
 3. Add an Inputs table:
 - a. Add a new static text field below the data field that you just added. Type **Inputs:** as the field text.
 - b. Right-click in the template page and select **New** → **Table**. Specify 2 rows and 2 columns for the table, and then position it immediately below the Inputs text field.
 - c. In the top left cell of the table, add a static text field and type Name. In the top right cell of the table, add a static text field and type Associated Data. These two static text fields will act as headings for your table columns.
 - d. In the Attributes view, update the horizontal alignment of the two text fields to **Center**.
 - e. In the Fields view, expand the data source: **Data Fields** → **Model** → **Process Model** → **Tasks** → **Task** → **Inputs** → **Input** → **name**. Click and drag this node to the bottom left cell of the table.
 - f. In the Fields view, expand the data source: **Data Fields** → **Model** → **Process Model** → **Tasks** → **Task** → **Inputs** → **Input** → **associatedData**. Click and drag this node to the bottom right cell of the table.
 4. Repeat step 3 above, but this time create an Outputs table. Add a static text field heading, create the table with column headings, and add the **name** and **associatedData** data fields for the global task outputs. Your template page should look similar to the one in the following image:



5. Click **File** → **Save** to save the report template.
6. Right-click on the template and select **Generate**.
7. Enter the required parameter values, and select Customer Order Handling as the process on which to generate the report. Click **OK**. Your report is generated and displayed.

Your generated report should contain a title page, a table of contents, and content generated from the static text and data fields that you have added. The generated content should look like the following image:

Global Tasks

Input Customer Information

Inputs:

Name	Associated Data
Input	Order Request

Outputs:

Name	Associated Data
Output	Customer Record


Notice that data was generated for only one global task. However, the Customer Order Handling process contains a total of three global tasks (including one contained within the Order Verification global process). To enable your report template to generate data for all of the global tasks in a specified process, you need to add your data fields to a group.

Adding a group

A group contains information on a modeling artifact whose type you specify when you set up the group. It enables you to repeat the same information for as many instances of the artifact that appear in your model. For example, if you create a group that displays details about a resource, the generated report will contain resource information for each reported resource.

In this tutorial, you have already added data fields which provide information about global tasks in a specified process. However, those data fields will only provide data for a single global task. You will now create a group, which will enable you to generate information on all global tasks.

To create a new group to contain the data fields, complete the following steps:

1. In the palette, click the **Create a new group**  button.
2. In the report template, click and drag the group box so that it contains the task name data field and the input and output tables. Be careful not to include the Global Tasks static text field in the group box, or that text will repeat when you generate your report.
3. In the Attributes view, click the ... button next to **Grouped By Field**, select **Model** → **Process Model** → **Tasks** → **Task**, and then click **OK**. This node is the immediate parent of the global task data records that you want to show in the group

4. Click **File** → **Save** to save the report template.
5. Right-click the report template and select **Generate**. Add the appropriate parameters, select the Customer Order Handling process, and then click **OK**.

Notice that your report now shows information for three separate global tasks. (Remember that there is a global task in Order Verification, one of the global processes used in Customer Order Handling.) Note, too, that each of the global task names appears in the table of contents—any static text field or data field that you list as a heading will appear in the table of contents.

Adding a group to a table

A table is, in effect, a self-contained group. However, you need to specify the field that the table is grouped by before it will display multiple instances of a particular element.

In this tutorial, you have added tables to display task inputs and outputs. You will now specify the fields that these tables must be grouped by in order to show multiple inputs or outputs for any task that has more than one.

To group a table by a field, complete the following steps:

1. In the report template, click the Inputs table to select it. **Tip:** You can select the table by clicking on its outside border. The shape of the cursor will show you whether you are selecting the full table, a row, or a column.
2. In the Attributes view, click the ellipsis ... button next to the **Grouped by Field** field.
3. Expand the data source to the following node: **Model** → **Process Model** → **Tasks** → **Task** → **Inputs** → **Input**. Select the node and then click **OK**. The field and path are added to the Attributes view.
4. Repeat these steps for the Outputs table, only this time select **Model** → **Process Model** → **Tasks** → **Task** → **Outputs** → **Output** as the field to group by.
5. Click **File** → **Save** to save the template.


If you generate your report again at this point, you will not notice any difference in the two tables because none of the global tasks contained within Customer Order Handling has multiple inputs or outputs. However, if you were to add inputs or outputs to any of the global tasks, or if you generated a report for a process that contained global tasks with multiple inputs or outputs, your template would enable you to display information for those multiple elements. Later in this tutorial, you will complete an exercise that will demonstrate the results of grouping a table by a particular field.

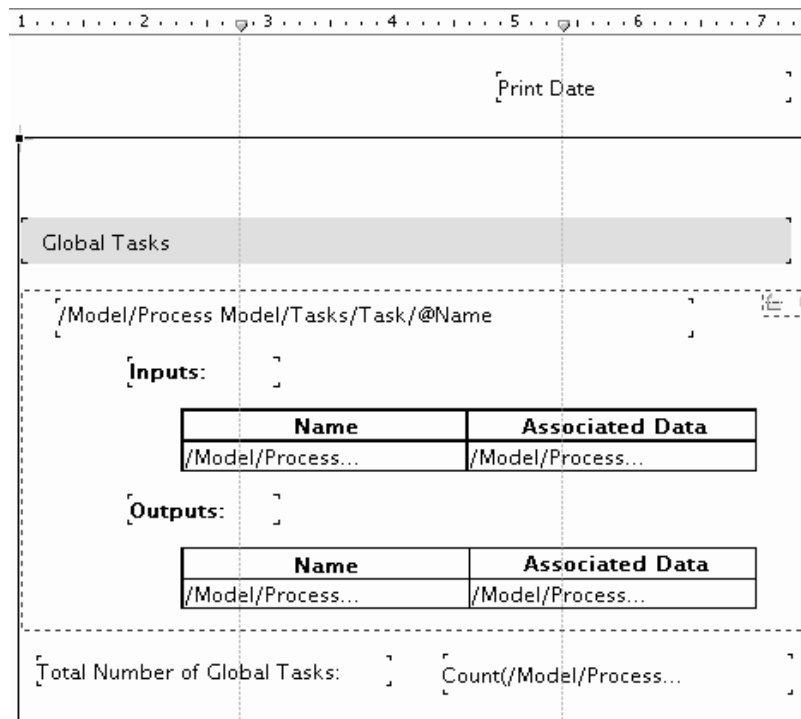
Adding a summary field

Summary fields enable you to display values calculated for any type of item in a generated report. You can perform different calculations on a particular data element, such as count, sum, or average, depending on the data element you choose. For example, you can count the number of tasks in a process, or display the average start-up cost per task.

You have already displayed details for global tasks in your report template. Now you are going to add a summary field that will display the total number of global tasks in your specified process.

To add a summary field to the report template, complete the following steps:

1. Add a text label for the summary field:
 - a. Add a new static text field immediately below the group that you created, and type Total number of global tasks:. Be careful not to include the field within the group, or the text will be repeated in any generated report.
 - b. In the Attributes view, select the **Use as Heading** check box and set the heading level to 2. The text field will be added to the table of contents.
2. In the palette, click the **Create a new summary field**  button.
3. Position the cursor on the report template to the right of the static text field that you added, and drop the field on the template page. The Create Summary Statistics window opens.
4. Click the ellipsis button next to the **Summary Field** field. The Data Field Selection window opens.
5. Select **Data Fields** → **Model** → **Process Model** → **Tasks** → **Task**, and then click **OK**.
6. Leave the **Summary Type** field as the default **Count**, and then click **OK**. The summary field is added to the report template.
7. Use guidelines to align the static text and summary fields. The template page should now look like the one in the following image:



8. Generate the report with your parameters, using Customer Order Handling as the specified process.

The key to using a summary field is in specifying the correct node in the data source on which to perform your calculations. By selecting the Task node within the Process Model, you specified that the summary field would show information for global tasks that exist independently and can be used in any number of processes. If, for example, you specify the **Model** → **Process Model** → **Processes** → **Process** → **Flow Content** → **Task** node as your summary field, you will receive a count of the *local* tasks within the Customer Order Handling process.


Adding a page break

Page breaks enable you to specify that particular elements and sections in your reports will begin on a new page.

To this point, you have added several fields to your template. Depending on the process, the reports you generate with the template might be many pages long. However, the template content itself is less than one page long. If you want to add more fields to your template, but you want the resulting data to appear on a new page in the generated report, you can add a page break to the template before adding the additional fields.

In this exercise, you will first add a page break to your template page, and then add elements to provide information on local tasks after the break. These template elements will be the same as the ones that you have already added for global tasks, but will use data fields from a different node in the data source.

To add a page break and additional fields to your report template, complete the following steps:

1. In the palette, click the **Create a new page break**  button.
2. In the template page, click immediately below the Total Number of Global Tasks field and associated summary field to add a page break. Any fields that you add below the page break will start on a new page when you generate a report.
3. Add elements to the new section of the template page to provide information about local tasks. To locate the fields you will need, go to the Fields view and expand the data source: **Model** → **Process Model** → **Processes** → **Process** → **Flow Content** → **Task**. The Flow Content node contains information on elements that are used only in the specific process flow, as opposed to global elements that can be used in multiple processes. Refer back to previous exercises if you need help adding any of the template elements.
 - a. Add a static text field and type Local Tasks. Specify it as heading level 1, and add the same background color as the Global Tasks heading.
 - b. Add a data field to contain the name of the local task.
 - c. Add tables to contain information on task inputs and outputs. Use the same column headings and data fields as you used for the Global Tasks section, ensuring that you use the data fields from the **Model** → **Process Model** → **Processes** → **Process** → **Flow Content** → **Task** node.
 - d. Create a group to contain the local task name and both the Inputs and Outputs tables. Remember to update the **Grouped by Field** in the Attributes view with the appropriate field, in this case **Model** → **Process Model** → **Processes** → **Process** → **Flow Content** → **Task**.
 - e. Click on the Inputs table to select it, and in the Attributes view update the **Grouped by Field** field with the appropriate data source node, **Model** → **Process Model** → **Processes** → **Process** → **Flow Content** → **Task** → **Inputs** → **Input**.
 - f. Repeat the step above for the Outputs table.
 - g. Add a Total Number of Local Tasks static text field, and then add a summary field to contain the data. Remember to leave the summary field function as the default **Count**.
4. Click **File** → **Save** to save the template.

5. Right-click and select **Generate** to generate a report for the Customer Order Handling process.

Note that the Local Tasks section begins on a new page in the generated report. Page breaks enable you to display data on a new page in your reports without having to add new template pages and headers and footers.

You should notice that there are several local tasks that contain multiple inputs and outputs. They are displayed in your report because you updated the **Grouped by Field** field for each table.

You may also notice that the alignment and layout of your fields contain slight inconsistencies between the Global Tasks and Local Tasks sections. In the next exercise, you will fine-tune the layout of the elements in your template.

Finalizing the template layout

Report Designer provides several tools to help you polish and finalize that layout of your template.

When you have added a large number of elements to your template, the generated reports can contain slightly misaligned headings and data that detract from the overall presentation of your information. Even if you have been using guidelines to align your fields, subtle differences in alignment, field size, and spacing can creep into your template. There are a number of tools in Report Designer that you can use to select and adjust multiple template elements, and in so doing polish the look and feel of your generated reports.

In this tutorial, you have added two sections that display the same information about two different types of tasks. You want the presentation of similar elements in these sections to be uniform.

To finalize the layout of your template, complete the following steps:

1. Click the Global Tasks static text field to select it.
2. Press the **Ctrl** button on your keyboard and click the Local Tasks static text field. Both text fields should now be selected.
3. Ensure that your cursor is hovering on one of the selected fields, and then right-click and select **Format** → **Size** → **Same Height/Width**. The two fields are adjusted to exactly the same height and width.
4. In the Local Tasks section, click the Inputs text field.
5. Press the **Ctrl** button on your keyboard and click the Inputs table, the Outputs text field, and the Outputs table.
6. Ensure that your cursor is hovering on one of the selected fields, and then right-click and select **Format** → **Vertical Spacing** → **Equal**. The spaces between the selected elements are automatically made equal.
7. Click the Total Number of Global Tasks static text field to select it.
8. Press the **Ctrl** button on your keyboard and click the Total Number of Local Tasks static text field. Both text fields should now be selected.
9. Ensure that your cursor is hovering on one of the selected fields, and then right-click and select **Format** → **Font Style** → **Italic**. Both fields now display italicized text. (Note that if you italicize or bold a field that has been designated as a heading, that formatting will also appear in the table of contents.)

10. Click **File** → **Save** to save the template.
11. Right-click and select **Generate** to generate your report.


There are numerous alignment and spacing options available in Report Designer. You should continue to experiment with the different options available to you in the right-click pop-up menu. Using the available options, adjust the alignment, size, and spacing of your template elements until you are satisfied with the look and feel of your generated reports. As you have done throughout this tutorial, remember to generate reports frequently so you can determine if your adjustments are providing the results that you intend.

Adding a process diagram

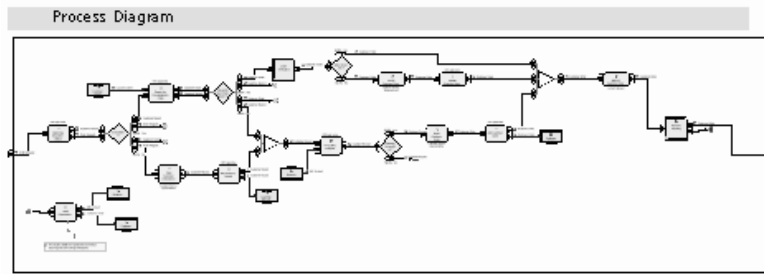
You can include a process diagram in your report template. Any report that you generate using the template will contain a diagram of the process for which you are generating data.

You can choose how you want to display the diagram. Normally, you will include it on a separate page in a report so that you can keep the diagram as large as possible. However, you can experiment with layout and diagram size to determine what works best for you. In this tutorial, you will add a new page to contain your diagram.

To add a process diagram to your report template, complete the following steps:

1. In the palette, click the **Create a new page**  button. Move your cursor to the lower margin of the final template page and click. (Alternatively, you can right-click on the margin of the title page and select **New** → **Page Below**.) A new page is added below the existing template pages.
2. Click the new page to select it. In the Attributes view on the Orientation tab, select the **Landscape** radio button. This layout will give you a larger horizontal area in which to position your diagram.
3. Add a header and footer to the page containing the same information fields that you used earlier in the tutorial. **Tip:** Refer to the previous exercises on adding headers and footers and adding information fields if you need instructions.
4. Add a heading for the diagram:
 - a. Add a static text field near the top left of the page and type Process Diagram.
 - b. In the Attributes view, select the **Use as Heading** check box, and specify the heading level as 1.
5. In the Fields view, expand the Data Fields folder and go to the following node: **Model** → **Process Model** → **Processes** → **Process** → **Diagram** → **Pages** → **Img Src**.
6. Click the **Img Src** node and drag it to a point on the template page below the Process Diagram text field. A placeholder image is added to the template.
7. Click **File** → **Save** to save the template.
8. Generate a report for the Customer Order Handling process.

When you generate the report, you should see the Customer Order Handling process on the final page, resembling the following image:



Note that the page has a landscape layout, as you specified. You may need to adjust the alignment of the diagram compared with the heading, or you might need to make the diagram smaller in order to have it and the heading fit on the same page. As with the layout of other fields, you might need to generate the report several times before you are happy with how your reports are displayed.

This is the final exercise of this tutorial.

Summary

In this tutorial, you have learned the basic process of creating and designing a report template using Report Designer. The methods that you have learned can be applied to any report templates that you create. You should always plan the design of your template before you get started adding elements, as this preparation will save you time later on. If you will be creating several templates, start with a generic "skeleton" template that contains general information fields. When you are comfortable with the look and feel of this skeleton framework, copy that generic template to make your more specific templates.

By completing the exercises in the tutorial, you have learned how to add and use many Report Designer elements. You should continue to experiment with your own templates, adding and manipulating the following:

- Pages and page breaks
- Page headers and footers
- Tables
- Static text fields
- Data fields
- Table of contents
- Summary statistics fields (such as counts, sums, and averages for selected data fields)
- Report special fields (such as page numbers, print date, and record number)
- Groups

Remember that effective report template design also means generating your report many times over to examine your results and make adjustments. It is a good practice to generate your reports after adding just a few elements; again, it will save you time by letting you see your progress and make corrections before any errors or design flaws propagate through the template. By using all the Report Designer tools and functions available, you can create accurate, informative, and professional reports.

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