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1 About this Guide

1.1 Who Should Read this Guide?

This guide is intended for users working with analysis applications on desktop browser and mobile devices.
2 Getting Started

2.1 What is SAP BusinessObjects Design Studio?

SAP BusinessObjects Design Studio enables application designers to create analysis applications and dashboards based on BW, SAP HANA and universe data sources - for browsers and mobile devices (iPads, for example). It is the product of choice when full support for BW and HANA data models and engine capabilities is required. The product offers a design tool that allows you to create applications easily and intuitively without the need for native HTML and iPad UI programming skills.

**Note**

In local mode, you can create demo analysis applications for evaluating SAP BusinessObjects Design Studio with users at customer locations.

Besides analysis applications, application designers can also create planning applications that support both manual and automated data entry and changes to data. The application user can enter the planning data manually in the crosstab (in cells or rows) or use planning functions and planning sequences (also known as planning objects) in SAP BW Integrated Planning to enter data automatically. For planning data, you have to use a BW backend system as the planning system.

SAP BusinessObjects Design Studio also allows application designers to create visualizations with streaming data (push based), and to create visualizations, which have a near real-time connection to SAP HANA or SAP BW (pull based). The application designer simply connects to a streaming data source such as HANA SDS (Streaming Data Services) or SAP ESP (Event Stream Processor) from within the Outline view in the designer and then connects their streaming data to any OOTB Chart. Real-time dashboards can be useful in the area of operational systems, where data may only be relevant as it occurs and where it may not be necessary to persist the data - for example, utility companies monitoring smart buildings and the financial capital markets.

In addition to the standard palette of components in Design Studio, which are used to visualize data and enable user interaction, you can develop 3rd party components with the Design Studio SDK and enhance your analysis applications with custom components. Besides SDK components that visualize data from a data source, you can also create SDK components that act as data sources for SDK components themselves. This enables SDK components to access a broad range of data sources such as local files, Web services, or new types of backend system. You can store and provide access to the analysis applications containing the 3rd party components on any of the supported platforms.
3 Working with the crosstab

3.1 Adjusting Column width in Crosstab for Desktop Applications

Context

If the content of a column in the displayed crosstab is larger or smaller than the calculated column width, you can adjust the column width to the length of the cell content.

Procedure

1. Hover over the column header cell that you want to adjust, to show the clickable area in the right cell margin.
2. Double-click this area to adjust the column width.

3.2 Adjusting Column Width for Crosstabs for iPad Applications

Context

If the content of a column in the displayed crosstab is larger or smaller than the calculated column width, you can adjust the column width to the width of the cell content.

Procedure

1. Tap and hold the column header cell you want to adjust.
2. Choose Adjust column width.
3.3 Calculating New Measures at Runtime

Based on measures that are available in your crosstab, you can calculate new measures. There are two types of calculations.

For simple calculations, you use two or more available measures as operands and an operator to create a new measure. The new measure is the sum of two available measures, for example.

For dynamic calculations, you only use one available measure as an operand and you create a new measure based on this operand. For example, if you use sales volume per region as the operand, you can add a new measure that displays the rank of each region according to sales volume. If you now filter out or add new regions to your analysis, the rank numbers are changed dynamically. These calculations are therefore called dynamic calculations. The newly created measures are added to the crosstab. You can edit the name and delete measures by using the context menu for these measures.

Related Information

Adding (Simple) Calculations [page 8]
Adding Dynamic Calculations [page 9]

3.3.1 Adding (Simple) Calculations

Context

By adding a (simple) calculation, you can create a new measure based on two or more available measures in your crosstab. The menu entry Add Calculation in the context menu of the crosstab is only available if the Selection Type property of the crosstab component has been set to Multi at design time.

Procedure

1. Select the measure headings that you want to use.
   - The first measure that you select is the first operand. Use the \[CTRL\] key to select the next measure that is the second operand. You can also select more than two operands for your calculation.
2. In the context menu, choose Add Calculation [Operator].
   - The following operators are available:
     - Add
     - Subtract
     - Multiply
- Divide
- Percentage Difference
  The new measure calculates the difference between operand 1 and operand 2 as a percentage. For example, operand 1 has the value 80 and operand 2 has the value 20. The new measure displays the value 300%, as the difference is 60 and 60 is 300% of 20. If operand 2 has a higher value than operand 1, the result is negative. For example, operand 1 has value 20 and operand 2 has value 80. The new measure displays the value -75%, as the difference is -60 and -60 is -75% of 80.
- Percentage Share
  The new measure calculates the share of operand 1 in comparison with operand 2 as a percentage. For example, operand 1 has the value 20 and operand 2 has the value 80. The new measure displays the value 25%, as 20 is 25% of 80.

Results

The new calculated measure is added to the crosstab.

A measure value displayed with sign reversal is used in calculations as displayed.

Example

A measure value is 200. If you have selected the sign reversal property in the query definition, the value is displayed as -200 in the crosstab. For calculations in Design Studio, the value 200 is used. If you select this checkbox, the value -200 is used for calculations.

3.3.2 Adding Dynamic Calculations

Context

By adding a dynamic calculation, you can create a new measure based on one measure in your crosstab that works as operand.

Procedure

1. Select the measure heading that you want to use.
2. Choose Add Dynamic Calculation [Operator].
   The following operators are available:
<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Moving Minimum Value</td>
<td>The new measure displays the lowest value available up to this point. For example, there are ten rows with values in your cross-tab. The new measure starts in the first row with the same value as the original measure. If the second row in the original measure has a higher value than the first, the value of the first row is repeated in the second row of the new measure and so on.</td>
</tr>
<tr>
<td>Moving Maximum Value</td>
<td>The new measure displays the highest value available up to this point.</td>
</tr>
<tr>
<td>Accumulative Sum</td>
<td>The new measure displays the sum of all values up to this point. For example, the original measure has eight rows with values. In the fourth row of the new measure, the sum of first four rows is displayed.</td>
</tr>
<tr>
<td>Accumulative Sum of Rounded Values</td>
<td>The new measure displays the sum of all rounded values up to this point.</td>
</tr>
<tr>
<td>Accumulative Count of All Values</td>
<td>The values per measure are counted and numbered starting with 1 for the first value. If there are 8 rows with values, including zeros, which contribute to the total, the new measure displays the numbers 1 to 8 for the 8 values.</td>
</tr>
<tr>
<td>Accumulative Count of All Values that are Not Zero, Null or Error</td>
<td>The values per measure are counted and numbered starting with 1 for the first value, excluding values that are equal to zero. For values that are equal to zero, the last number is repeated.</td>
</tr>
<tr>
<td>Moving Average</td>
<td>The new measure calculates the average of all values up to this point. For example, if there are five rows with values in the cross-tab, the new measure calculates in row 2 the average of the values in row one and two, and so on.</td>
</tr>
<tr>
<td>Moving Average that is Not Zero, Null or Error</td>
<td>The new measure calculates the average of all values up to this point, excluding values that are equal to zero.</td>
</tr>
<tr>
<td>Operator</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Rank Number</td>
<td>The new measure displays a rank number for each value of the original measure. The highest value in the original measure has the rank number 1. If a value occurs more than once, the values are assigned to the same rank number. If there are two identical values with rank number 4, the next smallest value has rank number 5.</td>
</tr>
<tr>
<td>Olympic Rank Number</td>
<td>The Olympic ranked list differs from the basic ranked list as follows: In the Olympic ranked list, when a value occurs more than once, the next lowest value is not assigned the rank incremented by one, but the rank that corresponds to the number of previous values (including the current value). For example, if the rank 4 occurs twice, the new measure displays number 6 for the next lowest value rank.</td>
</tr>
<tr>
<td>Percentage Contribution</td>
<td>The new measure calculates the percentage contribution of a value in the original measure to the overall result of the original measure.</td>
</tr>
</tbody>
</table>

Results

The new measure is added to the crosstab.

3.4 Creating Filters by Measure

By using the Filter by Measure entry in the context menu on a dimension in the crosstab, you can define filters to get the Top N or Bottom N values of a specified dimension, based on their measure values.

This means the filter is applied to the members of the selected dimension and does not affect totals or subtotals in your crosstab.

Filtering measures is a dynamic action. Whenever you change the view of your data, the filter is applied again. For example, if you add a Top 5 filter, five members are shown in your analysis. If you then add members that you previously removed from the crosstab, some of these newly added members could match the Top 5 criteria and replace some of the previously displayed members.

Prerequisites

This function is only available for SAP BW data sources or data sources based on SAP HANA HTTP connections via SAP HANA Info Access Service (InA).
Creating a measure-based filter

1. Right-click on a dimension header or dimension member in your crosstab and choose *Filter by Measure*. A new dialog box opens.
2. In the dialog box, perform the following steps:
   ○ Choose the measure that you want to use as the basis for filtering.
   ○ Choose the operator (*Top N* or *Bottom N*).
   ○ Enter a value for the operator (filter criteria), for example, 5 for Top 5.
   ○ Choose OK.

   A new measure-based filter is created for the dimension you have chosen. This means that the filter only filters the values for this dimension, for example, you filter the Top 5 customers based on their revenue by choosing the customer dimension. If you have additional dimensions in the drilldown, they are not filtered.

Editing a measure-based filter

1. Right-click on a dimension header or dimension member in your crosstab.
2. Choose *Filter by Measure > Edit* to edit an existing measure-based filter. A new dialog box opens.
3. Choose the measure, the operator and value for filter criteria according to your needs.
4. Choose OK. The measure-based filter is changed according to your input.

Deleting a measure-based filter

1. Right-click on a dimension header or dimension member for which you have created a measure-based filter.
2. Choose *Filter by Measure* ➤ *Clear* to remove the measure-based filter that you have created for this dimension.

If you have multiple filters defined for multiple dimensions, you need to repeat this procedure for every dimension that contains a measure-based filter.

**(De)activating predefined conditions**

Measure-based filters that were created in another tool (for example, BEx conditions created in BEx Query Designer or filters created in SAP BusinessObjects Analysis, edition for Microsoft Office) can only be (de)activated in Design Studio.

1. Right-click on a dimension header or dimension member in your crosstab.
2. Choose *Predefined Measure Filters* and click on any of the listed filters to activate or deactivate them.
4 Working with Bookmarks

To optimize efficiency and flexibility when working with Design Studio analysis applications, you can create bookmarks within your applications for reuse again and again. You can decide to create a snapshot of your entire analysis application or only a selected part of your analysis application.

Related Information

How to Drag and Drop Bookmarks [page 33]

4.1 Deleting Bookmarks

Context

You want to delete one or all of your bookmarks within your analysis application.

Note

You cannot delete bookmarks created by other application users.

Procedure

1. Within the application, select the bookmark you want to delete.
2. Select the component to call the delete function.

4.2 Listing Bookmarks

Context

You want to list all the bookmarks available to you in your analysis application.
**Procedure**

Within the application, select the component to call the list function.

All your available bookmarks will be listed in your application.

### 4.3 Loading a Bookmark Using a URL

**Context**

Using a URL in the browser bar, you wish to load bookmarks shared with you by other application users.

**Procedure**

Paste the URL into your native browser bar while the Design Studio application is running.

You will be presented with the shared analysis application.

### 4.4 Loading a Bookmark Using Scripting

**Context**

You wish to load a bookmark from within your analysis application.

**Procedure**

Within the application, select the component that calls the load function.

The bookmark will be loaded within your application.
### 4.5 Personalization

#### Context

You are in an analysis application and you wish to personalize or save the state of this analysis application so that later you can restore that default state when reloading the application.

#### Procedure

To set personalization, select the component that allows you to personalize your application.

### 4.6 Saving a Bookmark

#### Context

You wish to save a bookmark of your entire analysis application or a part of your analysis application.

#### Note

Bookmarks can also be saved in local mode for testing and development purposes.

#### Procedure

Within the application, select the component that calls the save bookmark function. Buttons may be scripted separately to allow you save the entire application or selected parts for usage during the online composition feature.
4.7 Sharing a Bookmark

Context

You want to share by email a bookmark you have created. To share your bookmark by email, follow these steps:

Procedure

1. Open the bookmarked application.
2. Within the application, select the component to call Share Bookmark.
3. A dialog box appears containing the URL of the current bookmark.
4. Choose the Send by email button to open an email directly from your current application browser. The subject field of the generated email is pre-populated with the title of both the application and the bookmark you want to share. The body of the email contains a copy of the actual bookmark link.
5. You can then edit the email as required and share a bookmark of your application by sending the email to the appropriate recipients.
6. To exit the Share Bookmark dialog box, choose the Close button.
5 Working with Info Charts

If your application is created by your application designer using info charts, you will enjoy more functionality when running your application, including using a context menu and configuring the data bound to the info chart. Any changes you make by moving the measures and dimensions up and down within the info chart feeding panel are directly reflected in the info chart.

5.1 Using the Context Menu

You can access the following context menu functions only on the category axis of an info chart:

- for dimensions or dimension members
  - sort the dimension
  - sort by key or text ascending or descending (Text/Key Ascending, Text/Key Descending)
  - change the display of the dimension members
  - switch between different key and text combinations (Key, Text, Key and Text, Text and Key)
  - choice of text presentation type (Short Text, Medium Text, Long Text, Text)
  - change hierarchy of the dimension
  - select hierarchy (and activate it) (Select Hierarchy)
  - expand and collapse the assigned hierarchy (Expand All, Collapse All)
  - expand to a specific hierarchy level (Expand to Level)
- filter dimension members
  - filter the member and move the dimension to the background filter (Keep Member) (only available if user has clicked on a dimension member)
  - filter the member and leave the dimension in the drilldown (Keep Member on Axis) (only available if user has clicked on a dimension member)
  - filter the member and swap the dimension with another dimension from the free axis (only available if user has clicked on a dimension member) (Filter Member and Swap)
  - open the filter to filter the dimension (Filter Members)
- change drilldown
  - add another dimension from the free axis to the drilldown (Drilldown By)
  - swap the current dimension with another dimension (Swap With)
  - remove the current dimension from the drilldown (Remove Drilldown)
5.2 Using the Info Chart Feeding Panel

Context

The info chart feeding panel offers you a representation of all the measures and dimensions bound to your info chart. You can move measures and dimensions up and down within their respective areas in the info chart feeding panel and any changes made to the position of the measures and dimensions are then directly reflected in your info chart. If you make a change to the position of measures and dimensions in the info chart feeding panel and then change the chart type using the chart type picker, the measures and dimensions remain in their new position.

Note

You cannot drag measures into the dimensions area or vice versa.

Procedure

Drag a dimension from the dimensions or measures area of the info chart feeding panel into the columns of rows area of the info chart.

The info chart changes to reflect the selection.

5.3 Changing your Visualization Type

Context

You want to choose a different type of visualization to change how your data is displayed.

Procedure

Select a different visualization type from the dropdown arrow to the right of a group within the Chart Type Picker palette, for example, an info bar chart or an info bubble chart.

Your visualization type changes accordingly, to render your data in a different way.
6 Working with the Filter Line

6.1 Adding a Filter to the Filter Line

Context

You have a Filter Line component in your application, which is linked to your assigned data source.

Procedure

1. Select the + icon to the left of the Filter Line.
   You will see the list of dimensions that you can filter on.
2. Select one of the listed dimensions.
   A Dimension Filter dialog appears with the members associated with the selected dimension.
3. Select from the Selection or Range tabs, the additional filter you want to add to the Filter Line.
4. Select Apply.
   The filter on the selected dimension and member(s) is added the row of filters in your Filter Line and the filter is applied to your data source.

6.2 Changing a Filter in the Filter Line

Context

You want to make a change to an existing filter within your Filter Line.

Procedure

1. Select the filter you want to change.
   The Dimension Filter dialog appears.
2. Make the required changes within the Selection or Range tabs.
   The change you made is applied to the Filter Line and to your data source.
6.3 Removing a Filter from the Filter Line

Context

There are filters listed in your Filter Line and you want to remove them.

Procedure

Select the X icon to the top right of the filter you want to remove.

The filter is removed from the Filter Line and no longer applied to your data source.
7 Working with the Filter Panel

7.1 Filtering Data in the Crosstab using the Filter Panel

Prerequisites

You are working in an application that contains a crosstab and a filter panel.

Context

In the filter panel, click the arrow symbol to the right of the dimension name.

Procedure

1. In the Selection tab, select the dimension members you want to use for the filter OR touch the dimension and type in the member names.
2. Choose Show Selected Members to see your selection.
3. Choose Apply in the filter panel.

Note

If you have to perform further filter operations like defining a range for dimension members, you can Apply all your filter settings at the same time.

7.1.1 Excluding Dimension Members in the Filter Panel

Procedure

1. In the filter panel, click the arrow symbol to the right of the dimension name.
2. In the Selection tab, select the dimension members you want to use for the filter.
3. Choose Show Selected Members to see your selection.
4. Choose Exclude, if you want the selected members to be excluded from the crosstab.
5. Choose Apply in the filter panel.

### 7.1.2 Defining a Range for Dimension Members

#### Context

The range tab in the filter panel is only displayed for dimension members for which you can define a range.

#### Procedure

1. In the filter panel, click the arrow symbol to the right of the dimension name.
2. In the Range tab, choose Starts at and select the dimension member the range should start with.
3. Choose Ends at and select the dimension member the range should end with.
4. Choose Apply in the filter panel.

**Note**

If you have to perform further filter operations like filtering for single dimensions, you can Apply all your filter settings at the same time.

### 7.1.3 Defining Several Ranges

#### Procedure

1. In the filter panel, click the arrow symbol to the right of the dimension name.
2. In the Range tab, define the range.
3. Choose Add To List.
4. Repeat the steps to define other ranges.
5. Choose Show Selected Ranges, to see all defined ranges.
### 7.1.4 Excluding a Range

**Procedure**

1. In the filter panel, click the arrow symbol to the right of the dimension name.
2. In the *Range* tab, define the range.
3. Choose *Add To List*.
4. Choose *Show Selected Ranges*.
5. Choose *Exclude* to exclude the members defined in the range.
6. Choose *Apply* in the filter panel.

### 7.1.5 Defining a Range: Greater Than or Equal/Less Than or Equal

**Procedure**

1. In the filter panel, click the arrow symbol to the right of the dimension name.
2. For **greater than or equal ranges**: in the *Range* tab, choose *Starts at* and select the dimension member the range should start with. For **less than or equal ranges**: in the *Range* tab, choose *Ends at* and select the dimension member the range should end with.
3. Choose *Apply* in the filter panel.

### 7.2 Assigning Dimensions to Rows or Columns of the Result Set

**Procedure**

1. Choose either the rows symbol or the columns symbol on the left of the chosen dimension in the filter panel.
2. Choose *Apply* to implement the change in the crosstab.
7.3 Reordering Dimensions in Rows or Columns

Procedure

In the header of the filter panel, choose group view symbol (rows or columns) to reorder the dimensions.
8 Working with the Geo Map

8.1 Interacting with the Geo Map

When your analysis application contains a geo map, you can interact with data from multiple data sources spread across different layers of the map. The geo map can contain three different types of layers - shapes (polygons, multi-polygons, lines and multilines), points and charts (bubble and pie). You can interact with the geo map in the following ways:

Drilldown into different layers

By selecting the component scripted by the application designer to allow you drilldown into the layers of the geo map, you can reveal different data, depending on which layer is selected.

Change the basemap

You can select a different basemap while running the application, by selecting the appropriate component scripted by the application designer.

Center the map

You can select a component that allows you to center the map around the data contained in the layer you have selected. This repositions the map, so that the area that contains the data becomes the center of the map.

Pan and zoom

The user can use the mouse and/or the default zoom buttons to pan across the entire map and to zoom in and out on the selected area on the map.
Tooltips and legends

As you hover over different areas on the map, the tooltip changes to display the geo-specific dimension and its corresponding measure value. If the layers have been scripted to show the legend, this information is also displayed in the legend.
9    Exporting your Application

9.1    Exporting to PDF - WYSIWYG

Context

You can export to PDF a WYSIWYG (What You See Is What You Get) version of your entire application screen, a selected panel or multiple panels of your application.

Procedure

1. To export a WYSIWYG version of your application or a selected panel or multiple panels of your application to PDF, select the component that calls the export to PDF (WYSIWYG) functionality.
   
   A dialog box appears, allowing you to apply various settings to your exported content.
2. Select from the available options to customize your export to PDF.
3. Select OK.

   A WYSIWYG version of your application is exported to PDF, with options set as selected.

9.2    Exporting to PDF - Report Style

Context

You can export to PDF a report style export of all crosstabs and charts native to Design Studio, and custom SDK components in your application.

Procedure

1. To export to PDF a report style version of your application, select the component that calls the export to PDF functionality.
   
   A dialog box appears, allowing you to apply various settings to your exported content.
2. Select paper size, orientation, metadata, header title, page number, footer text and whether to wrap column header text, row header text, or both in the dialog box. The selections you make will over-write the default settings.
3. Select OK.

A report style version of your application is exported to PDF, with paper size, orientation, metadata, header title, page number, footer text and wrapped column header or row header text and set as selected.

9.3 Exporting to SAP Lumira Desktop

Context

You want to export your data source from your Design Studio application to SAP Lumira Desktop. To do this, follow these steps:

Procedure

1. Select the component in your application to export data from your data source to SAP Lumira Desktop.

   The data source executes in the browser.

2. Select the Save As option to save the generated .lums file to a local directory.

3. Open Lumira Desktop and select Import to Folder.

4. Select the .lums file and select Yes.

   The dataset is opened in SAP Lumira Desktop.
10 Printing an Analysis Application to a Browser

Context

You want to print your analysis application to your browser. Printing to browser produces a WYSIWYG (What You See Is What You Get) version of the analysis application.

Note

Printing to browser is not supported when using the SAP BusinessObjects Mobile solution.

Procedure

Within the application, select the component to call the print function. A WYSIWYG version of your analysis application will then be printed to your browser of choice.

Note

Printing a Design Studio analysis application in Chrome has been disabled.
11  Recording of Applications for Offline Usage

You can record any application workflow for offline use later on by pressing a key combination in the executed application. In general, the displayed state after each interaction step is saved during recording. After recording you can download the recorded steps as a .ZIP file and replay the interaction steps. During playback, it is possible to move forward or backward through the set of saved steps. Apart from moving through the steps, no other type of interaction is possible during playback.

Prerequisites

You can only record applications, if the Design Studio is deployed on the SAP NetWeaver or the BI platform or is used locally.

If you want to record applications, note the following points:

- The maximum number of recorded steps per application is 100. Once this limit is reached, you will be warned, and no further steps will be recorded. It will still be possible to download the currently recorded steps in this case.
- The Prompt dialog box as well as the context menu itself will not be shown during playback; any interaction steps containing the prompts dialog box are skipped. This means the playback skips from the step before the variable dialog box is shown to the step immediately after the dialog box is submitted or canceled.
- The following components cannot be recorded for offline use:
  - geo maps
  - all SDK components

Enabling recording

To enable recording, press the key combination Ctrl + Alt + R. Once the recording mode has been started, a control bar is available at the bottom of the application window. It opens when the user hovers with the mouse at the bottom of the window.

The control bar contains the following buttons (from left to right shown as in the picture above):

- Reset: Deletes all steps captured so far, but does not switch recording on or off.
- Toggle Button Recording Active: switches recording on and off. This icon changes appearance depending on whether recording is active. If recording is currently active, the icon is displayed as a pause button (like in a media player). If recording is currently inactive, the icon is displayed as a record button. This toggle button
allows the user to skip steps, which are not required in the recording. When the user presses the pause button, the step immediately before the pause button was pressed is included in the recording, but the pausing step itself is not. When the user presses the resume button, the resuming step is included in the recording.

- **Stop**: Turns off the recording feature altogether. This also removes the recording control bar and clears all recorded steps.
- **Download**: Downloads the recorded steps as a .ZIP file. This opens a browser download window. After the file has been downloaded, the set of captured steps is reset (the result is the same as clicking the Reset button).

**Opening the downloaded .ZIP playback file**

The downloaded .ZIP file has the same name as the application. In order to start playback, you have to unzip the .ZIP file and open the file `index.html` contained in the ZIP file. All other files should not be directly accessed.

**Controlling playback**

The playback control bar contains three buttons and a page/pages indicator:

![Playback Control Bar](image)

From left to right as shown in the picture above:

- **Go to first step**: Displays the first recorded step.
- **Previous step**: Displays the step before the currently displayed step.
- **Next Step**: Displays the step after the currently displayed step.
- **Current / Total page indicator**
12 Working with the Online Composition Feature

Using the online composition feature, you can create your very own customized dashboard or visualization online using bookmarks created by you or indeed by other users from your line of business. To create your own online dashboards, you can apply the drag and drop paradigm to drag your bookmarks from a gallery and drop them onto your layout area and arrange them as you wish. In this way, you are creating new applications that you can now save and share with other application users. As part of online composition, the layout area adjusts itself to accommodate the bookmarks or visualizations as they are dropped in.

You can populate your gallery with different bookmarks by selecting from a tree structure, which represents the collection of bookmark folders to which you have access. You can also save one of your newly created dashboards or visualizations to the appropriate folder within this tree structure.

To further enable you to explore your data while running your application, you can also apply a global dimension filter across all portable fragment bookmarks or smart objects that you drop from your gallery into your layout area.

The application designer uses scripting methods to allow you to utilize all of these features in your applications. Alternatively, they can use out-of-the-box templates that allow them to quickly create applications for you to use online. For example, the Online Composition Template.

For more information on using these templates, you can refer to the chapter in this guide called Using the Online Composition Template.

12.1 How to Drag and Drop Bookmarks

Context

It is important to note that there are prescribed user interactions when dragging and dropping bookmarks from the gallery to the layout area. To drag and drop your bookmarks successfully, you must do the following:

Procedure

1. Select your chosen bookmark from the gallery and drop it onto your layout area.
2. You can replace the content in an existing area by dropping a bookmark from the gallery into the same area.
3. When adding content, you should drop the bookmark to the right or below an existing area.
4. If you add content to the right, your content is added as a new column in the layout area.
5. You can freely resize the cells by moving the mouse pointer between two cells. A resize bar is displayed. When you drag the resize bar, the areas adjacent to the bar are changed in size accordingly.
6. If you hover with the mouse pointer over the top of an area, a menu bar is displayed. To delete the cell, you have to click the delete symbol in this bar.

7. You can move cells by hovering with the mouse pointer over the top of an area until the menu bar is displayed. By dragging the bar, you can move the cells and drop them within the area as described above.

### 12.2 Assigning Bookmarks to a Folder

**Context**

You can save your own newly created bookmarks or smart objects to a folder within a tree structure, which allows you or other users to re-use your smart objects, once they have access rights to that particular folder.

**Procedure**

Select the component scripted to save your selected bookmark or smart object to a bookmark folder from within the tree structure.

If you do not have access rights to a particular folder, you will not see it appear as an option for you to select. If you have view rights only, you will be able to see the folder, but not overwrite the folder content in any way.

Your bookmark or smart object is saved to the folder tree structure.

### 12.3 Applying a Global Filter

**Context**

You can apply a global dimension filter across all smart objects that you drop into your layout area. This offers you a way to experiment with your data while running your application. Once a global filter is applied, the smart objects that have been dropped into the layout area and have these dimensions in common, will update to reflect this global filter - even if they are from different queries. All other smart objects dropped into the layout area, that do not have these dimensions in common will not be updated.

**Procedure**

1. From the gallery, drag and drop your first smart object into the layout area.

   The filter line across the top of your application is populated with the list of dimensions associated with the data source assigned to your first smart object.
2. Add more smart objects as required to the layout area.
3. Select from this dimension list, the dimension you wish to use as a global filter across your dashboard.
   Your visualization will change to display the newly applied global filters on the smart objects that have the selected dimension filter in common.

12.4 Using the Online Composition Template

You can use the Online Composition Template to utilize all the online composition features.

12.4.1 Creating Custom Dashboards

Context

Your application designer can create an application for you using the Online Composition Template. This will allow you to create your own smart objects and build your own dashboards.

Procedure

1. Select the Create menu item at the bottom of the first page of the template.
   This brings you to the second page of the template.
2. Drag and drop the required visualizations from the gallery onto the layout area.
   For more information on how to successfully use the drag and drop paradigm, see the chapter in this guide called How to Drag and Drop Bookmarks.
3. Select Save.
   You will see your application represented by a tile on the first page of the template.
12.4.2 Sharing a Dashboard

Context

The template includes a way for users to share their newly created dashboards with colleagues. To share a dashboard, follow these steps:

Procedure

1. Select a tile on the first page of the template.
2. Select the Share menu option.
   A dialog pops up with the option of sending an email containing a link to your dashboard.

12.4.3 Opening a Dashboard

Context

You can open a dashboard in read mode, by doing the following:

Procedure

1. Select a dashboard tile from the first page of the template.
2. Select Open.
   This will open the dashboard in read mode.

12.4.4 Deleting a Dashboard

Context

You can delete a dashboard from the template.
Procedure

1. Select a dashboard tile on the first page of the template.
2. Select the menu option *Delete*.

12.4.5 Filtering the Gallery

Context

You can choose to populate the gallery with different bookmarks or visualizations, from which to create your own dashboard.

Procedure

1. Select a folder from the tree structure which represents the bookmark folders to which you have access. This tree structure appears above the bookmark gallery.
   Selecting a folder from this hierarchical tree updates the gallery with the bookmarks or visualizations available to you from that particular folder.
2. Select from this new collection of visualizations to drag and drop from the gallery onto the layout area to create your dashboard.

12.4.6 Exporting to PDF

Context

You can export to PDF, a WYSIWYG (What You See Is What You Get) version of your dashboard.

Procedure

1. Select the *Export to PDF* button.
   A dialog box appears allowing you to customize how your dashboard will appear when exported to PDF.
2. Select *Export to PDF* at the bottom of the dialog box.
   Your dashboard is generated into a PDF with all the options you applied before exporting.
13 Using the Data Discovery and Visualization Template

You can use the Data Discovery and Visualization Template to create your own custom online dashboards containing visualizations representing data from different SAP BW and SAP HANA data sources.

13.1 Selecting an Initial Data Source

Context

You can create your own custom online dashboards containing visualizations representing data from different datasets. This offers you a very rich graphical representation of your data. To select an initial data source, follow these steps:

Procedure

1. Open the online self-service data discovery and visualization application.
   You will be prompted to connect to a recently used query or a data source.
2. Select one of the following options:
   - Select Recently Used Queries to select a query from a list of all the queries you have already used to date.
   - Select Select a System to select the data source and the query you want to assign to your dashboard, if there are no recently used queries listed.
3. Select Next and OK.
   The default Visualize page opens, displaying the measure and dimensions from your selected data source.
13.2 Changing a Data Source Within an Application

Context

It is possible to create dashboards online using data from multiple data sources. This offers you greater flexibility and insight into your data. To change a data source while working within an application, follow these steps:

Procedure

Select a query from the dropdown list at the top of the Visualize or Compose pages of the application.

If you select from the top of the Visualize page, the list of measures and dimensions available to you changes to reflect the new data source. You are now able to work with the data from a different data source to create the visualizations for your custom dashboard. If you select from the top of the Compose page, the visualizations in the gallery change to reflect the new data source, offering you more options when dragging and dropping visualizations into your dashboard.

13.3 Creating Visualizations

Context

You can create a whole collection of different visualizations on-demand by following these steps:

Procedure

1. In the Visualize page, drag and drop dimensions to the rows or columns area.
   The default visualization in the layout area changes automatically to reflect your dimension selection. The visualization is automatically saved to the gallery.
2. By default all the measures are displayed in the visualization. To display only some of the measures, you must use the context menu to filter out the measures you do not need. To access the context menu, right-click on a measure and select Filter Measures.
3. Select the member you want to display.
4. Select Apply.
   The same visualization saved in the gallery in the layout area changes automatically to reflect your measure selection.
5. Select a different chart type from the Chart Type Picker using the dropdown arrows to the right of each group of visualizations.
The visualization in the layout area changes accordingly.

6. To create another visualization, select the + icon in the gallery.

7. Repeat steps 1 to 6 until you have created the number of visualizations required.

You can also change the data source. For more information on how to do this, refer to the chapter in this guide called Changing a Data Source Within an Application.

13.4 Renaming a Visualization

Context

Visualization titles are based on the query used to create them. To change the title of your visualization, follow these steps:

Procedure

1. Select the cogwheel to the top right of the layout area of the Visualize page.
2. Select Rename.
3. Select Restore Default Title to change the title back to the generated title.

The generated title is based on the data source selection.

13.5 Show or Hide Title

Context

You can show or hide the title of your visualization, by doing the following:

Procedure

Select the menu option Show/Hide Title from the cogwheel to the upper right of the layout area of the Visualize page.
13.6 Adding and Removing Filters

Context

You can add, remove, view and edit filters and measures defined for your assigned data source.

Procedure

1. Select the + icon to the left of Add Filters.
2. Select a dimension from the list in the dialog box. If a dimension contains a dimension hierarchy, select to expand the list to show all dimensions included in the hierarchy.
   
   The filters you select to apply to your data source will appear across the top of the layout area.
3. You can remove a filter by selecting the x icon beside the applied filter.
   
   You can return to the dialog box to further modify your dimension filter, by selecting the applied filter from the Add Filters panel.

13.7 Deleting a Loaded Query

Context

You can delete a loaded query from your custom dashboards and all visualizations associated with it, by following these steps:

Procedure

1. Select from the dropdown list at the top of the Visualize page, the loaded query you want to delete from your custom dashboard.
2. Select the delete icon.
   
   You will be prompted to confirm that you want to delete the selected query.
3. Select Yes.
   
   The selected query will be deleted from the dropdown and all visualizations associated with that query will no longer appear in the gallery.
13.8 Open Prompt Dialog

Context

You can use *Open Prompt Dialog* to select the values for the variables set filters that determine which data is included in a visualization. To do this, follow this step below:

Procedure

Select *Open Prompt Dialog* from the cogwheel in the top right-hand corner of the layout area in the *Visualize* page to display a list of required and optional variables.

Multiple values can be selected when a variable allows for multiple values. The prompt values are saved automatically with the visualization.

13.9 Creating Custom Dashboards

Context

When you have created the collection of visualizations you require, you can proceed to use these to create your own custom dashboards. To do so, follow these steps:

Procedure

1. Select the *Compose* page at the top of the application.
   
The *Compose* page opens and the gallery is populated with the visualizations currently open in the *Visualize* page.
2. Drag and drop the visualizations from your gallery onto the layout area to create your own custom dashboard. The dashboard is saved automatically.
   
   You can also change the data source. For more information on how to do this, refer to the chapter in this guide called *Changing a Data Source Within an Application*. Selecting to change data source from the top of the *Compose* page, will result in the visualizations in the gallery changing to reflect the new data source. This offers you more options when dragging and dropping visualizations into your dashboard.
3. Select the *New Story* button to create a new dashboard.
4. Add a title to your dashboard. All other selections are made by default.
5. Select *Create*. 
6. Repeat the process to create as many dashboards as you wish.

### 13.10 Switching Between Dashboards

**Context**

You can switch between dashboards, while working in the Compose page.

**Procedure**

Select the dashboard you wish to work with by selecting it from the dropdown list at the top of the Compose page. The dashboard that appears in the layout area changes according to your selection.

### 13.11 Sharing a Dashboard

**Context**

You can share your dashboard as a bookmark with other users by doing the following:

**Procedure**

Select the Share button.

A dialog pops up with the option of sending an email containing a link to your dashboard.

### 13.12 Exporting to PDF

**Context**

You can export to PDF, a WYSIWYG (What You See Is What You Get) version of the currently displayed page of your dashboard.
Procedure

1. Select the *Export to PDF* button.
   
   A dialog box appears allowing you to customize how your dashboard will appear when exported to PDF.
2. Customize the following options before exporting - page size, orientation, header title and footer text.
3. Select *Export to PDF* at the bottom of the dialog box.
   
   A WYSIWYG version of your dashboard is generated into a PDF with all the options you applied before exporting.
14 Working with Planning Applications

14.1 Entering Data in the Crosstab

In order to have input ready cells or rows in a crosstab, the application designer of your application has assigned an input-enabled data source to the crosstab. Whether input ready cells are displayed also depends on the model in the SAP BW backend system and the initial view of the data source.

Input ready cells display an edit field which, when clicked on, allows you to enter text. When you press Enter or leave the cell by navigating away from it, the system validates the input:

- If the input is invalid, the relevant input area of the cell is highlighted.
- If the input is valid, the entered value is formatted for the relevant data type (for example, a unit is added, the decimal display format is changed, ...).

Besides selecting a cell by clicking it, you can also use the tab key to move forward from cell to cell in a given row. If you have modified any value in an input ready cell, the first press of Tab validates the input, and the second press of Tab moves the focus to the next cell.

**Note**

It is not possible to delete data in input ready cells. When you enter a blank (empty) input, the cell is reset to its initial value. In case you enter a 0 (zero) value, if the data type allows this, the 0 is set as the new cell value.

14.2 Locking Cells

**Context**

You can lock input-ready crosstab and total cells in planning applications. A locked cell cannot be changed manually when the crosstab is recalculated. The cells are locked for the current user session only. You can also unlock the cells during the session.

**Procedure**

1. Select the crosstab cell you want to lock.
   
   The selected cell must be input-enabled and must not have been changed since the last recalculation.

2. Open the context menu of the selected cell and choose Lock cell.

   If you want to unlock the cell, select it and open the context menu. You can now deselect the menu entry Lock cell.
Results

The selected cell is locked for changes and is displayed with a lock icon.

[Image: locked cell icon]
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