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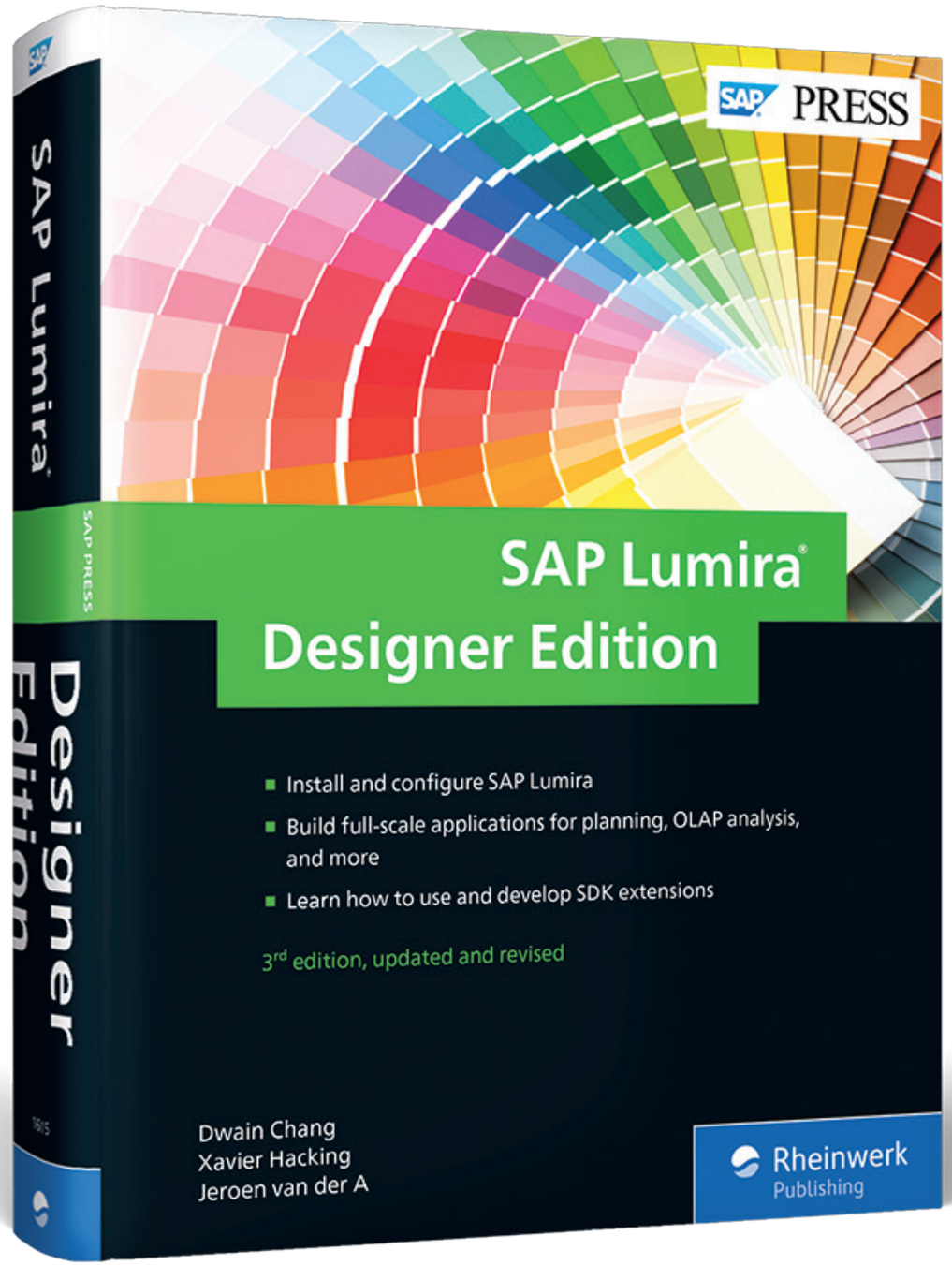


# *Reading Sample*

*This sample chapter introduces the SAP Lumira, designer edition workspace and its elements. Before you can start building dashboards and applications with SAP Lumira, designer edition, you should know your way around the development environment.*



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Chapter 5

# The Integrated Development Environment



*Before you can start building dashboards and applications with SAP Lumira, designer edition, you should know your way around the development environment. This chapter introduces the SAP Lumira, designer edition workspace and its elements.*

SAP Lumira, designer edition allows developers to create interactive applications and dashboards. With its integrated development environment (IDE), the developer can create a user interface (UI) with components from a predefined library, configure the properties of these components, and set up data connections with source systems. Finally, the application can be published to the SAP BusinessObjects Business Intelligence (BI) platform. SAP Lumira, designer edition is fully what you see is what you get (WYSIWYG), which eases the development process.

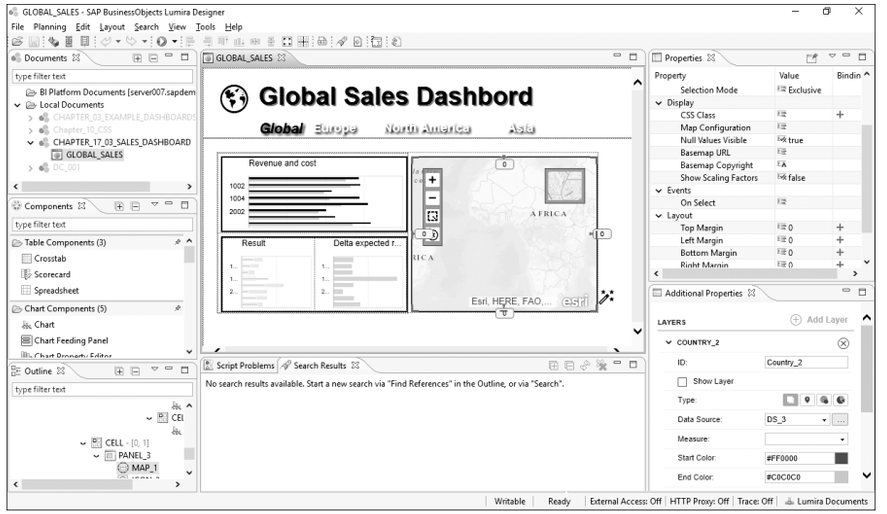



**Figure 5.1** Integrated Development Environment

Figure 5.1 shows the SAP Lumira, designer edition development environment, including the menus, toolbar, and the Layout Editor. The **Documents**, **Components**, **Outline**, **Properties**, **Additional Properties**, **Error Log**, **Search Results**, and **Script Problems** tabs are also visible. This chapter will introduce you to all these features in the SAP Lumira, designer edition IDE and help you get familiar with the menus, toolbars, and views available in this tool.

## 5.1 Menu

The menu bar is located at the top of the SAP Lumira, designer edition window and contains eight dropdown menus. We'll discuss each of these menus and their items next.

### 5.1.1 File

The **File** menu has the most options in SAP Lumira, designer edition. This menu allows you to create, open, save, or execute an SAP Lumira, designer edition application. All the options in the **File** menu are shown in Figure 5.2.

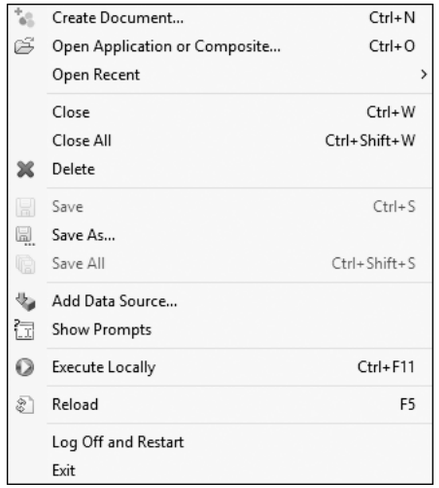



**Figure 5.2** File Menu





#### Create Document, Open Application or Composite, and Open Recent

An SAP Lumira document is a collection of applications, composites, and MIME repository items. Before you can create a dashboard application, you'll have to create an SAP Lumira document. The first time you create an application, the document will be created automatically. After the first time, you'll open the **File** menu, right-click on the Document Explorer (Figure 5.3), or use the keyboard shortcut Ctrl+N.



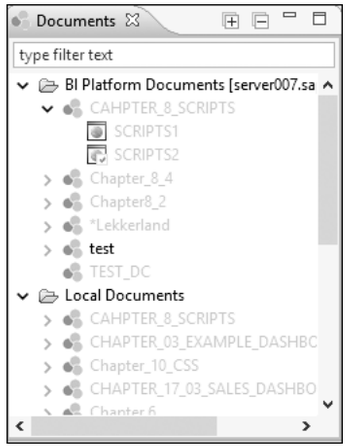



**Figure 5.3** Documents Tab

When you select the option to create a new document, a prompt window will open where you can name the document and choose an existing template, as shown in Figure 5.4. When you are connected to the SAP BusinessObjects BI platform, you'll have to specify a folder location where you want to store your SAP Lumira document. Your new document will appear in the Document Explorer along with a standard application called "APPLICATION". You can choose from five standard templates and one ready to run template.

The **Open Application or Composite** option lets you open an existing application or composite stored on your PC or on the SAP BusinessObjects BI server. Instead of using this menu, you can also double-click on the application or composite in the **Documents** tab (Figure 5.3).

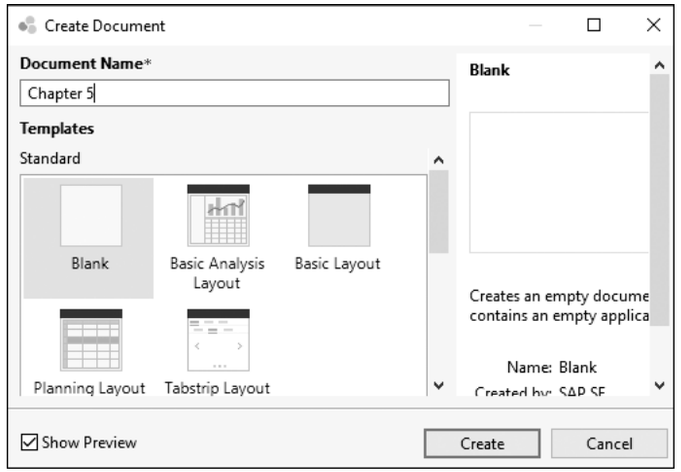



**Figure 5.4** Creating a New Document

The **Open Recent** menu item is a quick way to return to recently opened SAP Lumira applications or composites.

### Close, Close All, and Delete

The **Close** option, accessible by shortcut Ctrl+W, closes the currently opened application or composite. The **Close All** option, accessible by the shortcut Ctrl+Shift+W, closes all opened applications or composites.

The **Delete** menu option deletes the currently opened application or composite.

### Save, Save As..., and Save All

If you want to keep the changes you've made to an application, you can use the **Save** command to overwrite the original saved file with the newer version. The keyboard shortcut for this command is Ctrl+S.

If you don't want to overwrite your original saved file, you should use the **Save As...** option. You'll be prompted for a new (unique) name, and then, you can choose to save the application in the same SAP Lumira document, or you can choose another **Target Document** (Figure 5.5).





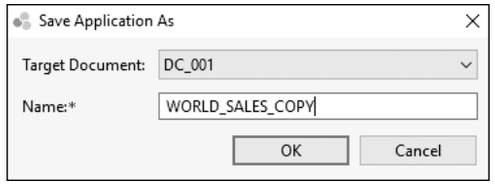



**Figure 5.5** Save As...

When you're working with multiple applications or composites at the same time, the **Save All** command can save changes for all these applications at once. The keyboard shortcut for this option is Ctrl+Shift+S.

### Add Data Source... and Show Prompts

The **Add Data Source...** option lets you add a data source to an open application or composite. You can also right-click on the **Data Sources** folder and choose **Add Data Source...** from the context menu (Figure 5.6). When you select this option, a new prompt window will open (Figure 5.7) where you can choose an existing connection. When working on a document on the SAP BusinessObjects BI platform, the connection defined on the SAP BusinessObjects BI platform will be available. When working on a local document, the connection in your SAP GUI will be shown. If you know the exact technical name of the query you want to use, you can add the technical name as well. Otherwise, you'll have to browse to a specific query (Figure 5.8) or use the search function to search for your query.

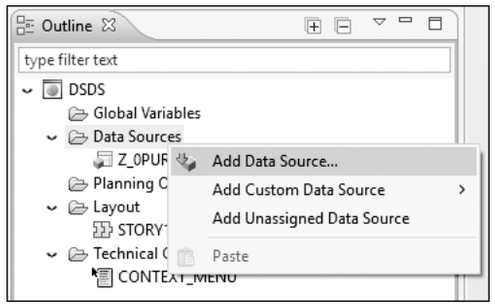



**Figure 5.6** Outline Tab

As shown in Figure 5.7, the data source will be assigned a default alias name starting with **DS_1**. You can change this name if you wish. When you are done, just click **OK**, and the data source will appear in the outline view in the **Data Sources** folder. You can use the data sources in this folder and connect them with other components in your application.

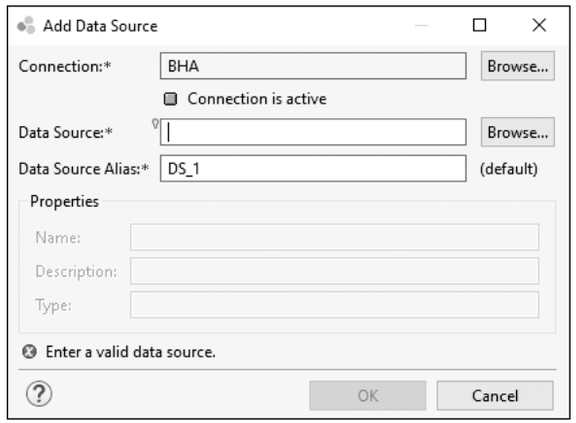



**Figure 5.7** Adding a Data Source

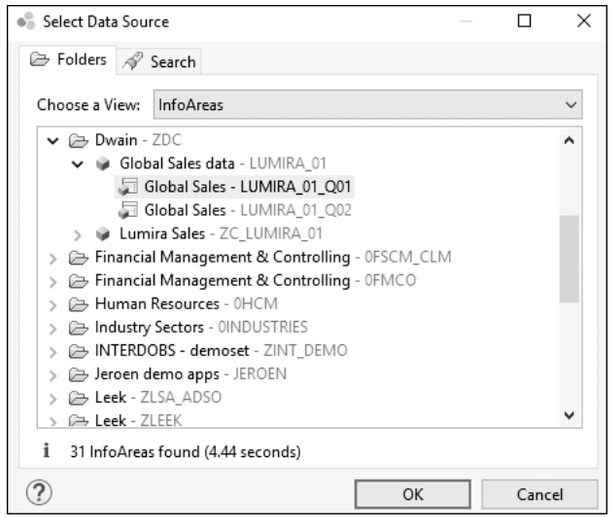



**Figure 5.8** Selecting a Query





**Tip**

To quickly assign a data source to a component that has already been added to the application, you can drag and drop the data source on top of either the item in the outline view or the component in the layout editor.

The **Show Prompts** menu item displays the prompts that were initially inserted when you added a data source with prompts to your application. You can also change the prompt values (Figure 5.9).

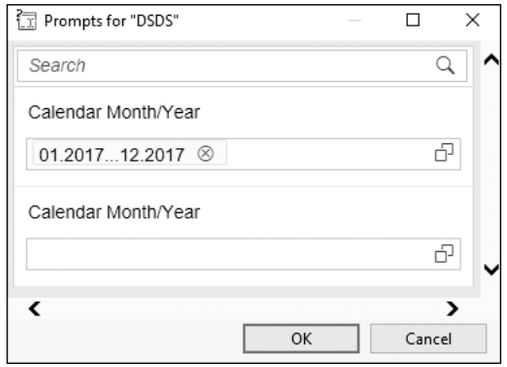



**Figure 5.9** Prompts Screen

### Execute Locally

The **Execute Locally** option lets you run your application using your PC as a server. Using this option lets you skip the SAP BusinessObjects BI platform. The advantage with running the application locally is that you can make changes to your application and run the modified application locally without having to save the application.

### Reload

Sometimes, you may need to reload your application, for example, when you've made changes to one of the data sources and want these changes to be displayed in your application. You can use the **Reload** menu item or use the keyboard shortcut F5.

### Log Off and Restart, Exit

The **Log Off and Restart** option lets you disconnect from the SAP BusinessObjects BI platform (if you are connected) and restart SAP Lumira, designer edition. The **Exit** option closes SAP Lumira, designer edition. For both options, you'll have the choice to save your work if you did not already do so.

## 5.1.2 Planning

The **Planning** menu contains two options: **Add Planning Function** and **Add Planning Sequence** (shown in Figure 5.10). Planning functions and planning sequences are SAP Business Warehouse (SAP BW) objects that can be used in applications that use SAP BW Integrated Planning (SAP BW-IP). Both of these objects are modeled in SAP BW.

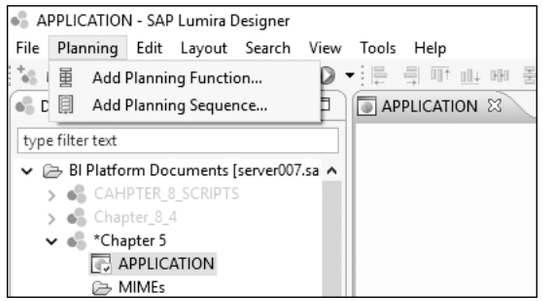



**Figure 5.10** Planning Menu

With SAP BW-IP, users can enter plan values into an application that can be then saved back into the InfoCube in SAP BW. Entering plan values can sometimes be a lot of work, but instead of manually entering the values in every single data cell, users can define some logic for this task. For instance, let's say the logic for planned values might be to use last year's actuals increased by 5%. A planning function can be created to achieve this goal. Other planning functions might be to delete the data or to write to save the data. A *planning sequence* is a series of planning functions executed one after the other. We'll discuss planning sequences in more detail in Chapter 9.

## 5.1.3 Edit

The **Edit** menu (Figure 5.11) provides the basic productivity features common in desktop applications. You can quickly undo or redo a certain operation or copy and paste an object.





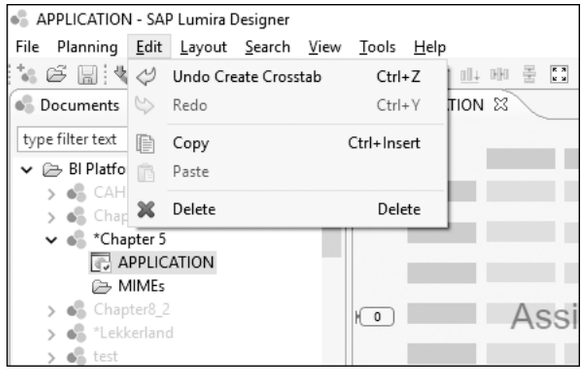



**Figure 5.11** Edit Menu

### Undo and Redo

You can use the **Undo** option to reverse an action you performed. For example, if you just created a crosstab component but decide you do not need it, you can easily go back to the state of your application before the component was created. The keyboard shortcut for **Undo** is Ctrl+Z.

The **Undo** option also shows what action will be undone. As shown in Figure 5.11, the **Undo** action will undo a change that was made to a crosstab, whereas in Figure 5.12 a set visible action will be undone.

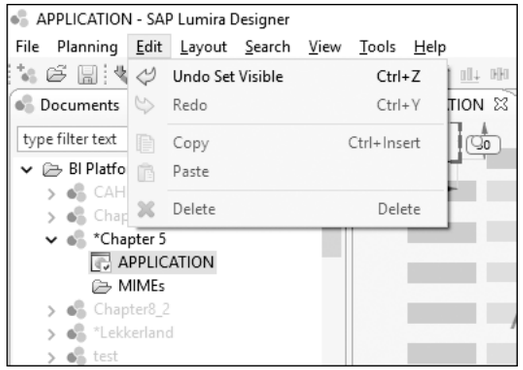



**Figure 5.12** Undo Set Visible

If you used the **Undo** feature but still want to use the change, you can use **Redo** to reverse the undo action. The keyboard shortcut for **Redo** is Ctrl+Y.

In SAP Lumira, designer edition, you can go back and forth across multiple steps with these options.

#### Copy and Paste

Some other well-known features are **Copy** and **Paste**. When you use the **Copy** option on a selected component, the component will be stored in your system's clipboard. You can use the **Paste** option to paste the component into the desired location.

You can use these commands on multiple selected components at the same time. The keyboard shortcuts are Ctrl+C for **Copy** and Ctrl+V for **Paste**.

#### Delete

The **Delete** command erases the selected component or components from the application. The keyboard shortcut for this action is Del.

### 5.1.4 Layout

The **Layout** menu (Figure 5.13) is all about positioning components within an SAP Lumira, designer edition application.

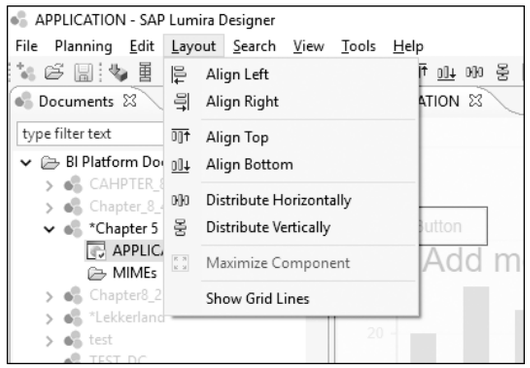



**Figure 5.13** Layout Menu

#### Align

With the four **Align** commands, you can position two or more components on the same left, right, top, or bottom edge. To align components, select two or more components in the outline view (Section 5.3.3) by holding Ctrl or Shift while clicking. Next, select the **Align** command for the alignment that you want to execute.





SAP Lumira, designer edition uses the outermost component as the leading placeholder. Let's say you have three components in your application: component A on the left of the application, component B in the middle, and component C on the right. If you select these three components and choose the **Align Left** command, components B and C will be aligned with the left side of component A because that component provides the outermost position for the **Align Left** command. If you choose the **Align Right** command, components A and B will be aligned with the right side of component C.

#### Distribute

With the **Distribute Horizontally** and **Distribute Vertically** options, a set of three or more selected components can be spaced evenly. The two outer components remain in position, but the components lying in between are arranged such that the distance between the center point of each component is the same.

#### Maximize Component

The **Maximize Component** command enlarges a component to its maximum size. When you use this option, the layout properties of the component will be set, as shown in Figure 5.14, with "0" for the margins and "auto" for the width and height.

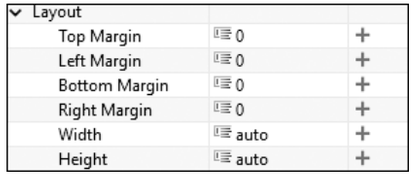



**Figure 5.14** Layout Properties after Using the Maximize Component Command

The **Show Grid Lines** option adds gridlines to the canvas of your application (Figure 5.15), which you can use to better position components. The gridlines are only visible while you design, so when you execute your application, you don't have to worry about the gridlines showing up.

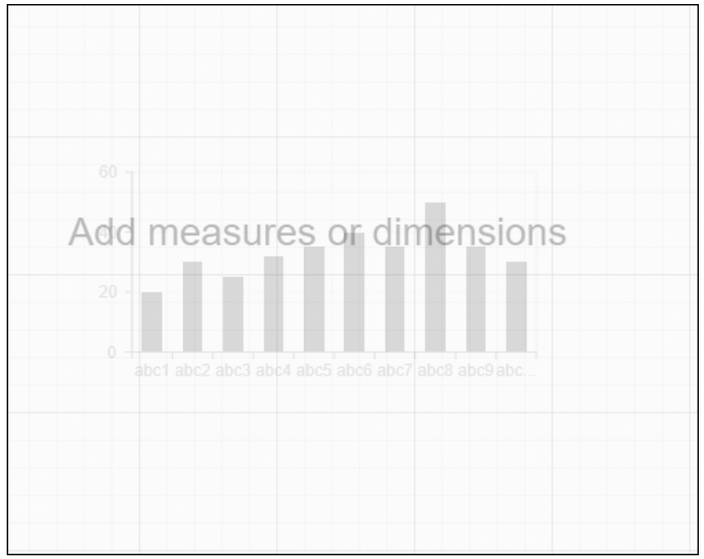



**Figure 5.15** Show Gridlines

### 5.1.5 Search

The **Search** menu (Figure 5.16) brings some very powerful developer features to SAP Lumira, designer edition—**Search...** (to search the application) and **Find References**—which will come in handy when working with more complex applications.

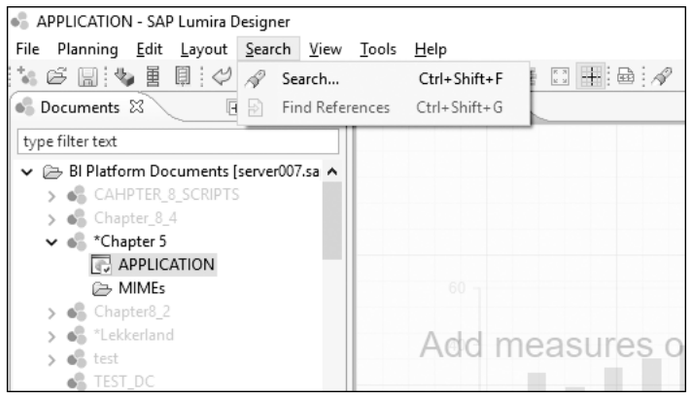



**Figure 5.16** Search Menu





#### Search...

With the **Search...** option, you can search every text string that is used throughout the complete application—whether that string is a part of code, a component name, or a property value. The results box displays the search results while you're typing. You can make the search case-sensitive by selecting this option after clicking the **Options >>** button. You can also specify that you want to search through the hidden components.

As shown in Figure 5.17, ten matches are available when searching for the string "false." The results are grouped by component, showing the corresponding component icon and its name.

You can double-click a component or property to select it. If you double-click a script or a CSS style, its editor opens instantly.

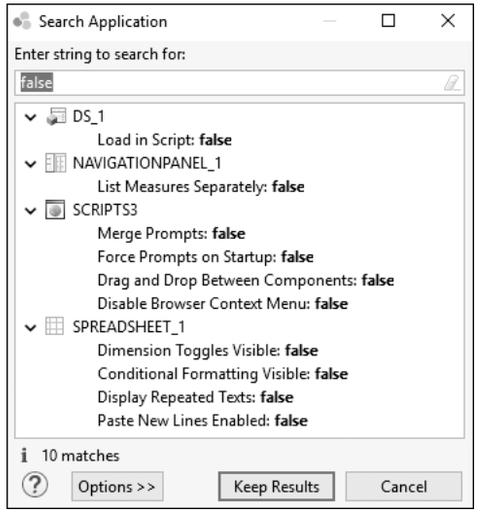



**Figure 5.17** Search Application

Clicking the **Keep Results** button closes the **Search Application** window, and the search results appear in the **Search Results** tab (see Figure 5.18). You can also press Enter to do this.

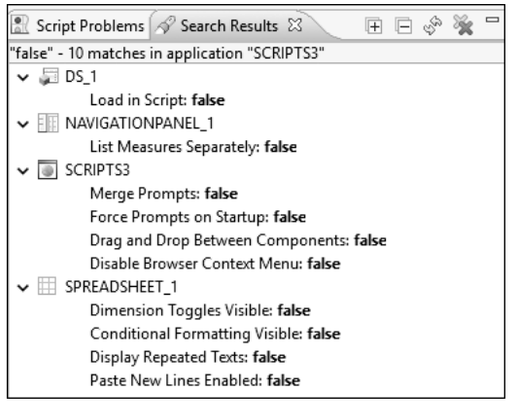



**Figure 5.18** Search Results View

The keyboard shortcut for **Search Application** is Ctrl+Shift+F.

### Find References

The **Find References** option lets you easily find other components and the scripts that are linked to the currently selected component. The results are displayed in the **Search Results** tab (Figure 5.19). The keyboard shortcut for this command is Ctrl+Shift+F.

As with the **Search Application** results, you can double-click a component to select it. Double-clicking a script or a CSS style will open its editor.

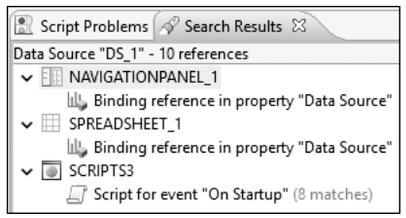



**Figure 5.19** Find References

## 5.1.6 View

The **View** menu enables you to show or hide the tabs that are present in SAP Lumira, designer edition (Figure 5.20). We'll discuss these tabs in depth in Section 5.3, so we'll only briefly mention the key purpose of each tab, as follows:





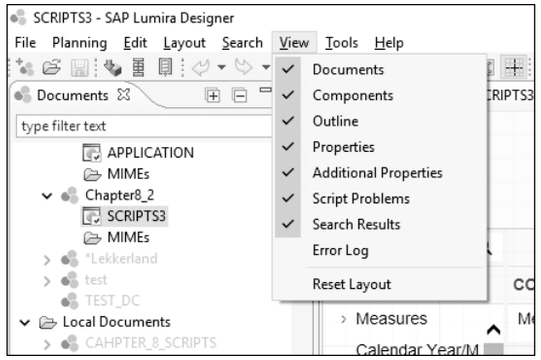



**Figure 5.20** Tabs in the View Menu

- **Documents**
  The **Documents** tab displays all the SAP Lumira documents, applications, composites, and MIME repository objects that you have worked on. If you have a connection to the SAP BI platform, this view will be divided into two parts: one for local documents and another for documents stored online.
- **Components**
  The **Components** tab lists all the components you can use to create a UI in the Layout Editor for your SAP Lumira, designer edition application.
- **Outline**
  The **Outline** tab lists all the data sources, planning objects, layout components, and technical components currently used in the Layout Editor of the SAP Lumira, designer edition application.
- **Properties**
  The **Properties** tab shows the properties of the SAP Lumira, designer edition application or one or more selected components.
- **Additional Properties**
  Some components, such as chart and geo map components, have additional properties to further configure the look and features of the component. The **Additional Properties** tab displays these settings.
- **Script Problems**
  The **Script Problems** tab shows script errors if any exist in the application.
- **Search Results**
  The **Search Results** tab lists the search results from the **Search...** command in the **Search** menu.

- **Error Log**
  The **Error Log** tab lists general errors in the SAP Lumira, designer edition application itself.
- **Reset Layout**
  The **Reset Layout** command rearranges the tabs around the Layout Editor. All tabs are shown except the **Search Results** tab and the **Error Log**.

### 5.1.7 Tools

The **Tools** menu has four options: **Install Extension to Lumira Designer**, **Install Visualization SDK Extension**, **Platform Extensions,** and **Preferences** (Figure 5.21).

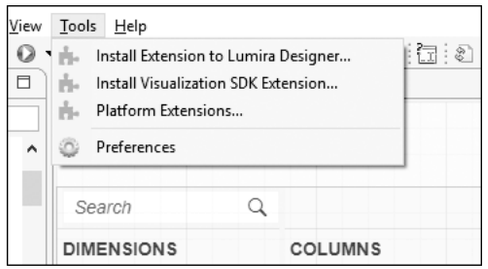



**Figure 5.21** Tools Menu

Although many standard components are available in SAP Lumira, designer edition, you can also use components developed using the SAP Lumira, designer edition software development kit (SDK). These components are installed using the **Install Extension to Lumira Designer** menu item. A window will pop up asking for the path to the SDK (Figure 5.22), which can be a local path or a URL. When you click on the **Get Partner Extensions** link, you'll be guided to a catalog of third-party extensions you can use. Some are even free! The URL to the partner extension is *https://www.sapappcenter.com/productLines/11#!/list/page/1*.

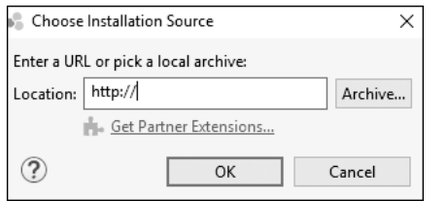



**Figure 5.22** Installing Extensions





The **Install Visualization SDK extension** option also lets you install a third-party chart component. The difference is that SAP Lumira, designer edition treats this extension like a regular chart component. In the properties of any chart component, you'll have the option of switching between chart types. When a third-party chart is installed as a visualization extension, this chart will also be available in the list of selectable charts.

In the **Preferences** menu (Figure 5.23), you can review and change the settings for SAP Lumira, designer edition.

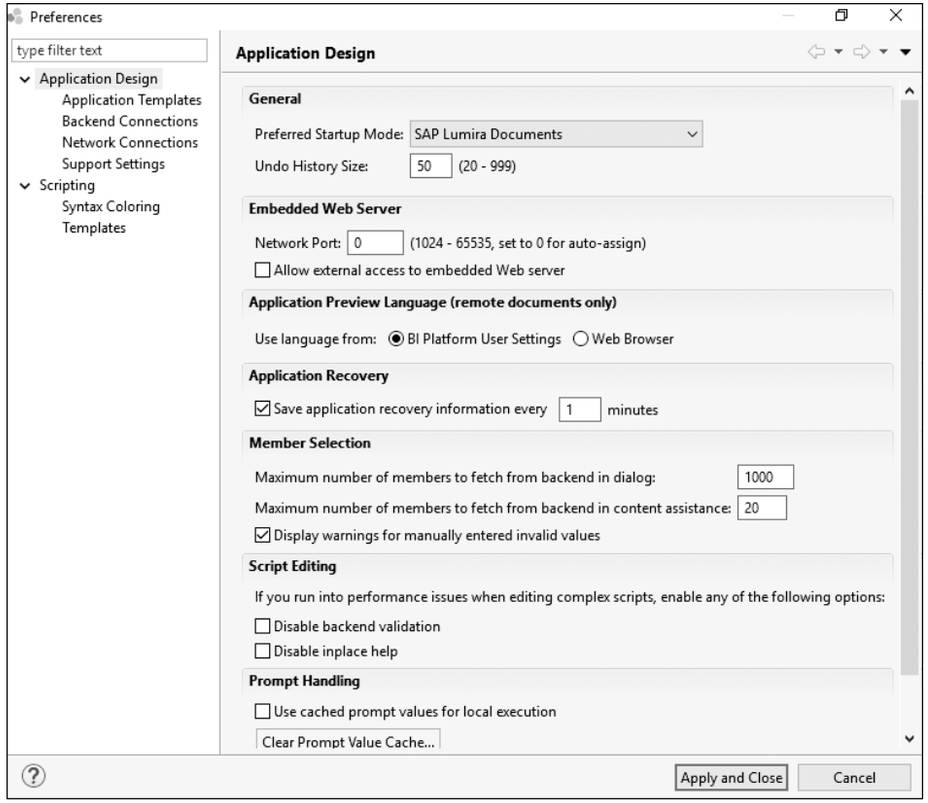



**Figure 5.23** SAP Lumira, Designer Edition Preferences

On the left side of the window, you can choose between the following menus:

- **Application Design**
  - **Application Templates**

  - **Backend Connections**
  - **Network Connections**
  - **Support Settings**
- **Scripting**
  - **Syntax Coloring**
  - **Templates**

Because the bulk of the functionality in the **Tools** menu is within this **Preferences** option, we'll devote some time to these preferences here.

### Application Design

First, let's take a look at the **Application Design** settings.

In the **General** area, you can change the preferred startup mode for SAP Lumira, designer edition. You can choose between the following options:

- **SAP Lumira Documents**
- **Local mode (Legacy)**
- **SAP BusinessObjects BI Platform (Legacy)**

The **Undo History Size** setting determines how many changes can be undone by using the **Undo** command from the **Edit** menu.

In the **Embedded Web Server** area, define the **Network Port** for the web server embedded in SAP Lumira, designer edition to execute applications locally. If you use the default value of "0," SAP Lumira, designer edition will assign a network port.

In the **Application Preview** area, you can define which language settings to use when executing an application: either **BI Platform User Settings**, which are the language settings in the SAP BusinessObjects BI Launchpad, or **Web Browser,** which are the language settings that defined in the web browser. The selected language is used for message texts and tooltips and for determining the correct formatting of numbers, dates, and times.

The **Application Recovery** area gives you the option to have SAP Lumira, designer edition create a recovery copy of your application. To enable this functionality, select the checkbox and define the time interval between each copy.

The **Member Selection** area allows you to define how many members of a dimension are shown when using the Script Editor.





As shown in Figure 5.24, the **Content Assistance** feature, accessible by shortcut Ctrl+Space, has been used to show a list of members for the 0CALMONTH dimension. This list is shown because it consists of fewer than 20 members. You can change this value by editing the **Maximum number of members to fetch from backend in Content Assistance number** setting.

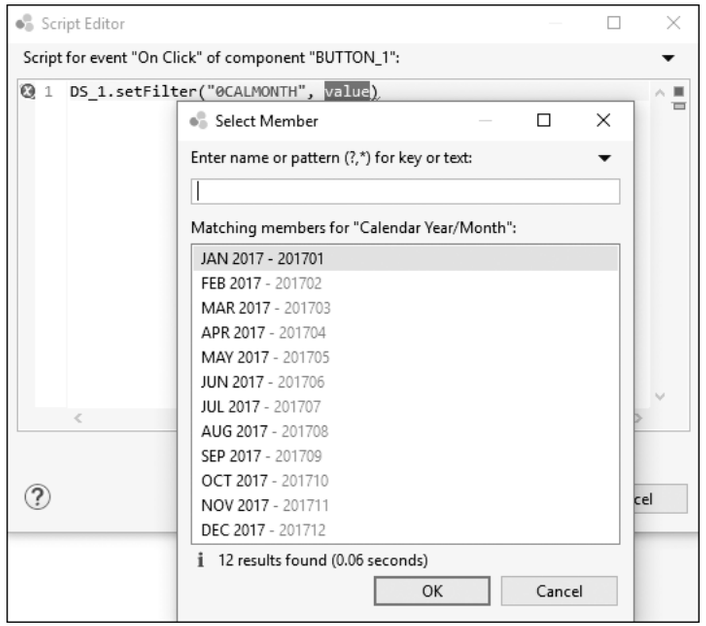



**Figure 5.24** Fetching Dimension Members

In the example shown in Figure 5.25, we've changed the maximum number of members to be fetched to 5. Now, when you want to select a certain member, a warning message will be shown, and you'll have to use the search functionality to search for the desired member.

Finally, you can select the **Display warnings for manually entered invalid values** setting to let SAP Lumira, designer edition display warnings in the Script Editor when nonexistent values are entered.

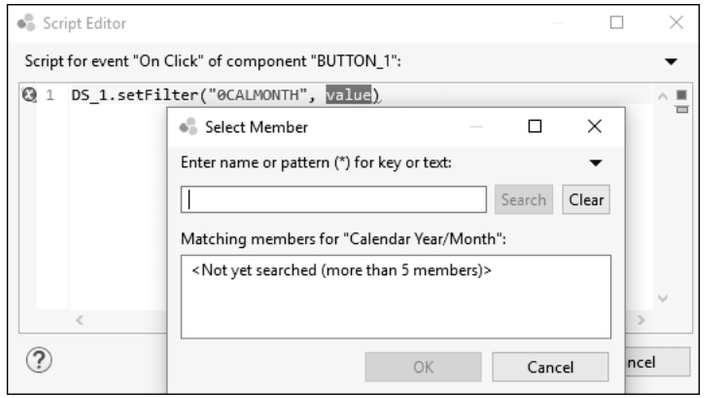



**Figure 5.25** Maximum Number of Members Exceeded

Sometimes you'll run into performance issues, especially when you use many complex scripts in your application. You can select the option **Disable backend validation** and **Disable Inplace Help**. The first option skips master data validation. For instance, if you want to use a script to filter a certain dimension, no master data check will occur if this dimension is valid. When checked, the second option won't display information about the methods you're using in your script.

If your application uses an SAP BEx query with input variables as a data source, you can use the **Show Prompts** command from the **Application** menu to select the prompt values. If the **Use cached prompt values for local execution** option is selected in the **Prompt Handling** section of the **Application Design** screen, the application will use the prompt values that are already set in SAP Lumira, designer edition when executing the application locally.

You can clear these prompt values with the **Clear Prompt Value Cache** button. The dialog box gives you the option to choose the applications for which the cache should be emptied (Figure 5.26).





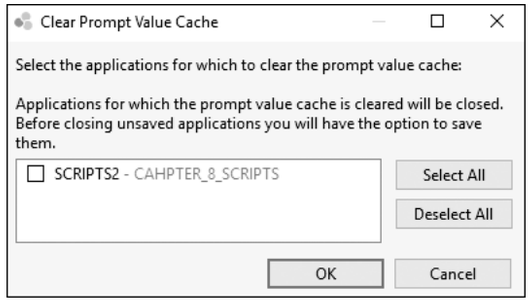



**Figure 5.26** Clear Prompt Value Cache

### Application Templates

When you are in one of the legacy modes, you can create your own application templates and even share these templates with other developers. When you've developed an application, you want to use as template, select the **Export as Template** option from the **Application** menu. Give the template a name and a description and then save this template somewhere on your local or shared drive (Figure 5.27).

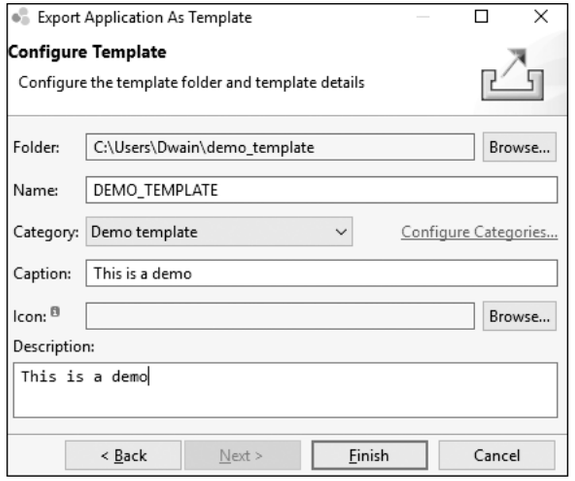



**Figure 5.27** Creating and Exporting a Template

You'll notice that, the next time you create a new application, the template will be available to be chosen in the **New Application** screen (Figure 5.28).

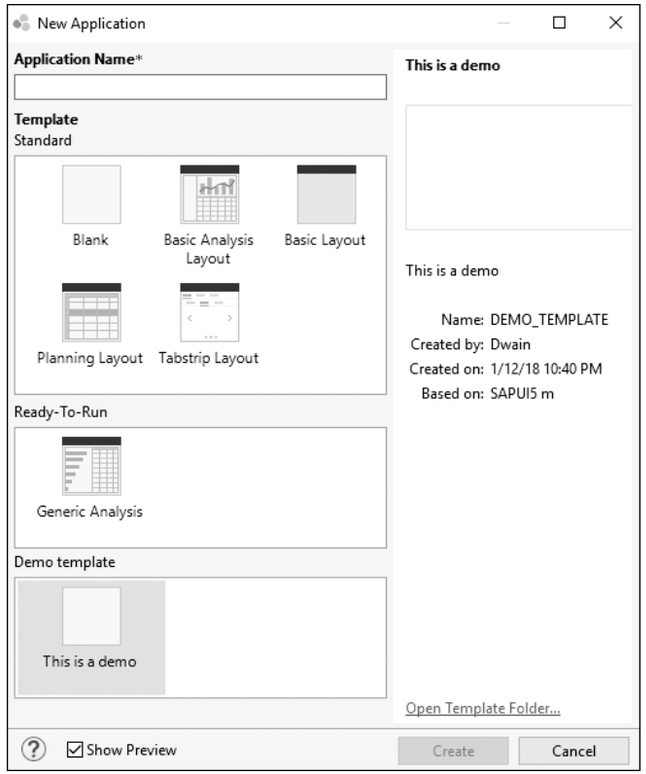



**Figure 5.28** New Application Screen

In addition, when you look at the **Application Templates** option in the **Preference** menu, you'll see the name and path of the template (Figure 5.29).

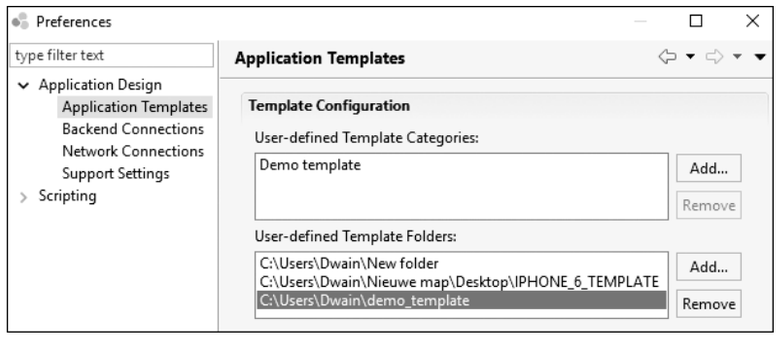



**Figure 5.29** Application Template Settings





### Backend Connections

Now, refer back to the **Preferences** screen shown in Figure 5.23. Click on **Backend Connections** under **Application Templates**. This area will display the available backend connections, which you can use to create data sources. The contents of this area can differ depending on the startup mode you used. When the preferred startup mode is **Lumira Documents**, you'll be able to create a connection to a local SAP HANA ODBC driver connection. When connected locally, you should be able to see all the connections defined in your SAP GUI. When connected via the SAP BusinessObjects BI platform (legacy mode), you'll be able to see all the connections that are defined in the Central Management Console (CMC).

### Network Connections

On the **Network Connections** tab, shown in Figure 5.30, you can configure the system to use a proxy server. Proxy servers act as a connection between the client browser and application and can be used to increase the performance and security of an application.

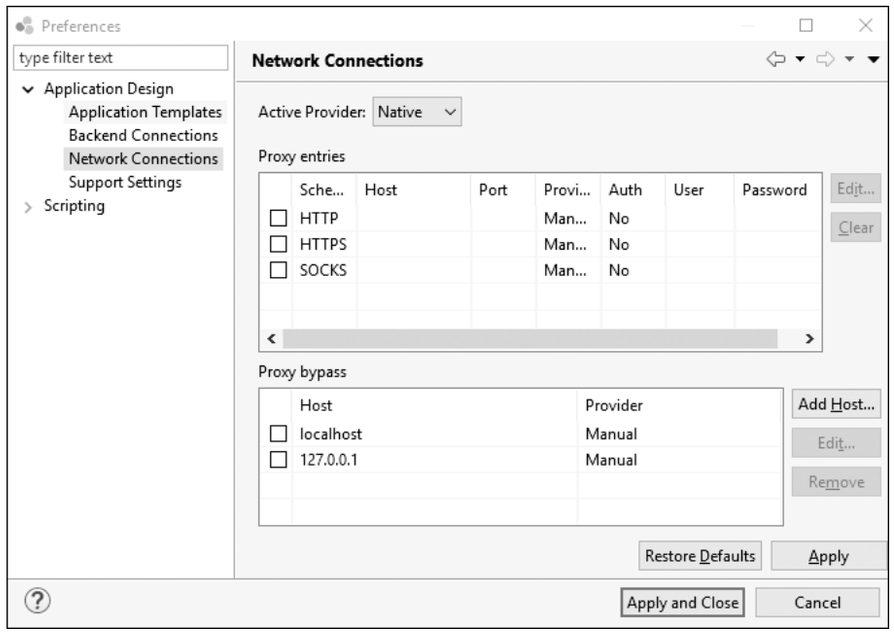



**Figure 5.30** Network Connections

When the **Active Provider** is set on **Native**, the proxy settings defined in the operating system are used. When the **Active Provider** is set to **Direct,** all connections are opened without the use of a proxy server. When the **Active Provider** is set to **Manual**, the settings defined in Eclipse are used.

### Support Settings

Now, click the **Support Settings** option. The options in **Support Settings** can provide help if problems or errors arise (Figure 5.31).

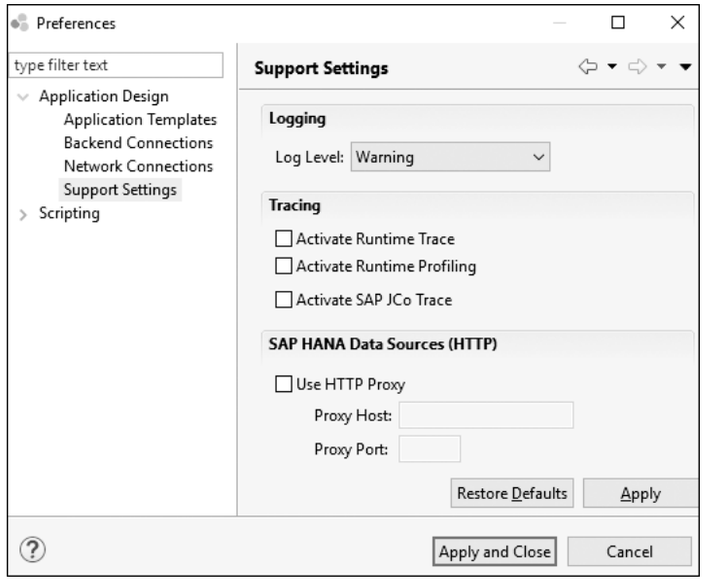



**Figure 5.31** Support Settings

With the **Log Level** setting, you can define the level of detail to be displayed in logs shown in the **Error Log** tab.

To generate a trace file to be used for in-depth analysis of the activities performed in SAP Lumira, designer edition and in the executed application, you can select the **Activate Runtime Trace** checkbox. The trace file is stored in the following location: *C:\Users\<User>\LumiraDesigner-workspace\.metadata\.plugins\com.sap.ip.bi.zen\logs*.





You can also record SAP Java Connector (SAP JCo) traces by checking the **Activate SAP JCo Trace** setting. The trace files can be collected with the **Collect Support Information** option (Section 5.1.8).

> **SAP Java Connector (SAP JCo)**
>
> More information on SAP JCo and SAP JCo traces is available at *http://wiki.sdn.sap.com/wiki/display/SI/Java+Connectivity*.



### Scripting

In the **Scripting** section, you can adjust some settings that support coding activities.

### Syntax Coloring

With **Syntax Coloring** (Figure 5.32), you can adjust the styling of scripts to make the code easier to read.

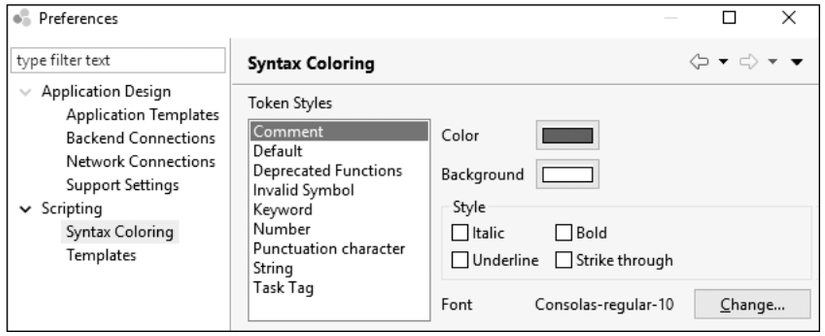



**Figure 5.32** Syntax Coloring

### Templates

Templates for scripts (Figure 5.33) can be used in the Script Editor to generate a predefined code template. In Chapter 8, Section 8.2.2, we'll talk more about these script templates.

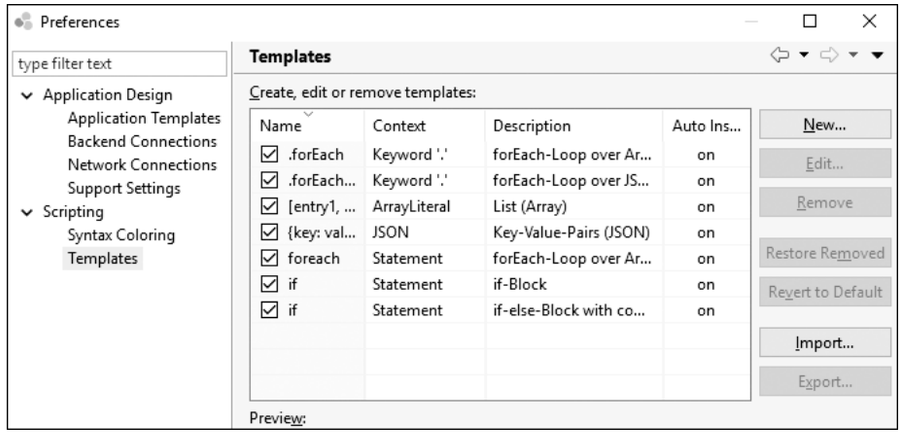



**Figure 5.33** Script Templates

### 5.1.8 Help

As the final item in the menu bar, the **Help** menu (Figure 5.34) provides several support options for SAP Lumira, designer edition, as well as some more detailed information about your current SAP Lumira, designer edition installation.

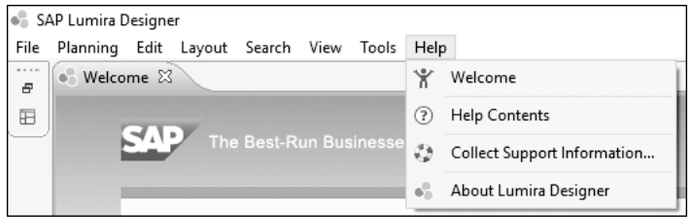



**Figure 5.34** Help Menu

#### Welcome

The **Welcome** option shows the **Welcome** page that you also see when you start SAP Lumira, designer edition (Figure 5.35). The **Welcome** page consists of four sections:

- **Getting Started**
  This area provides a number of links to introductory video tutorials. The **More** link redirects you to SAP's official product tutorial website for SAP Lumira, designer edition.





- **Create New**
  The button in this area closes the **Welcome** page and creates a new SAP Lumira, designer edition application.
- **Recently-Used Analysis Applications**
  The five most recently used SAP Lumira, designer edition applications are listed in this section.
- **Useful Links**
  Some links to the SAP website are listed in this section.

As you might have noticed, this **Welcome** page doesn't bring any real added value to SAP Lumira, designer edition, because most of its features are also available elsewhere. Luckily, in the bottom-left corner, you can deselect the checkbox to disable showing this page at each startup of SAP Lumira, designer edition.

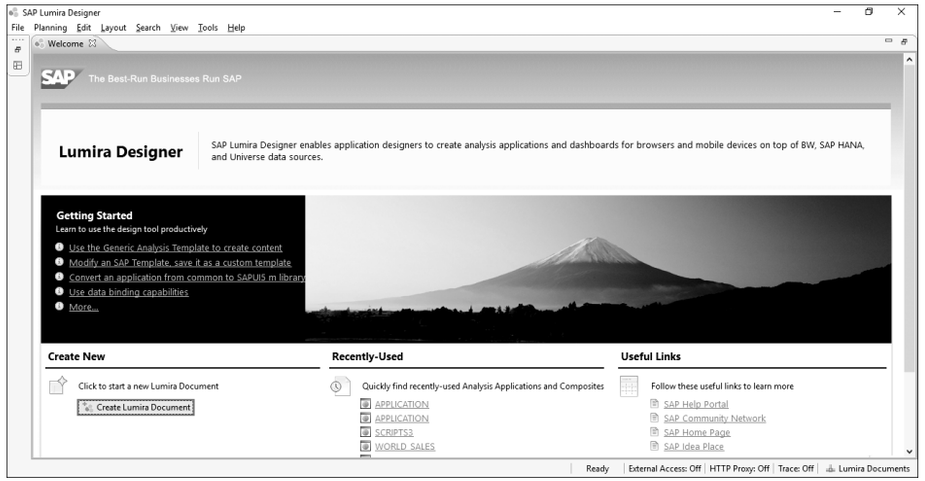



**Figure 5.35** Welcome Page

#### Help Contents

The **Help Contents** option provides the default guide for SAP Lumira, designer edition, created by SAP.

#### Collect Support Information

When you select the **Collect Support Information** option, a ZIP file is created that includes several configuration settings and logs.

### About SAP Lumira, Designer Edition

You can use the **About** option to check the installation and versioning details of your SAP Lumira, designer edition setup (Figure 5.36). When you click on the **Installation Details** button, a new window will open with some additional information about the installed components.

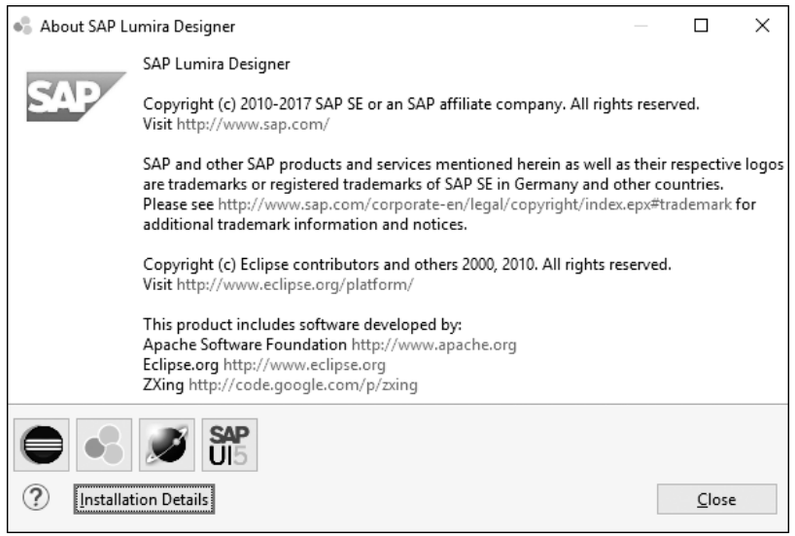



**Figure 5.36** About SAP Lumira, Designer Edition

## 5.2 Toolbar

Positioned just below the menu bar, the toolbar includes many commands that are also available in the menus; however, the toolbar just makes these commands a bit easier and faster to access (Figure 5.37).

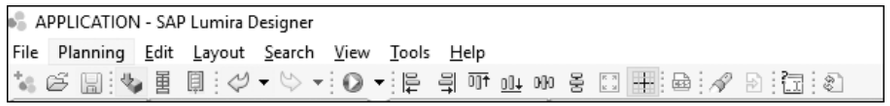



**Figure 5.37** SAP Lumira, Designer Edition Toolbar

You can use simply clicking on a toolbar button to execute the command. As with the commands from the menus, depending on the component or components you've currently selected, some of the buttons are enabled, and some are disabled. For





example, the **Alignment** buttons are only active when two or more components are selected.

The toolbar is divided into eight command groups. Each new group starts with a vertical line of dots. You can rearrange these command groups by selecting the vertical line of dots and dragging the group to the desired position on the toolbar.

The commands that we have not mentioned yet are the **Send Local version to Mobile Device** and **SEND BI Platform Version to Mobile Device** command (see Figure 5.38). These functions generate a QR code (quick response code) of the URL of the SAP Lumira, designer edition application (Figure 5.39). This QR code can be read by a QR code scanner application on a mobile device. Free applications with this functionality are widely available in app stores. After scanning the QR code, you can run the application URL in a browser on the mobile device to execute the SAP Lumira, designer edition application.

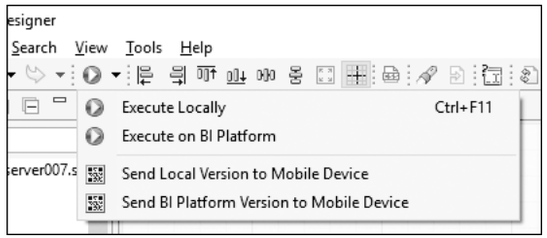



**Figure 5.38** Send to Mobile Device Toolbar Command


**Figure 5.39** Generated QR Code

Table 5.1 lists all the toolbar buttons with a short description of their commands.

| Toolbar button | Command Description |
|---|---|
| | Create a new SAP Lumira, designer edition document. |
| | Open an existing application. |
| | Save the current application. |
| | Add a new data source to this application. |
| | Add a planning function to the application. |
| | Add a planning sequence to the application. |
| | Undo an operation. |
| | Redo an operation. |
| | Execute the application locally. |
| | Left-align two or more selected components. |
| | Right-align two or more selected components. |
| | Top-align two or more selected components. |
| | Bottom-align two or more selected components. |
| | Distribute three or more selected components horizontally. |
| | Distribute three or more selected components vertically. |
| | Maximize the size of a selected component. |
| | Show grid lines on your canvas. |
| | Open the CSS Style Editor (see Chapter 10 for more details). |
| | Search the application. |
| | Find references to a selected component. |
| | Show prompts. |
| | Reload the application. |

**Table 5.1** Toolbar Buttons and Their Commands





## 5.3 Layout Editor

The Layout Editor is the central area of SAP Lumira, designer edition. Functioning as the visual representation of an application, the Layout Editor is the place to design your applications in a WYSIWYG format.

If you make changes to your application, an asterisk (*) will be placed in front of the technical name shown on top of the Layout Editor. This asterisk indicates that the current version of the application hasn't been saved yet.

The Layout Editor is affected by what tabs you select in the **View** menu, which we briefly introduced in Section 5.1.6. Now, we'll go into a lot more detail about what each of these tabs means for you.



### 5.3.1 Documents Tab

The Document Explorer (Figure 5.40) shows all the documents that you are working on. The documents are divided into documents stored on the SAP BusinessObjects BI platform and documents stored on your local PC.

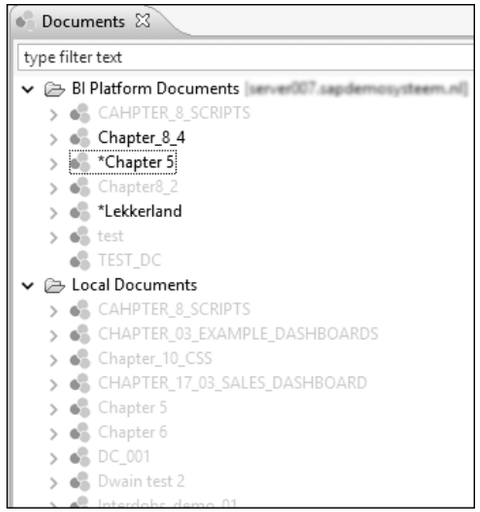



**Figure 5.40** Document Explorer

If you're working on an SAP BusinessObjects BI platform document, you'll have the following options when calling up the context menu (Figure 5.41):

- **Create Document**
  Creates a new document on the SAP BusinessObjects BI platform.
- **Download documents**
  Downloads the document that you have selected to your PC.
- **Synchronize with BI platform**
  Changes you make to a document must always be synchronized first before they are visible on the SAP BusinessObjects BI platform.
- **Close all documents**
  Closes all documents.

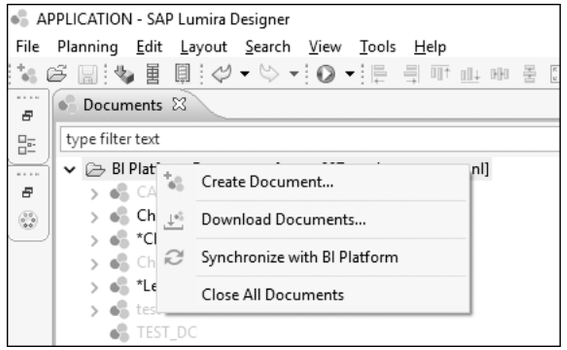



**Figure 5.41** Context Menu: SAP BusinessObjects BI Platform Documents

If you're working on local documents, the context menu will look like Figure 5.42. The difference, when compared to a SAP BusinessObjects BI platform document context menu, is that you won't have the synchronize option. However, you do have an extra **Refresh** option which checks your local repository folder for new documents.

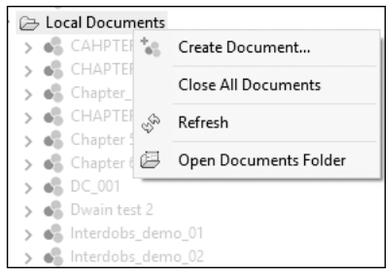



**Figure 5.42** Context Menu: Local Documents





When you right-click on a document in the Document Explorer, whether in **Local Documents** or in **BI Platform Documents**, you can call up the context menu to create a new application, for instance. Figure 5.43 shows the context menu for **BI Platform Documents**, and Figure 5.44 shows the context menu for **Local Documents**. The most important menu items are **Create Application...** and **Create Composite...**. If you're working on an SAP BusinessObjects BI platform document, you'll have additional options to synchronize the document you are working on, execute the application locally, execute on the SAP BusinessObjects BI platform, or delete the document from the platform. If you're working on a local document, the extra option that you'll have is to upload your document to the SAP BusinessObjects BI platform.



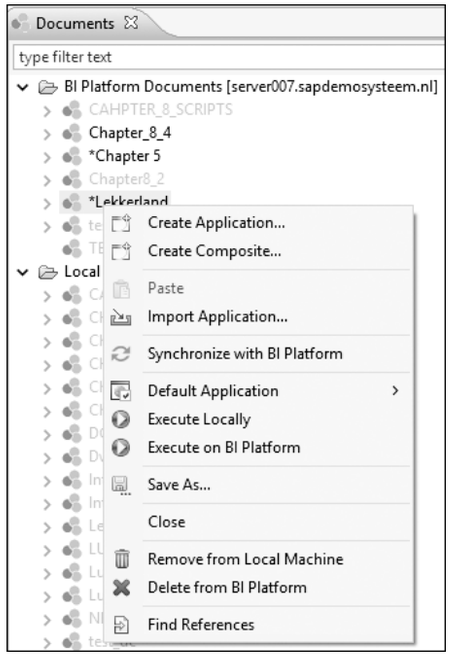



**Figure 5.43** Context Menu: SAP BusinessObjects BI Platform Documents

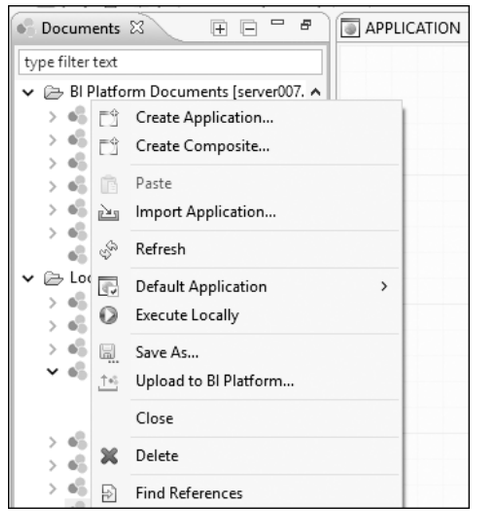



**Figure 5.44** Context Menu: Local Documents

### 5.3.2 Components Tab

The **Components** tab (Figure 5.45) houses all the visual building blocks to create an application, including an interactive UI. To add a component to an application, just drag and drop the component from the **Components** tab into the Layout Editor.

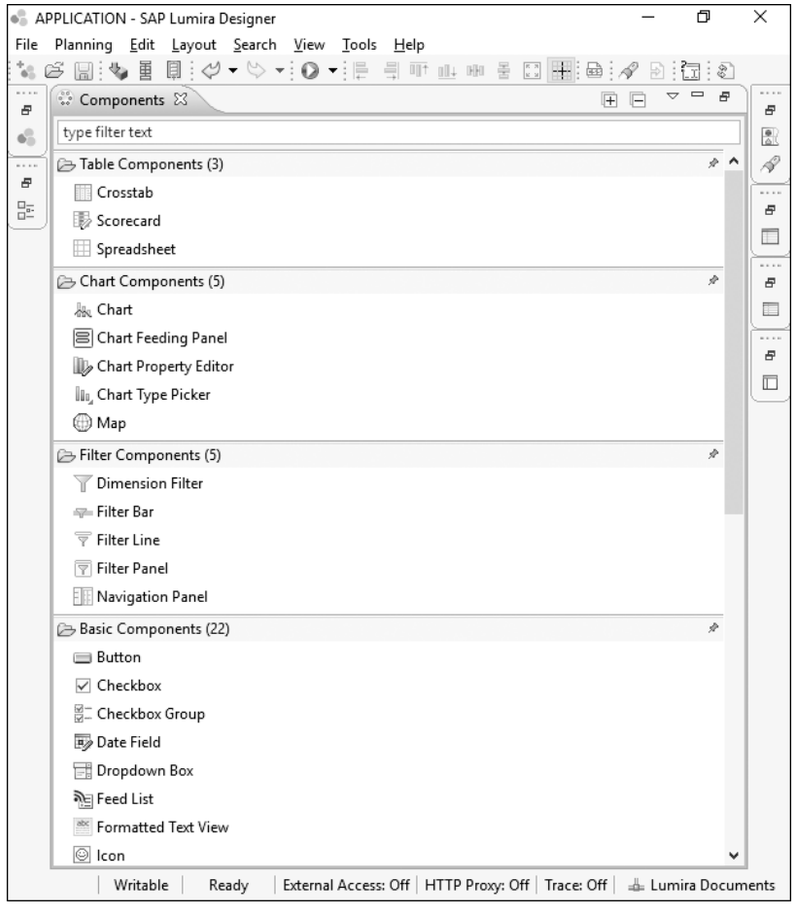



**Figure 5.45** Components Tab

The components are grouped in five categories:

- **Table Components**
  These components can either be a regular crosstab, a scorecard, or a spreadsheet.
- **Chart Components**
  Chart components are charts or maps and related components that can be used to configure these charts.
- **Filter Components**
  These components are regular filter components you can use as filters in your applications.





- **Basic Components**
  These components can be used to create more advanced filters and interactivity, as well as to display images and texts.
- **Container Components**
  These components are used to define the framework of an application by grouping and structuring the other components.



### 5.3.3 Outline Tab

The **Outline** tab provides a structured overview of all the components and data sources used in the application. As shown in Figure 5.46, five folders can be found under the top application level: **Global Variables**, **Data Sources**, **Planning Objects**, **Layout**, and **Technical Components**.

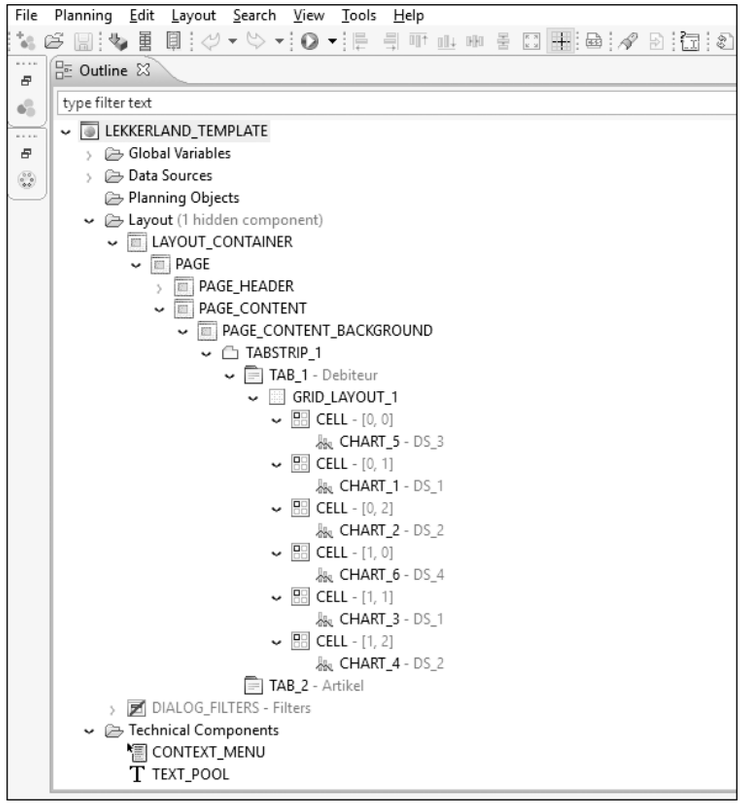



**Figure 5.46** Outline Tab

All the global variables that you create in your application will be grouped in the **Global Variables** folder. As the name indicates, all data sources will be displayed in the **Data Sources** folder. In the **Planning Objects** folder, you can add planning functions and planning sequences to the application. Components that can be seen on screen are shown in the **Layout** folder, in a structured way. The example in Figure 5.46 shows a tabstrip component with two tabs. As a container component, other components can be placed within the tabstrip component. **Tab 1** contains a grid layout component, consisting of six cells that, in turn, each have a chart component. **Tab 2** is empty.

In the **Technical Components** folder, you can define technical objects such as **Backend Connections**, **Context Menus**, **Global Script Objects**, **PDF Objects**, and **Text Pool Objects** (Figure 5.47).

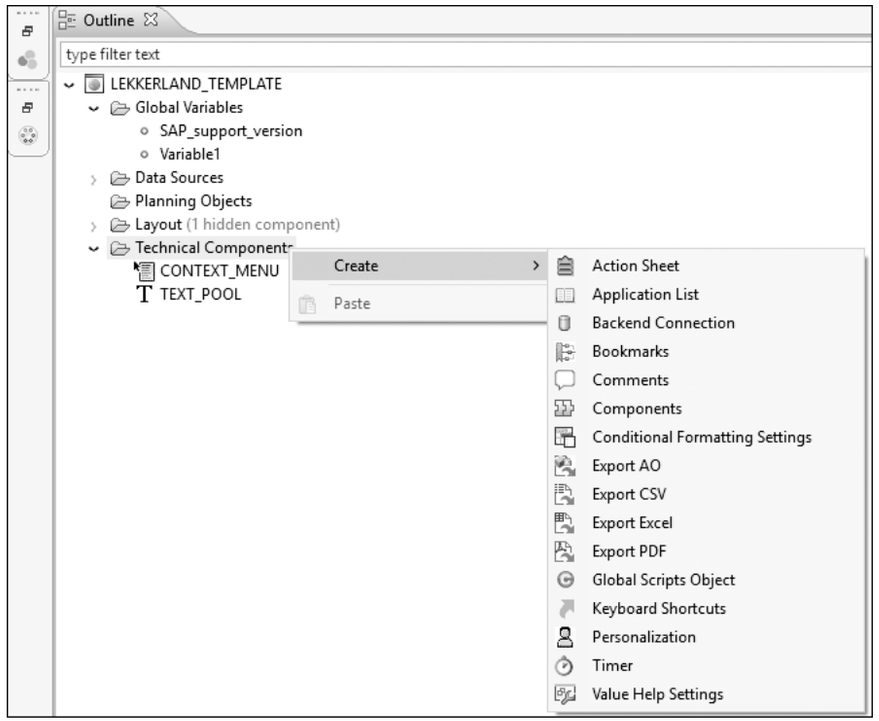



**Figure 5.47** Technical Components

Not only does the **Outline** tab give you a clear overview of the application and its components and data sources, but you can also use the **Outline** tab to select and rearrange these items. By holding Ctrl and clicking, you can select multiple items, and





by holding Shift and clicking, you can select a range of items. With the search box on top of the **Outline** tab, you can quickly look for an item. The search results will appear as soon as you start typing.

When you right-click an item, its context menu is shown, providing a number of quick commands. These commands differ according to the type and number of items selected. The options for **Copy**, **Paste**, **Rename**, **Delete**, and **Find References** are available for all items.

For the data source items here, the options **Edit Initial View** and **Reset Initial View** are also available (Figure 5.48). The initial view of a data source represents the formatting of the data source. The **Reset Initial View** command sets the output of a data source back to its original state by eliminating all the changes you made using the **Edit Initial View** option.

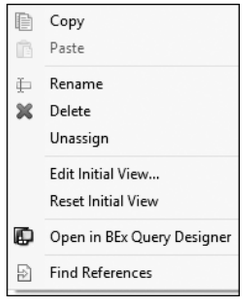
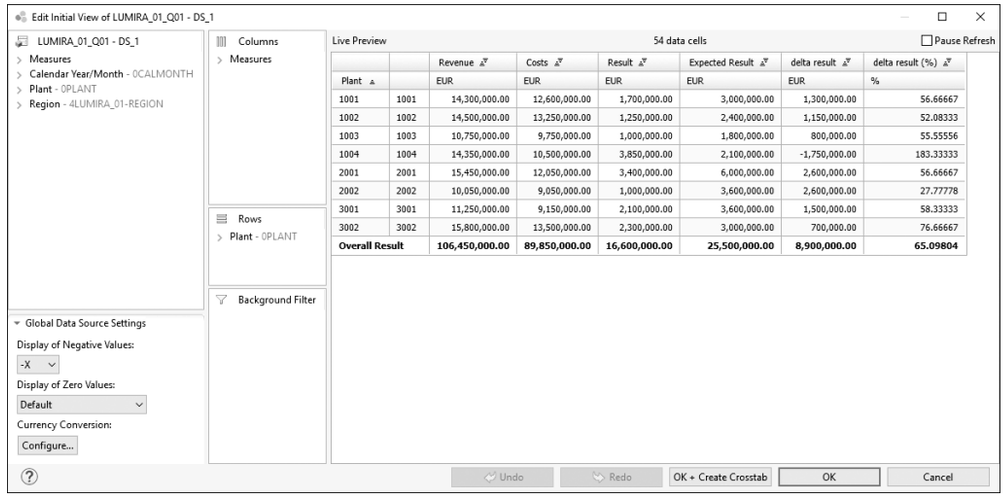



**Figure 5.48** Context Menu for Data Sources

You can change the initial view of a data source with the **Edit Initial View** option, which brings you to the screen shown in Figure 5.49. This screen is divided into the following four areas:

- The available dimensions and measures are placed on the left, including their attributes and hierarchies (when available). To add an attribute, right-click the attribute and select **Add** from the context menu. An attribute is only visible in the result set when its dimension is also added to the columns or rows. If a dimension has a hierarchy, you can go to the context menu of this hierarchy to activate it, deactivate it, and set its expansion level.
- At the bottom-left side of the screen, you'll see the **Global Data Source Settings**. In this section, you can select how negative values (**-X**, **X-**, or **X**) and zero values (**Default**, **With Currency/Unit**, **As Empty Cell,** or **Custom**) should be displayed. You can also use a currency conversion method if available.

- The middle column is the area to place and arrange the dimensions and measures that should be shown in the columns and rows of the result set. In the **Background Filter** section, measures can be added that will be filtered but don't appear in the result set.
- On the right side of the window, a **Live Preview** of the result set is given with the number of data cells. In the upper-right corner, a **Pause Refresh** checkbox is available to suspend the automatic refreshing of the result set. This pause function comes in handy when you need to make a lot of alterations to the initial view but you don't need an updated preview of the result set after each change. When all changes are done, deselect the checkbox again to refresh the preview of the result set.




| Plant | | Revenue EUR | Costs EUR | Result EUR | Expected Result EUR | delta result EUR | delta result (%) % |
|---|---|---|---|---|---|---|---|
| 1001 | 1001 | 14,300,000.00 | 12,600,000.00 | 1,700,000.00 | 3,000,000.00 | 1,300,000.00 | 56.66667 |
| 1002 | 1002 | 14,500,000.00 | 13,250,000.00 | 1,250,000.00 | 2,400,000.00 | 1,150,000.00 | 52.08333 |
| 1003 | 1003 | 10,750,000.00 | 9,750,000.00 | 1,000,000.00 | 1,800,000.00 | 800,000.00 | 55.55556 |
| 1004 | 1004 | 14,350,000.00 | 10,500,000.00 | 3,850,000.00 | 2,100,000.00 | -1,750,000.00 | 183.33333 |
| 2001 | 2001 | 15,450,000.00 | 12,050,000.00 | 3,400,000.00 | 6,000,000.00 | 2,600,000.00 | 56.66667 |
| 2002 | 2002 | 10,050,000.00 | 9,050,000.00 | 1,000,000.00 | 3,600,000.00 | 2,600,000.00 | 27.77778 |
| 3001 | 3001 | 11,250,000.00 | 9,150,000.00 | 2,100,000.00 | 3,600,000.00 | 1,500,000.00 | 58.33333 |
| 3002 | 3002 | 15,800,000.00 | 13,500,000.00 | 2,300,000.00 | 3,000,000.00 | 700,000.00 | 76.66667 |
| **Overall Result** | | **106,450,000.00** | **89,850,000.00** | **16,600,000.00** | **25,500,000.00** | **8,900,000.00** | **65.09804** |

**Figure 5.49** Edit Initial View of Data Source

For each measure, you can change the following options by right-clicking the measure (Figure 5.50):

- Number of decimal places
- The scaling factor
- How the totals are calculated (e.g., **Sum**, **Minimum**, **Maximum**, or **Average**)
- Specify a predefined dynamic calculation to use like **Percentage Contribution**
- The sorting order





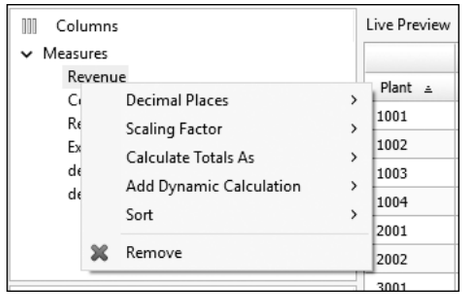



**Figure 5.50** Context Menu of a Measure

You have serval options to change the presentation of the data. These options correspond to features known from SAP BEx. To change the presentation of a certain dimension, use the context menu (right-click). You have the following options to choose from (Figure 5.51):

- Additional attributes to be displayed.
- The active hierarchy and its initial expansion level.
- With the **Member for Filtering** option, you can set which members of a dimension are available in the filter. You can choose between the members with posted values, members that exist in the InfoProvider, or all members in the master data.
- A member to be filtered.
- The filter by input string.
- Member presentation (key, text, key + text, etc.).
- The totals display mode.

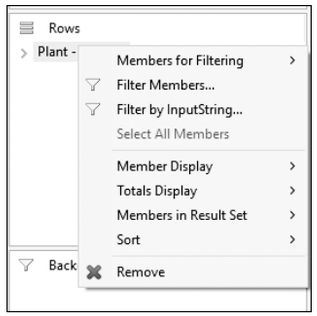



**Figure 5.51** Context Menu of a Dimension

Use the **Member Display** option to define whether the text and/or key value of a dimension should be shown, its order, and which text type should be used. You can also choose **Filter Members**, which allows you to add filters from a list of values. If you want to make a complex filter, you can choose the **Filter by Inputstring** option. An editor will open in which you can enter a filter expression. For example, if you want the product numbers 0001 through 0005, product number 0008, and all above 0010 in your selection, you can type this filter into the editor: "[0001;0005],0008,[>0010]". To remove all filters, use **Select All Members**.

The **Totals Display** option determines whether a totals column or row should be shown for the dimension. You can choose among **Show Totals**, **Hide Totals**, and **Hide Totals If Only One Member.**

Finally, the **Members in Result Set** option defines whether all available members in the master data should be shown or only those members for which values can be posted.

The context menu of a component has the option to hide a component (Figure 5.52). This hiding feature is an important feature for developers. Applications that consist of a large number of components that are nested within each other and form multiple interface layers can quickly lead to an overcrowded Layout Editor. As a result, a developer can find managing the application difficult. With the **Hide** feature, the selected component or components can be hidden from the Layout Editor. When a component is hidden, the **Hide** option is replaced with the **Show** option, which can be used to reveal the component again. The **Hide** option has no effect on the application during execution.

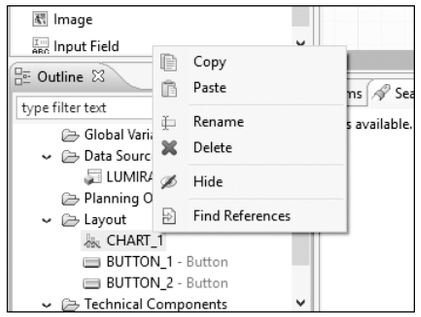



**Figure 5.52** Context Menu for Components





When you select two or more components, the **Arrange** command is added to the context menu, providing the commands for alignment. When you select three or more components, the **Distribute** commands are available (see Figure 5.53).

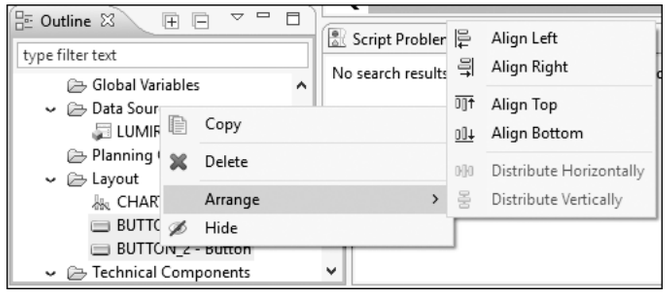



**Figure 5.53** Arrange Commands in the Context Menu for Components

You can add new items to the application from the context menus of the **Data Sources**, **Planning Objects**, **Layout,** and **Technical Components** folders. From the context menu of the **Global variables** folder, you can create new global variables. Components from the first three folders can also be copied and pasted. In addition, the context menu for the **Layout** folder has the option **Show All Hidden Components** to undo all the **Hide** settings on the hidden components in one click.

### 5.3.4 Properties Tab

The **Properties** tab contains all the settings that can be edited for a selected item, such as a data source; a component (either layout components, planning objects, or technical components); or the application itself. When multiple items are selected, only those properties that are common to all selected items are shown.

In the remainder of this section, we'll provide a short overview of the properties available in the various **Properties** tabs in SAP Lumira, designer edition. In Chapter 7, we'll discuss in detail the item-specific properties for all available components.

The **Properties** tab of a data source consists of four areas (Figure 5.54):

- **General**
  The data source name and type.
- **Data Binding**
  Loading settings, source information about the data source, and a **Processing Group** that can be assigned to a data source.

- **Display**
  Description of the data source shown when the application asks for a prompt value. When the text field isn't filled, the data source alias (**Name**) is used instead.
- **Events**
  A script is triggered when the result set changes.

| Property | Value | Binding |
|---|---|---|
| General | | |
| Name | DS_1 | |
| Type | Query | |
| Vendor | SAP SE | |
| Data Binding | | |
| Load in Script | false | |
| Data Source | | |
| Name | LUMIRA_01_Q01 | |
| Connection | BHA | |
| Type | Query | |
| Processing Group | <default group> | |
| Display | | |
| Text | | |
| Events | | |
| On Result Set Changed | | |

**Figure 5.54** Properties Tab of the Data Source

The **Properties** tab of a component can consist—depending on the type of selected component—of the following areas (Figure 5.55):

- **General**
  Name and type of component, plus a visibility setting.
- **Data Binding**
  The data source assigned for this component.
- **Optimization for Low Data Volume**
  Settings to improve usability.
- **User Interactivity**
  Various user interaction settings, such as single or multiple data selection and enabling or disabling the context menu.
- **Display**
  Formatting and display features.
- **Planning**
  Settings for planning applications.





- **Events**
  Options to create interactivity on this component.
- **Layout**
  Size and positioning options.

| Property | Value | Binding |
|---|---|---|
| General | | |
| Data Binding | | |
| Data Source | <none> | |
| Optimization for Low Data Volume | | |
| Pixel-Based Scrolling | false | |
| Row Limit | 20 | |
| Column Limit | 20 | |
| User Interactivity | | |
| Selection Type | None | |
| Selectable Area | All | |
| Enable Hover Effect | true | |
| Single On Select Event | false | |
| Hierarchy Navigation Enabled | true | + |
| Sorting Enabled | true | + |
| Column Resizing Enabled | true | + |
| Horizontal Header Resizing Ena | false | |
| Horizontal Scrolling for Header | false | |
| Context Menu Enabled | true | |
| Drag and Drop Enabled | false | |
| Display | | |
| Planning | | |
| Number of New Rows | 0 | |
| Position of New Rows | Bottom | |
| Maximum Number of Value He | 100 | |
| Value Help Settings | <none> | |
| Events | | |
| On Select | | + |
| Layout | | |
| Top Margin | 0 | + |
| Left Margin | 0 | + |
| Bottom Margin | auto | + |
| Right Margin | auto | + |

**Figure 5.55** Properties Tab of the Crosstab Component

Finally, the **Properties** tab for the application consists of the following sections (Figure 5.56):

- **General**
  Name, location, and application file information.
- **Scheduling**
  You can add a script that will be triggered when the application is scheduled.

- **Behavior**
  The number of navigation steps the application needs to remember to allow the user to undo actions.
- **Display**
  Formatting and display options.
- **Prompts**
  Setting to display prompts when starting the application.
- **Planning**
  Settings related to IP connections and models.
- **Scripting**
  Definition of global variables.
- **Events**
  Scripts that have to run when the application starts.

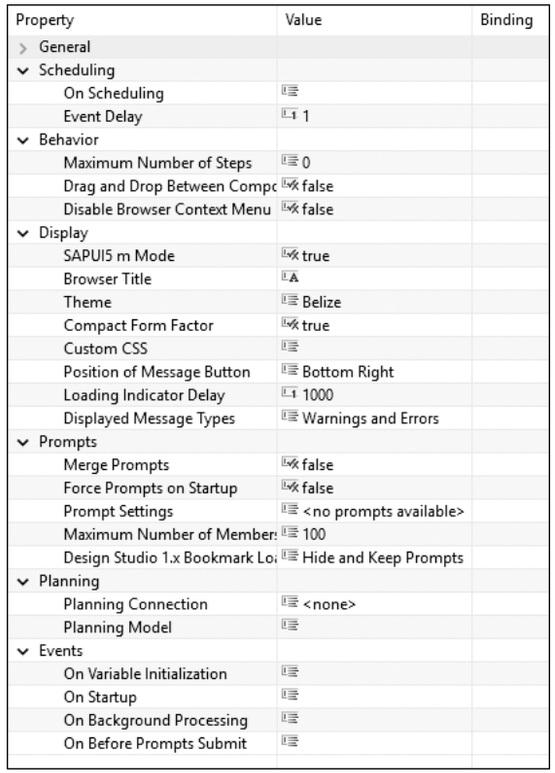



**Figure 5.56** Properties Tab of the Application





### 5.3.5 Additional Properties Tab

The **Additional Properties** tab is an extension of the **Properties** tab but is only available for a limited number of components such as the scorecard component. With the scorecard component, you can use the regular properties to position the component on the canvas, and you'll use the additional properties (Figure 5.57) to configure the scorecard.



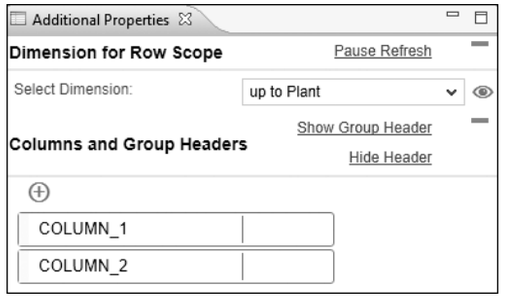



**Figure 5.57** Additional Properties

### 5.3.6 Error Log Tab

All SAP Lumira, designer edition system and application errors are displayed in the **Error Log** tab (Figure 5.58). In addition, messages are displayed when script validation methods are used in scripts. If you double-click an error, more details about the event are given in a popup window.

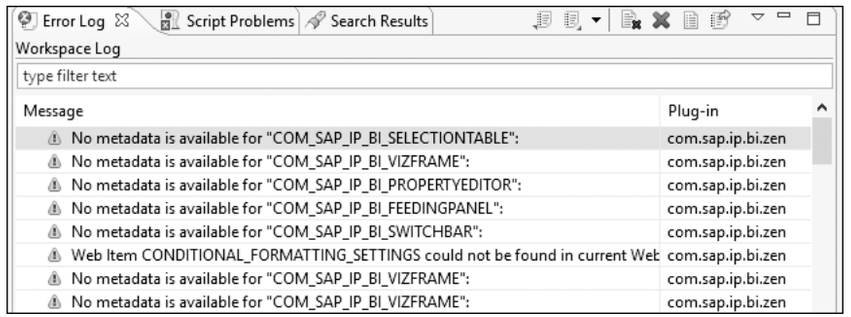



**Figure 5.58** Error Log Tab

### 5.3.7 Script Problems Tab

The **Script Problems** tab displays script errors encountered during script validation (Figure 5.59). This tab is only updated when you open and save an application, so a problem can remain in the **Script Problems** tab even after the problem has been fixed. Double-clicking a problem opens the Script Editor of the component concerned.

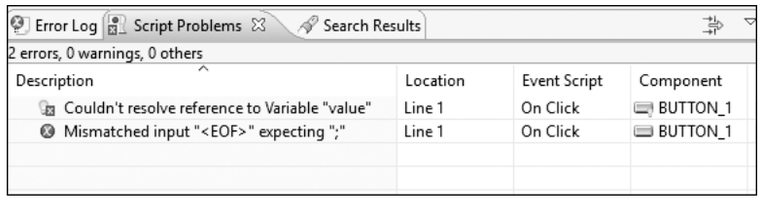



**Figure 5.59** Script Problems Tab

## 5.4 Summary

In this chapter, we provided a detailed look at the SAP Lumira, designer edition application, with the goal of getting more familiar with its IDE. We discussed all the available menu options in detail, from creating a new SAP Lumira, designer edition document and application to checking the SAP Lumira, designer edition software version in the **About** menu. You also learned that some of the most important commands are incorporated in the toolbar.

From there, we went through the Layout Editor and all the tabs in SAP Lumira, designer edition: **Documents**, **Components**, **Outline**, **Properties**, **Additional Properties**, **Error Log**, **Search Results**, and **Script Problems**. We also discussed the menu items in the **Help** menu.

In the next chapter, you'll put this knowledge to use in the application design process.

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