

Elixir Dashboard Designer User Manual

Release 8.4.1



Elixir Technology Pte Ltd

Elixir Dashboard Designer User Manual: Release 8.4.1

Elixir Technology Pte Ltd

Published 2012

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Chapter 1

About Elixir Dashboard Designer

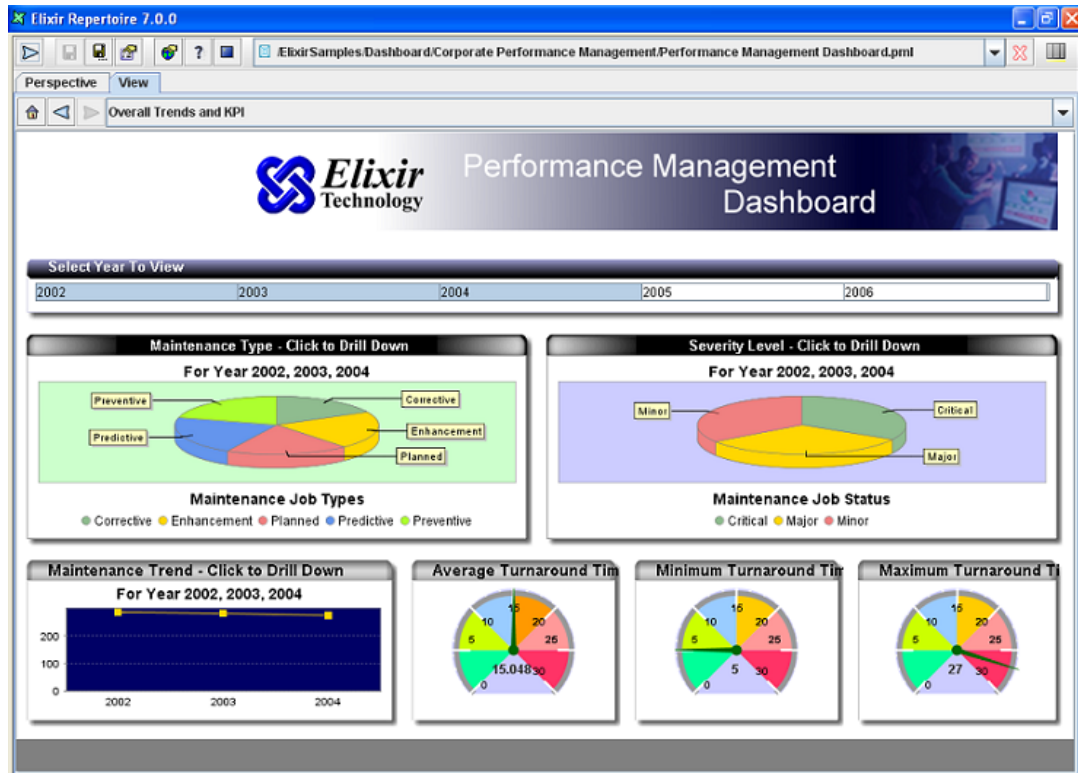
Introduction

Elixir Dashboard Designer is a tool for navigating and visualizing enterprise data. A dashboard can assemble a comprehensive view of the available information. It provides:

- Seamless navigation between data, cube, and reports with user-customizable views
- On-demand cube creation and modification of dimensions and measures for data analysis
- Graphical visualization of data and OLAP cube
- User-definable linking and filtering of data from disparate data sources
- Dynamic report generation from view selections

A Perspective is the set of views, contents and actions that together form a dashboard. Dashboards are stored in files with the extension .pml, which stands for Perspective Markup Language.

Figure 1.1. A Sample Dashboard



To achieve this powerful and flexible solution, Elixir Dashboard Designer defines Content, Views and Actions.

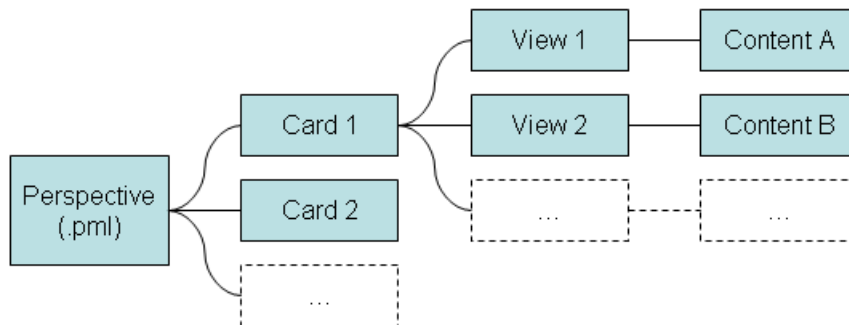
Contents

The content is the underlying data and presentation. This could be a report or cube backed by a data source, or a chart showing data derived from other Contents. Each content added to a Perspective has a unique name allowing it to be referenced by views. The different kinds of content supported by in a dashboard are described in Chapter 2, *Contents*.

Views

A view acts as a frame for content. Content may appear in different views at different times. Views may have titlebars that allow interaction with the underlying content and act as placeholders for connecting content together. For example, a chart may receive it's data for rendering from the selection in another view. All views also have unique names to allow this kind of referencing. Views are grouped together into cards. Elixir Dashboard Designer shows one card (containing one or more views) at a time and user actions can be used to trigger navigation between cards. The different kinds of view supported by dashboards are described in Chapter 3, *Views*.

Figure 1.2. Cards, Views and Contents

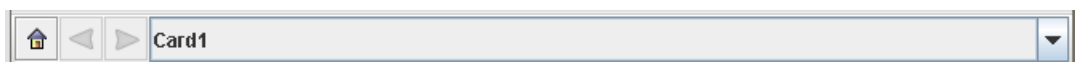


Actions

Actions are invoked in response to events . Typically these are user interaction events, like selecting a row in a table, or clicking on a detail in a report. Certain actions are preconfigured - if a chart shows the data from a table and the table contents changes, then the chart is automatically refreshed. Other actions can be user-defined. For example, double-clicking on a chart may open another view on that data. Actions are chosen based on a combination of the user event, the view and the content involved, so a double-click on two charts may result in two completely different actions - it is completely user-definable. The different kinds of actions supported by a dashboard are described in Chapter 4, *Actions*.

The Dashboard Toolbar

Figure 1.3. The Dashboard Toolbar



The Elixir Dashboard Designer toolbar is shown in Figure 1.3, “The Dashboard Toolbar”. From left to right, the contents are:

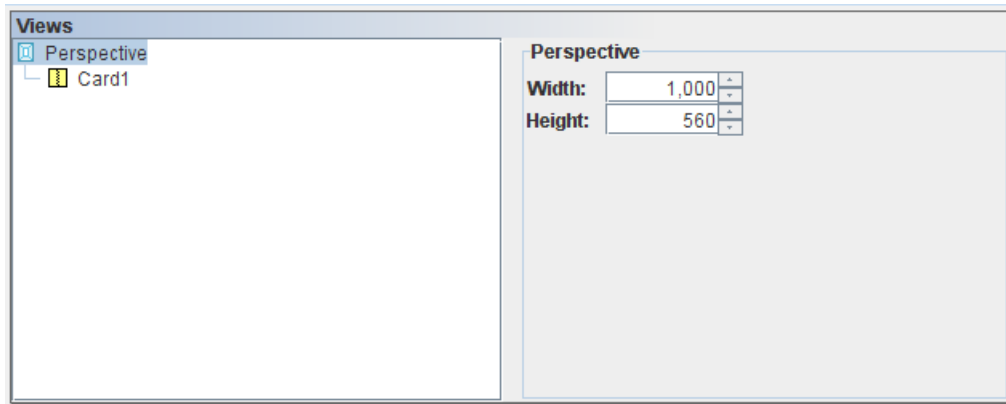
- Home This button resets the dashboard to it's initial state. That is, all views are restored to their initial contents and initial selection.

| | |
|------------|---|
| Back | Just like a browser, this button reverts to the previous dashboard state. This can undo any undesirable change, or navigate back to a previous position to allow further exploration. |
| Forward | Again, just like a browser, this button takes you forward again, redoing any action that was undone by pressing Back. |
| Card Combo | This combo box shows all of the cards in the dashboard and allows you to choose one to view. Actions can also be used to change the card as a result of events. |

Dashboard Dimension

The dimension of a dashboard can be specified by selecting the Perspective root of the view tree as shown in Figure 1.4, “Dashboard Dimension”. The dimensions are measured in pixels.

Figure 1.4. Dashboard Dimension



Case Study

This case study will create a simple dashboard built upon the `/ElixirSamples/DataSource/FruitSales.ds` datasource.

1. Select a FileSystem. Right-click to select Add->Perspective from the filesystem popup menu.
2. When the Add Perspective window appears, enter a unique name and description for the Perspective and click Finish.

Figure 1.5. Add Perspective

Add Perspective

Perspective Properties

Enter name

● Name required

Name:

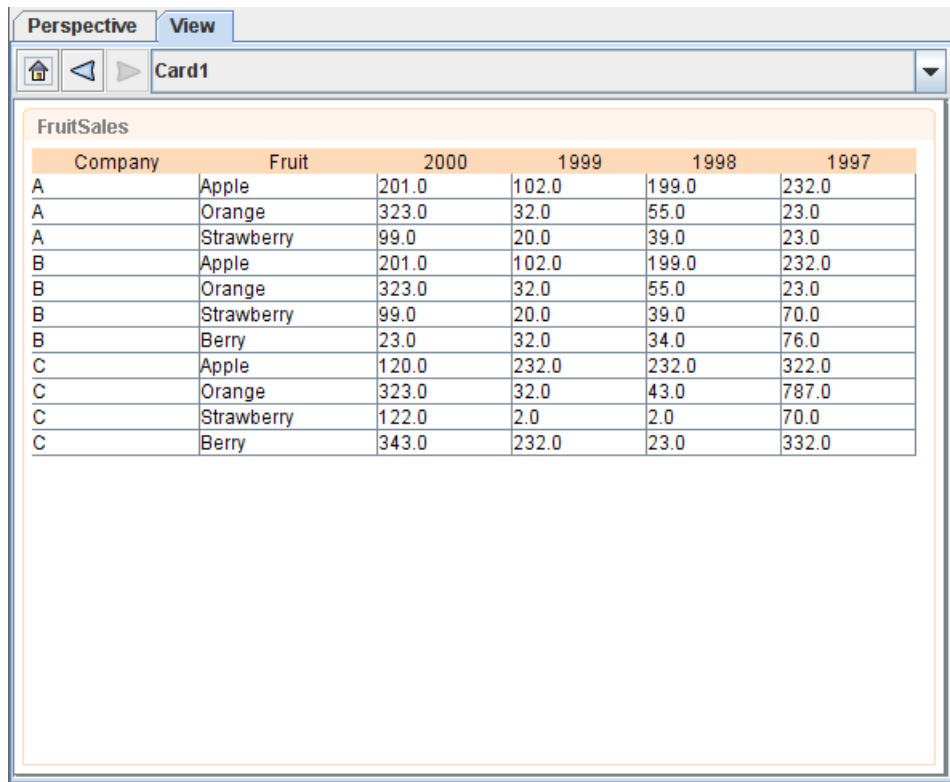
Description:

Refresh: Seconds None

On Render Begin

3. Drag FruitSales.ds from the repository to the workspace. On releasing of the mouse, a popup with four different options will appear. It's for the user to select the element to add to the Perspective. In this case, we will add a Table element by selecting Add Table.
4. On clicking, a table with all the data from FruitSales.ds will be displayed. The Table element will appear.

Figure 1.6. Table on Perspective



| FruitSales | | | | | |
|------------|------------|-------|-------|-------|-------|
| Company | Fruit | 2000 | 1999 | 1998 | 1997 |
| A | Apple | 201.0 | 102.0 | 199.0 | 232.0 |
| A | Orange | 323.0 | 32.0 | 55.0 | 23.0 |
| A | Strawberry | 99.0 | 20.0 | 39.0 | 23.0 |
| B | Apple | 201.0 | 102.0 | 199.0 | 232.0 |
| B | Orange | 323.0 | 32.0 | 55.0 | 23.0 |
| B | Strawberry | 99.0 | 20.0 | 39.0 | 70.0 |
| B | Berry | 23.0 | 32.0 | 34.0 | 76.0 |
| C | Apple | 120.0 | 232.0 | 232.0 | 322.0 |
| C | Orange | 323.0 | 32.0 | 43.0 | 787.0 |
| C | Strawberry | 122.0 | 2.0 | 2.0 | 70.0 |
| C | Berry | 343.0 | 232.0 | 23.0 | 332.0 |

5. Drag FruitSales.ds into the workspace again. A blue box will be shown to indicate the placement of intended content, as shown in Figure 1.7, "Placement of Intended Content". Over here, we will be placing it on the left of the table. When the mouse-click is released, select Add Chart and the content will be created on that region.

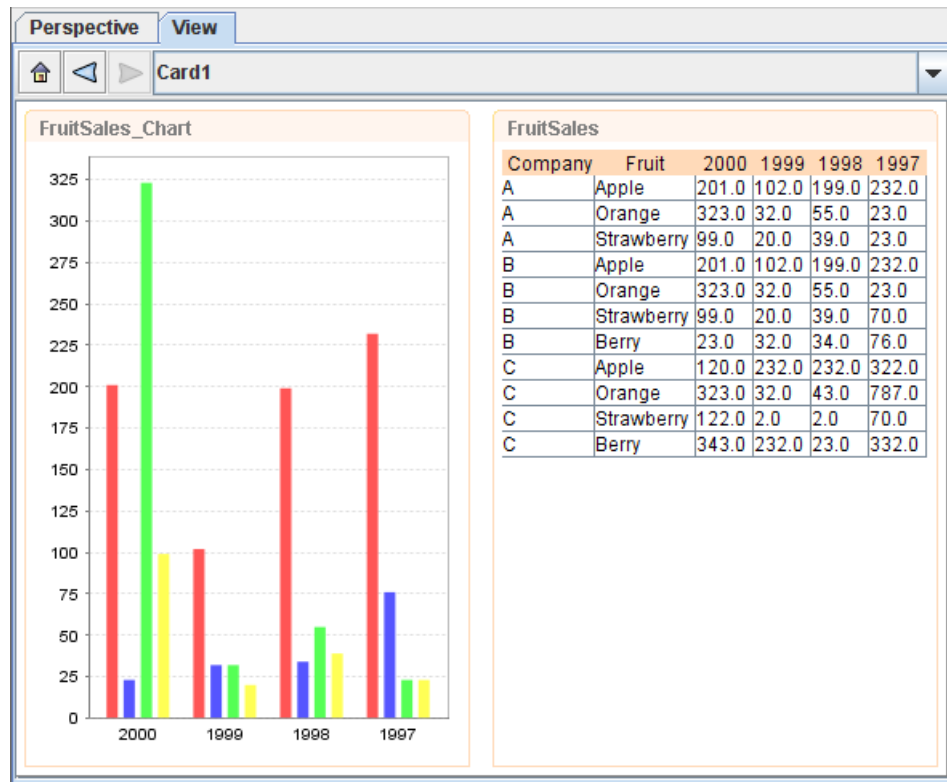
Figure 1.7. Placement of Intended Content

The screenshot shows a dashboard designer window with a 'View' tab selected. Below the tab is a 'Card1' header. The main content area contains a table titled 'FruitSales'. The table has the following data:

| | Company | Fruit | 2000 | 1999 | 1998 | 1997 |
|---|------------|-------|-------|-------|-------|-------|
| A | Apple | | 201.0 | 102.0 | 199.0 | 232.0 |
| A | Orange | | 323.0 | 32.0 | 55.0 | 23.0 |
| A | Strawberry | | 99.0 | 20.0 | 39.0 | 23.0 |
| B | Apple | | 201.0 | 102.0 | 199.0 | 232.0 |
| B | Orange | | 323.0 | 32.0 | 55.0 | 23.0 |
| B | Strawberry | | 99.0 | 20.0 | 39.0 | 70.0 |
| B | Berry | | 23.0 | 32.0 | 34.0 | 76.0 |
| C | Apple | | 120.0 | 232.0 | 232.0 | 322.0 |
| C | Orange | | 323.0 | 32.0 | 43.0 | 787.0 |
| C | Strawberry | | 122.0 | 2.0 | 2.0 | 70.0 |
| C | Berry | | 343.0 | 232.0 | 23.0 | 332.0 |

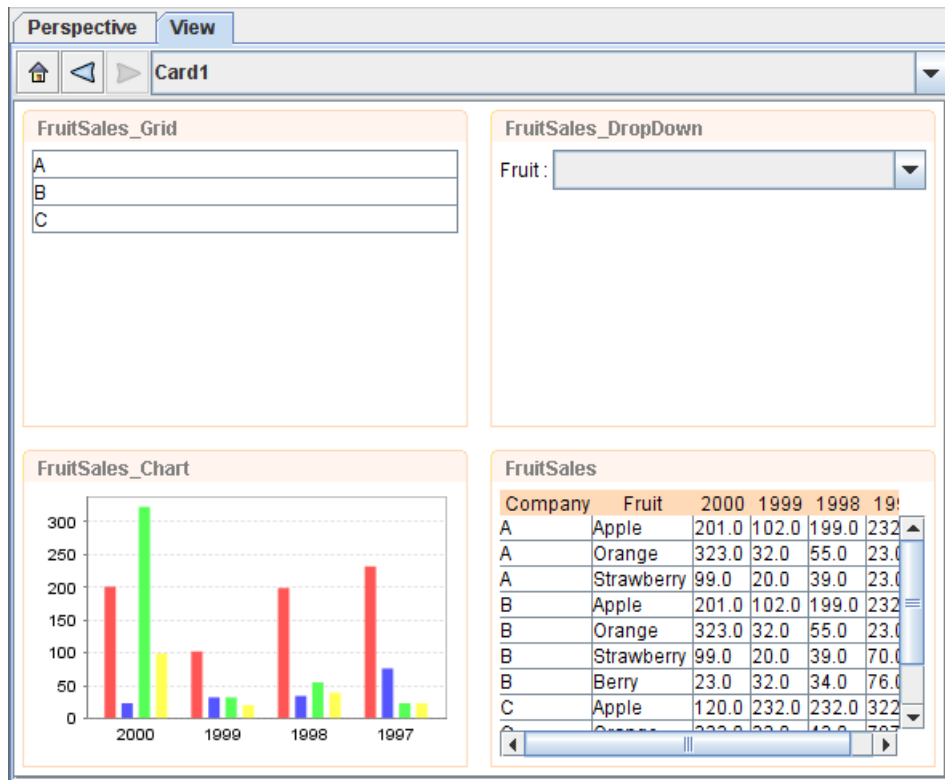
6. In the *Add Content Wizard*, change the name to "FruitSales_Chart" for easy reference.
7. In this example, we will create a Column Chart with *Fruit* as the key and *1997, 1998, 1999* and *2000* as the values.

Figure 1.8. Chart and Table on Perspective



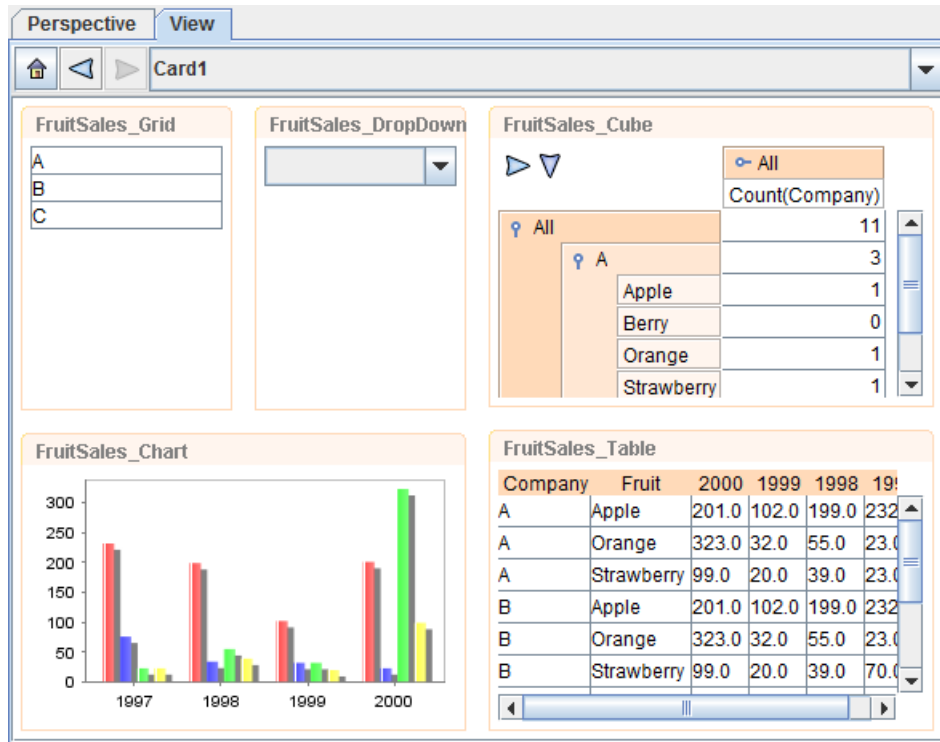
8. Now we will try creating a Grid element in the Perspective. Repeat step 1 to 3, but place the element on top of *FruitSales_Chart*, select Add Grid and change the name to *FruitSales_Grid*.
9. At the next page of the wizard, select a field for the Grid element to display. Select *Company* then click on Finish.
10. Repeat step 9 and 10, place the element above *FruitSales* and change the name to *FruitSales_DropDown*.
11. In the *Add Content Wizard*, select *Fruit* as the field and check the checkbox that says *Show as Drop-Down List*. In the Label field, enter *Fruit : .*

Figure 1.9. Grid, Chart and Table on Perspective



12. Repeat step 1 and 2. Place the blue region on the right of *FruitSales_DropDown* and select Add Cube.
13. Click through the wizard without changing any settings.
14. You can adjust the height and width of each element by dragging the sides.
15. At the end of this, the whole Perspective should look something as shown in Figure 1.10, "Completed Perspective"

Figure 1.10. Completed Perspective



Chapter 2

Contents

Introduction

Elixir Dashboard Designer provides different kinds of content from which you can compose your views. Every content must have a unique name within the Perspective so that it can be referenced. Each kind of content reads data and renders it into a view. The views then provide the ability to interact with the content.

Most kinds of content read from a datasource. There are two kinds of datasource available, the .ds files in the repository (which can be JDBC, XML, etc.) and dynamic datasources where the data records are extracted from other views. The first kind of datasource will be identified with a `repository: URL`, whereas the dynamic data will be accessed with a `view: URL`. When the datasource is defined in the repository, a schema is associated with it and is available to the content designer. When the datasource is defined by a view, there is no explicit schema available - it depends on the content of the view, which can itself be dynamic. The solution is to allow view-based datasources to explicitly load a schema. When a datasource has been chosen for a content, the subsequent page in the wizard will show the schema of that datasource if one is available. If no schema is available, the Load Schema button will be available to allow one to be explicitly loaded.

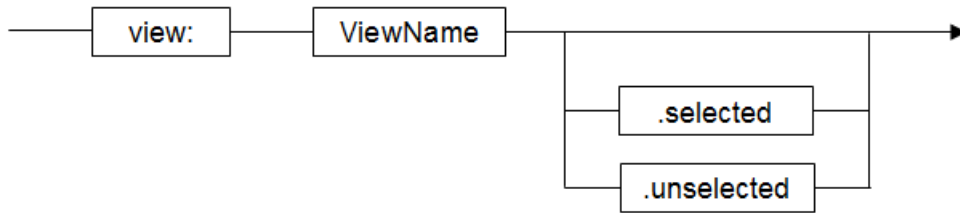
The data schema needs to be available in order to support options like filtering. Each content that reads from a datasource is allowed to filter the records before rendering them. The filtering options allow records to be selected based on criteria such as "Equals", "Greater Than", "In Range", "In DataSet" etc. These are discussed in the Filter Processor description of the Elixir Data Designer manual.

In addition, `slice: URL1&URL2&URL3` shows the intersection of selected records as the result. The syntax is a `slice: prefix` followed by view names separated by ampersands. All these named views must be grids from a common datasource. It can simplify the data operation by providing a workaround of filter.

Dynamic DataSources

Dynamic datasources allow a content to read it's data from another view, rather than from a fixed datasource. This allows the user to select an item in one view and see related items appear automatically in another view. A dynamic datasource is identified by a URL with the protocol `view:`. The next part of the URL is the name of the view. For example, `view:Top-Left` would use the data supplied by the view called Top-Left. Many views support selection and it is often useful to show information related to the selected records of another view. This can be accomplished by adding the suffix `.selected` onto the URL. Similarly, `.unselected` will use those records that are not selected. Taking the previous example, the URL `view:Top-Left.selected` would get the selected data records only from the Top-Left view.

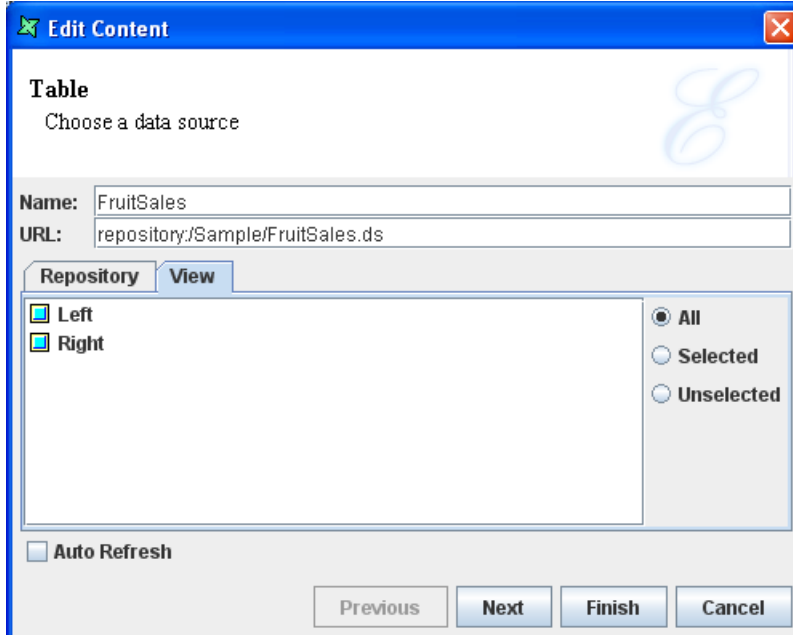
Figure 2.1. View URL



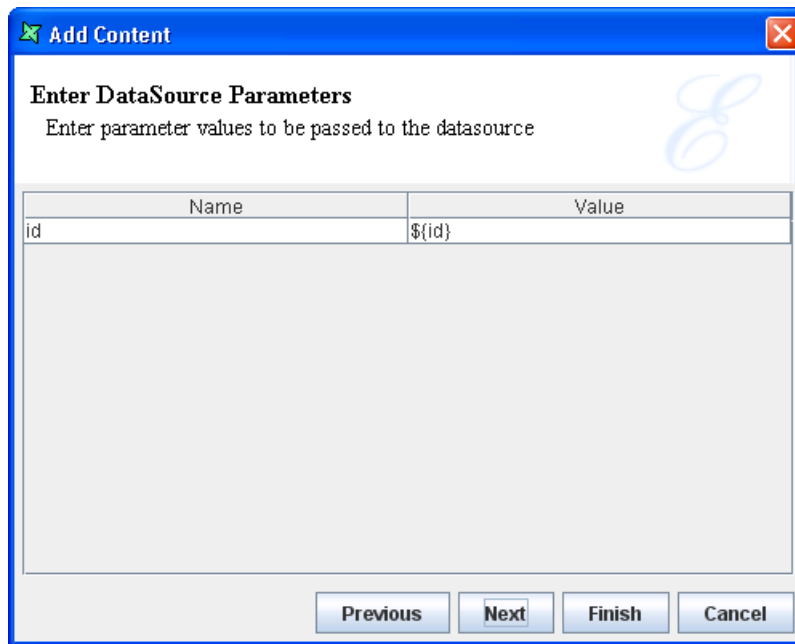
The tool will manage the connection between views so that any view that depends on another is automatically updated when the dependent view changes. There is usually no need to define explicit actions to enable this behaviour. If you use scripts to extend the dependency mechanism - for example changing the dependency dynamically - then you can explicitly define the dependency on the last page of the content wizard. It is important to note that datasources can only be read from views, not from contents. This is because each content may be filtered and selected differently within different views at the same time. The benefit of selecting through views is that the same view may show different contents at different times and the dynamic data connection is still maintained.

For each kind of content, described below, there is an indication of **Available datasources**: that indicates what options each supports. Support for All, means the view name can be used to get the entire datasource of the view. Support for Selected means the view name followed by .selected can be used to get the selected records from the view. Support for Unselected means the view name followed by .unselected can be used to get the unselected records from the view. The figure below, Figure 2.2, “Dynamic Datasource”, shows the screen where a user selects a dynamic datasource to use.

Figure 2.2. Dynamic Datasource



If a datasource has a parameter, there will be a page in the wizard for specifying the value of the parameter as shown in Figure 2.3, “Datasource Parameters”.

Figure 2.3. Datasource Parameters

Filtering, Sorting and Extracting

Data from a datasource or another view can be filtered and sorted before being passed to the view. Certain records can also be extracted, for example the top ten or bottom five can be retained and the rest discarded (this extraction operation occurs after any filtering and sorting).

Filtering allows you to define rules that each record is tested against. A typical rule might be: Country Equals "Singapore" or Salary Greater Than 2000. Only those records that pass all the rules are allowed to proceed. The filter criteria used here are the same as those used in the Filter Processor in the Data Designer manual. Please see that discussion for full details on the options available.

Sorting allows you to sort the records into ascending or descending order based on the values in fields. Multi-level sorting is supported, so you can sort by Country and then City and the tool will ensure that the Cities are sorted within their respective Countries. Contents such as Chart, Grid, Table and Cube have sorting capabilities now. Sorting within the view will override any earlier sorting, but will occur after any extraction. For example, you can sort sales people by performance, extract the top ten and then show them in a chart sorted in alphabetical order. Two variants of sort are supported, regular Ascending and Descending and Simple Ascending and Simple Descending. The Simple options are very fast, but don't take into account complex character differences, for example letters with accents produced by merged Unicode character combinations. The regular Ascending and Descending use the full Unicode algorithms. Further, the Simple variants treat whitespace as significant, whereas the Unicode algorithms don't (just like a dictionary).

Extraction is the retention of certain records based on their position in the data set. You might choose to extract those records at the top or the bottom of the set (presumably the order is significant, probably because they have just been sorted). You can choose to retain either a fixed number or a percentage of all the records. If a percent value is chosen, then the value will be "rounded up" to include partial records. For example, if you choose 1%, you will still get one record, even if there are only twenty records in the set.

Presentation

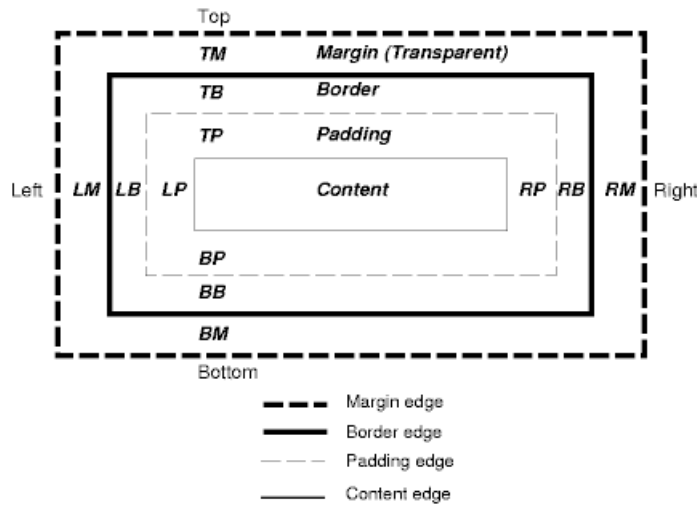
Each kind of content has some common presentation characteristics, along with some content-specific ones. These are all editable from the Presentation Wizard, accessible from the Presentation popup menu item. The common characteristics are:

| | | | | | | | | | | | | | |
|--|---|------------------------------|-------------------------|---------------------------|----------------------|----------------------------|------------------------------------|----------------------------|------------------------------------|-----------------------------|--|--|---|
| Padding | Padding is the area inside the border, which provides insets for the content area. The background of the padding is set according to the background colour of the content. See Figure 2.4, “The W3C CSS Box Model”. | | | | | | | | | | | | |
| Margins | Margins is the area outside the border, which provides insets for the border rectangle. The background of the margins is set according to the background colour of the card that the content is shown on. See Figure 2.4, “The W3C CSS Box Model”. | | | | | | | | | | | | |
| Background | The background colour is used to fill the background of the border and padding rectangles, along with the content area. If no background is specified then usually the card background will show though (this depends on the content type and other content-specific backgrounds). | | | | | | | | | | | | |
| Title Bar Tip | Title Bar Tip is a field for entering some text for the tooltip. The tooltip will appear when a cursor is placed over the top bar of the element's content border. You will need to enter some text under Title Bar Tip and apply border to the element before any tooltip can be seen. | | | | | | | | | | | | |
| Border Name | A Border is a set of images in a repository folder that are used to construct a frame around the content (and padding). To select a border, you need to select the folder that contains the images. There are a number of samples provided in /ElixirSamples/Resources/Borders, for example you might choose /ElixirSamples/Resources/Borders/Lavender. You can create your own custom borders by following the examples. Your borders don't need to have images on all sides of the frame. Any missing images will just appear blank. It is important for correct web display that the widths and heights of all images are consistent. For example the heights of topleft, top and topright images must be the identical. | | | | | | | | | | | | |
| Border Title | If a border is chosen that supports titles (if there is a title.xml in the border folder), then any text entered here will be placed on the border using the information provided by the title.xml. You may either use a fixed text string, or substitutions. The available substitutions are: <table> <tr> <td><code>\${ContentName}</code></td> <td>the name of the content</td> </tr> <tr> <td><code>\${ViewName}</code></td> <td>the name of the view</td> </tr> <tr> <td><code>\${ShortDate}</code></td> <td>the short form of the current date</td> </tr> <tr> <td><code>\${ShortTime}</code></td> <td>the short form of the current time</td> </tr> <tr> <td><code>#{=JavaScript}</code></td> <td>Any JavaScript (after an equals (=) will be evaluated at runtime and the result substituted.</td> </tr> <tr> <td><code>\${view:ViewName.Selection:Field}</code></td> <td>The field name of the selected/unselected record in a particular view. However, the element must be refreshed before being able to show the updated border title. An ideal way of utilising this feature will be using on an element that displays data based on the selected/unselected of a</td> </tr> </table> | <code>\${ContentName}</code> | the name of the content | <code>\${ViewName}</code> | the name of the view | <code>\${ShortDate}</code> | the short form of the current date | <code>\${ShortTime}</code> | the short form of the current time | <code>#{=JavaScript}</code> | Any JavaScript (after an equals (=) will be evaluated at runtime and the result substituted. | <code>\${view:ViewName.Selection:Field}</code> | The field name of the selected/unselected record in a particular view. However, the element must be refreshed before being able to show the updated border title. An ideal way of utilising this feature will be using on an element that displays data based on the selected/unselected of a |
| <code>\${ContentName}</code> | the name of the content | | | | | | | | | | | | |
| <code>\${ViewName}</code> | the name of the view | | | | | | | | | | | | |
| <code>\${ShortDate}</code> | the short form of the current date | | | | | | | | | | | | |
| <code>\${ShortTime}</code> | the short form of the current time | | | | | | | | | | | | |
| <code>#{=JavaScript}</code> | Any JavaScript (after an equals (=) will be evaluated at runtime and the result substituted. | | | | | | | | | | | | |
| <code>\${view:ViewName.Selection:Field}</code> | The field name of the selected/unselected record in a particular view. However, the element must be refreshed before being able to show the updated border title. An ideal way of utilising this feature will be using on an element that displays data based on the selected/unselected of a | | | | | | | | | | | | |

view. This will be discussed later in the case study.

You can mix these, for example "`{ContentName} : {ShortDate}`" will show both the content name and short date in the title. For other titles, you can use script substitutions, like this: `{=java.lang.System.getProperty("java.version")}`. Any JavaScript syntax (which can call Java, as shown) inside a `{=JavaScript}` substitution will be evaluated when the title is shown.

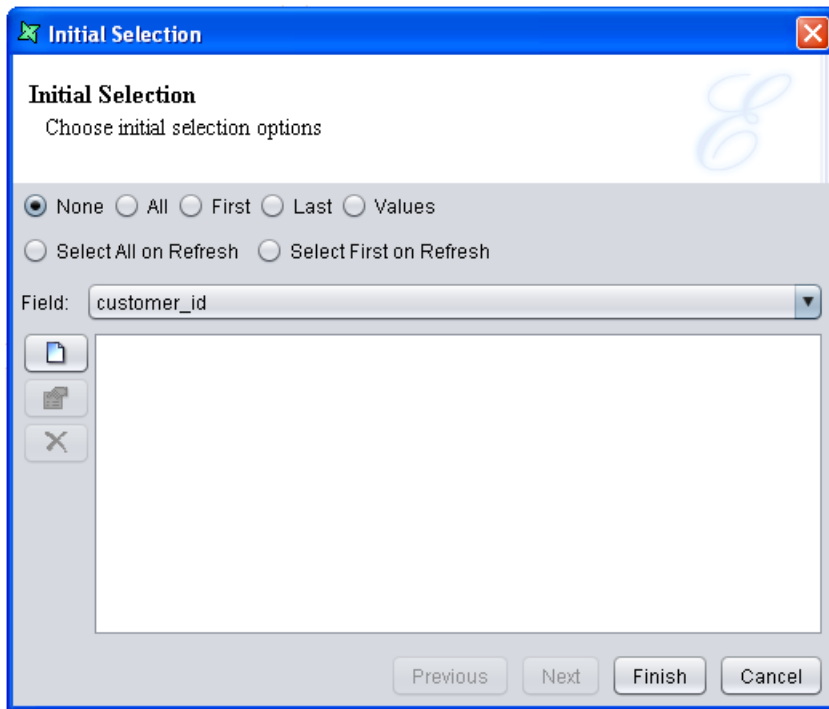
Figure 2.4. The W3C CSS Box Model



Initial Selection

When the dashboard is first loaded, it is often useful for contents to be given initial selections, so that the user isn't presented with a blank page. No initial selection is provided by default, but you can use the Initial Selection dialog, available on the popup menu of each content (or if you prefer, each view of the content). The dialog is shown in Figure 2.5, "Initial Selection Dialog".

Figure 2.5. Initial Selection Dialog



The choices for initial selection are:

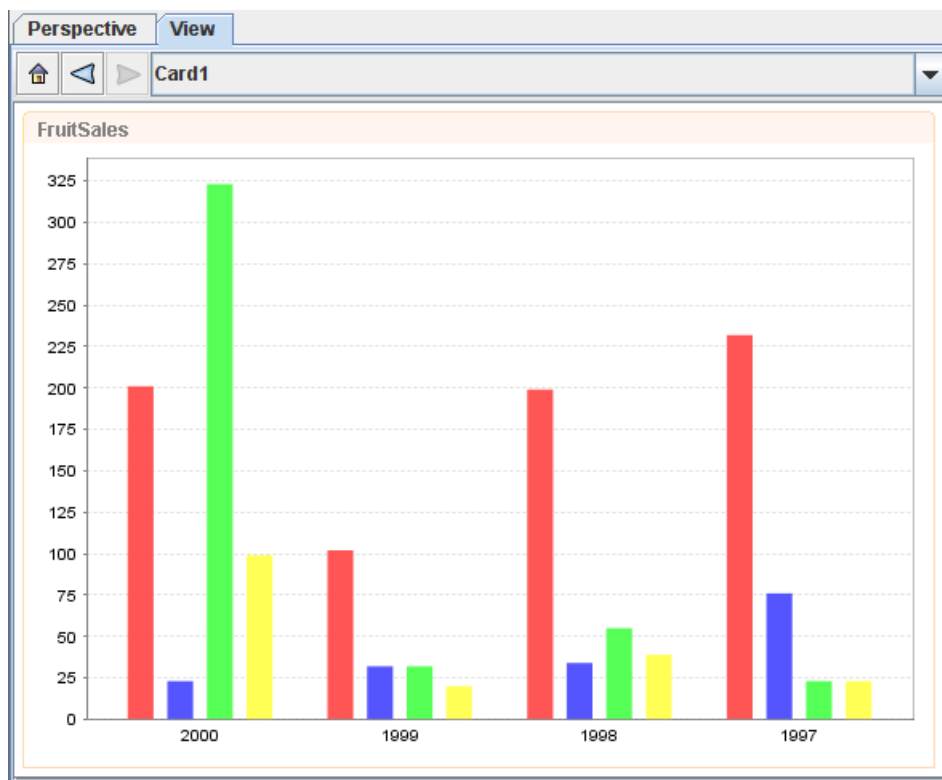
| | |
|-------------------------|--|
| None | The default - no items are initially selected. |
| All | All items are initially selected. |
| First | The first item is selected (depending on sort order, if any). |
| Last | The last item is selected (depending on sort order, if any). |
| Values | This option requires a field name and one or more constant or dynamic values to compare against the records. All records that contain values of the chosen field that match the value strings will be selected. Note that if the values are constant, they must be strings and any other data types will be formatted into strings if necessary, for comparison purposes. If the values are dynamic parameters, they must be defined in the <code>Parameters</code> tab page in <code>Perspective</code> . The parameter value follows the syntax below: <pre style="background-color: #f0f0f0; padding: 5px;"> <code>\${Parameter_Name#choice(option_1,option_2,option_3,...,option_n)}</code> </pre> After adding <code>\${Parameter_Name}</code> as a value, each time you click the Home button to refresh, the Dynamic Parameters window will display a dropdown list with pre-defined options for your selection. |
| Select All on Refresh | All items are selected and the selection is updated each time the view is refreshed. |
| Select First on Refresh | The first item is selected and the selection is updated each time the view is refreshed. |

Chart

A chart reads data from a datasource and renders it as a graphical display which sizes to fill the view it is placed in. The datasource chosen may be identified by a repository URL, in which case the content is fixed, or the datasource may be reading from another view, in which case the chart will be updated automatically each time the other view is modified.

There are many parameters that can be used to configure the presentation of the chart, most importantly what type of chart is required. The chart wizard and range of available charts and options is described in the Elixir Report Designer manual.

Figure 2.6. Chart on Perspective



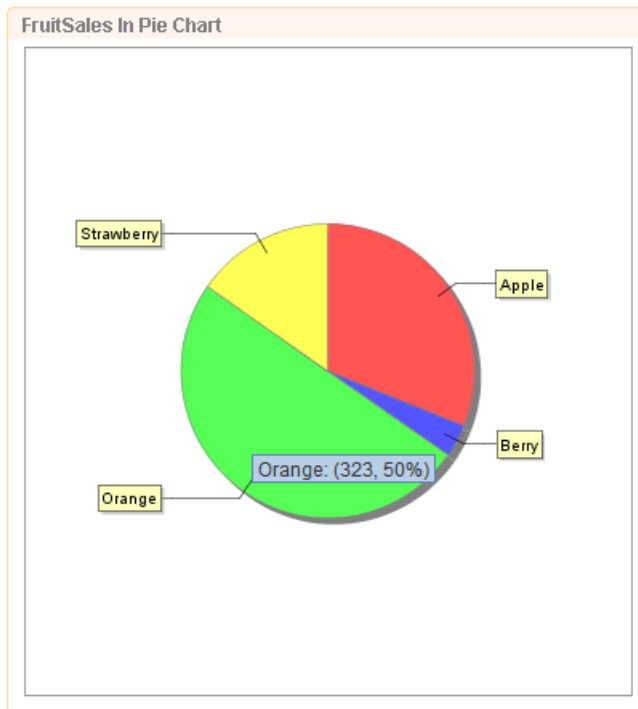
Bar, column, area and pie charts have selectable regions corresponding to the chart shapes. For example, clicking on a bar will select all records that contributed to that bar. You can create another view which uses this selection as a filter to control its display. You can also attach actions, so that clicking on a bar will show a new view or card which is mapped to the selection made. This is an easy method of creating a drill-down chart.

Pie Chart supports mouse-over and explode slices. In order for the Pie Chart to display the containing values when the mouse rolls over, the following scripts are required to be inserted under the Script tab of the *Edit Content Wizard* :

```
importClass(Packages.org.jfree.chart.labels.
StandardPieToolTipGenerator);
plot.setToolTipGenerator(new StandardPieToolTipGenerator());
```

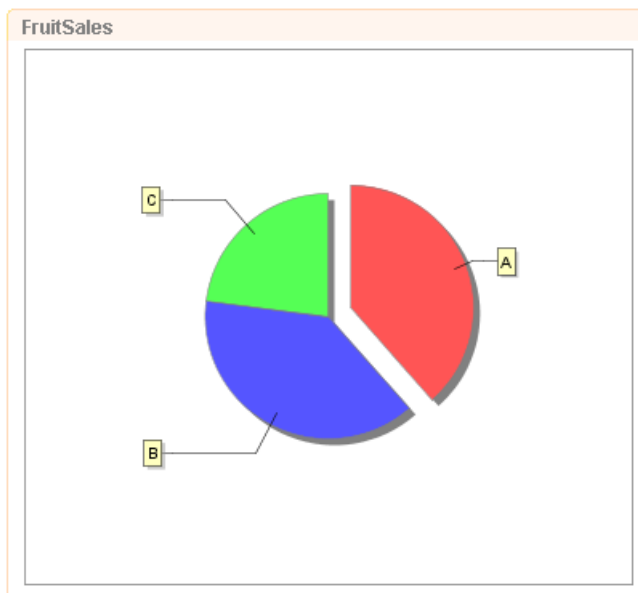
After the changes are being applied, the value of the particular slice of the pie will display its value when the mouse rolls over, as shown in Figure 2.7, "Mouse Roll Over Pie Chart"

Figure 2.7. Mouse Roll Over Pie Chart



In order to explode the slice of a Pie Chart when clicked, as seen in Figure 2.8, “Pie Chart Explode Slice”, enter a figure in **Explode Percent** in the **Pie** tab of the *Edit Content Wizard*. This figure represents the degree of "explosion" of the slice, meaning the space between the exploded slice and the pie chart.

Figure 2.8. Pie Chart Explode Slice



Available datasources: All, Selected, Unselected (only for bar, column, area and pie charts).

Cube Table

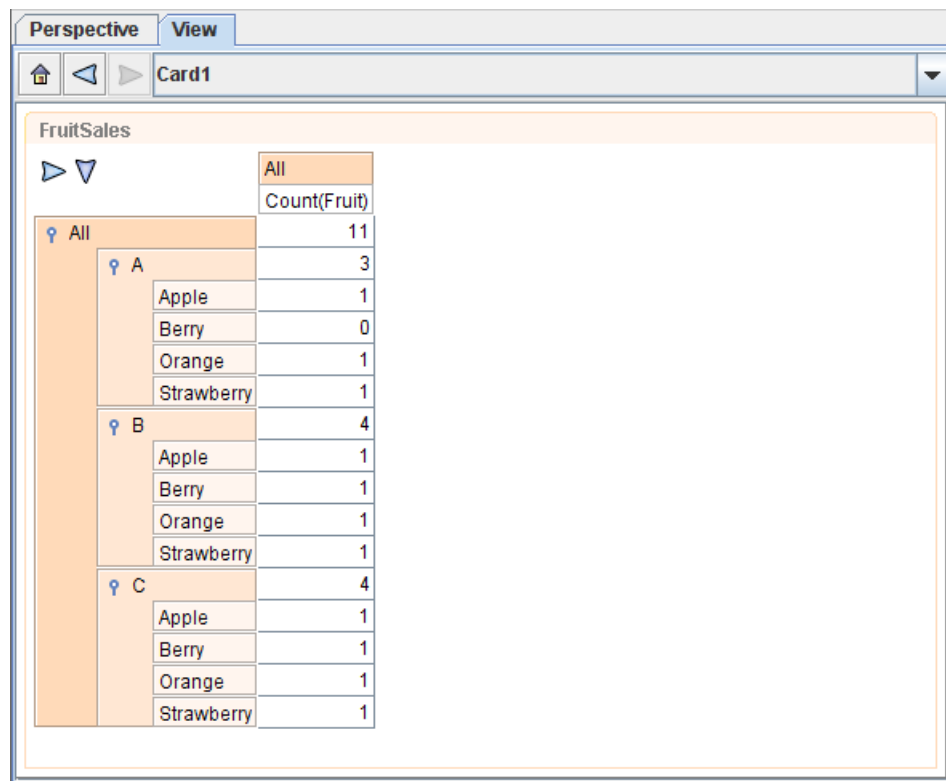
A cube table reads data from a datasource and renders a two-dimensional table showing the values derived from those records that form the intersection of the two dimensions. There are two ways in which a cube table can be designed. The Cube Table wizard provides a step-by-step dialog to guide the design process. This is identical to the wizard used in Elixir Report Designer and is described in that manual. The other approach is to create an empty cube table using the wizard (just click Finish after choosing a datasource) and designing the cube interactively. This approach is usually preferred because each change to the cube is immediately reflected in the view.

Similar to a Cube element in report template and Cube processor, Cube Table in a dashboard is able to *Show Row Grand Totals*, *Show Column Grand Totals*, *Row Totals After Details* and *Column Totals After Details*. To change the settings of the Cube Table in a dashboard, click on the arrowhead pointing downwards. The respective settings can be found in Row Options and Column Options. More information about Cube can be found in Elixir Data Designer.pdf, Chapter 4. Composite Datasource, the section on Cube Processor.

If the cube data is required for subsequent processing, it is possible to save the cube table contents into a CSV, DataSource, Excel or XML file.

Available datasources: All, Selected, Unselected.

Figure 2.9. Cube Table on Perspective



Glint

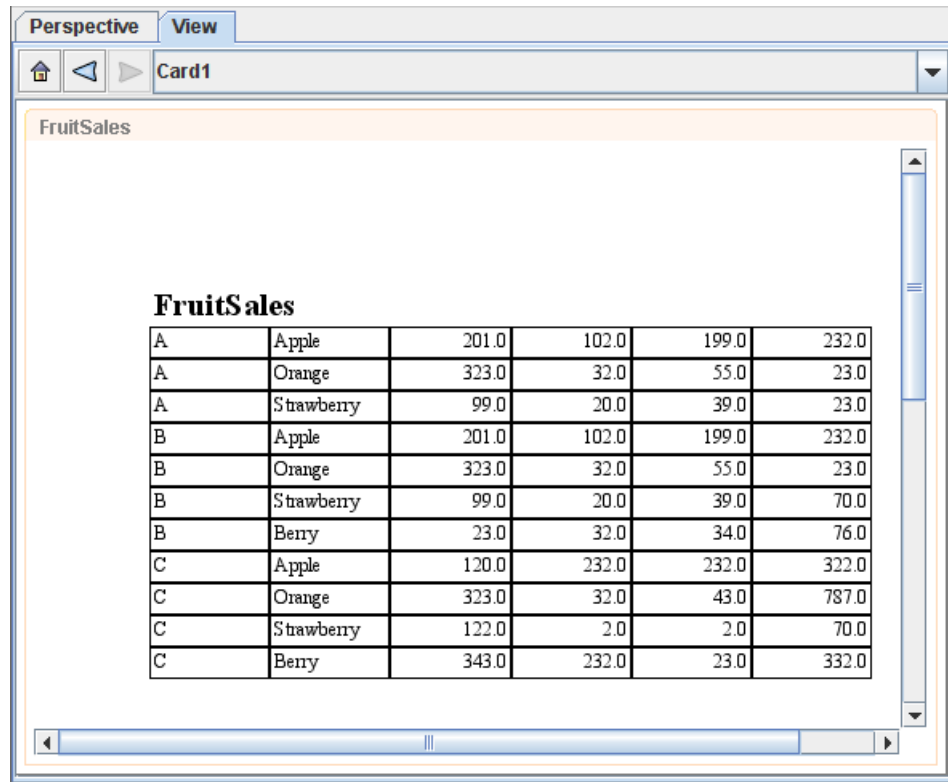
The glint content type renders a glint file to produce a graphical view. Glint is Elixir's native vector graphics format. It is designed to be extremely compact to minimize network traffic and reduce memory requirements on low-end machines. Instructions on generating a glint file can be found in the Report Designer documentation.

This is useful for displaying fixed content and pre-rendered output. For example, a view could be based on a FileSystem DataSource to show a list of glint files. Selecting a file would load it and display it in another view, allowing quick creation of a customized interface to access pre-rendered reports.

Available datasources: None.

A glint file can be opened from the Perspective tab by right-clicking on the glint file and select *Open Glint*.

Figure 2.10. Glint on Perspective



Grid

The grid content type is a special kind of table. The grid renders one field from each record and allows for a more compact representation, where the fields may be displayed in a grid layout.

Before rendering, any duplicate fields are removed and the values can optionally be sorted. When you select a field in the grid, you are actually selecting all records in the datasource that have that selected value. For example, with a grid showing the Field "Month", selecting "April" will select all records where Month=April.

When designing a grid, you can choose a direction, *Across*, then *Down* or *Down*, then *Across*, and either length in that direction. For example, a "4 Across, then Down" grid will place the cells like this:

```

1  2  3  4
5  6  7

```

There will be four cells in each horizontal row, and the fields will be added across then down. Alternatively, a "3 Down, then Across" grid would look like this:

1 4 7
 2 5
 3 6

In this case there are four cells vertically and the fields are added down then across.

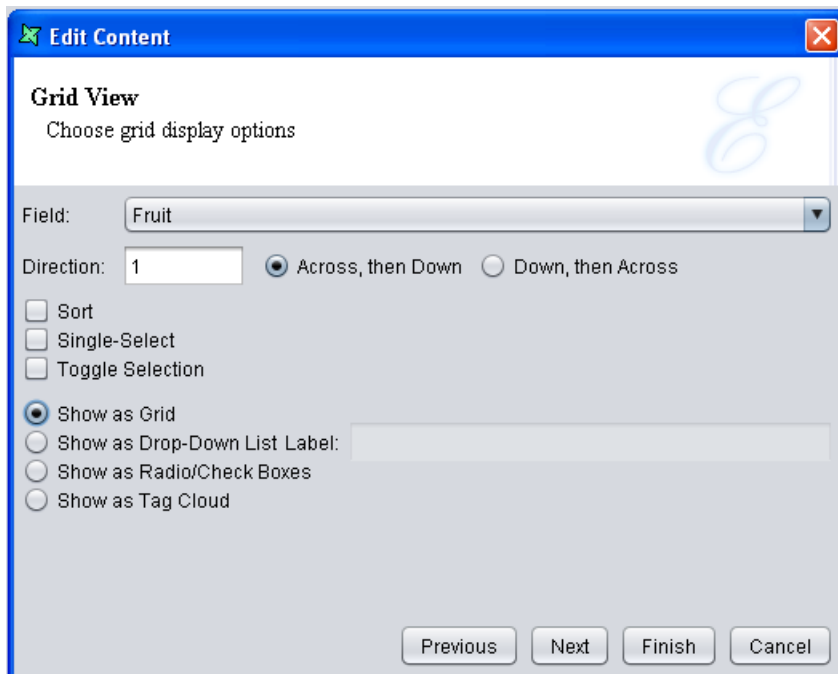
A grid can also be displayed as a Drop-Down list. This can be done on the second page of the Add Content wizard. The second page of Add Content wizard is shown in Figure 2.11, “Add Content Wizard”. The normal behaviour of grid selection is to turn off other selections each time a new selection is made (unless Control is held down). The grid also includes a Toggle Selection option which changes the behaviour so that the first click selects an item and a subsequent click on the same item is required to deselect it. This behaviour is often preferred as it prevents accidentally losing a set of existing selections by forgetting to press Control.

Check on the checkbox that says "Show as Drop-Down List" to create a Drop-Down list. Enter a name for the Label so a name will be displayed beside the Drop-Down list in the Dashboard. See Figure 2.11, “Add Content Wizard”. Note that the *Sort* in Figure 2.11, “Add Content Wizard” overrides the *Sort* in the earlier page of the wizard.

Checking on the checkbox that says "Show as Radio/Check Boxes" will create checkboxes. To create radio buttons, check the *Single-Select* option.

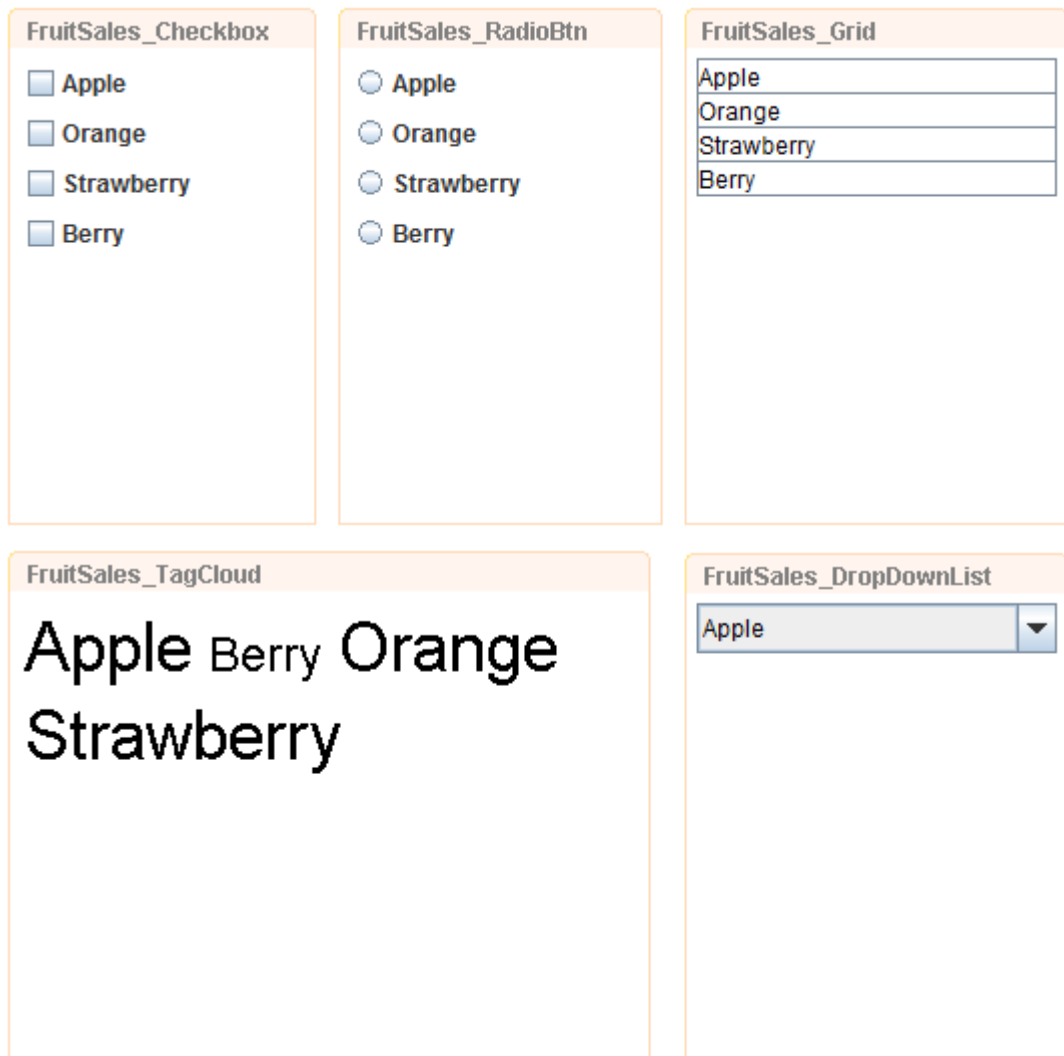
Checking on the checkbox that says "Show as Tag Cloud" will create a Tag Cloud, which consists of tags in different font sizes, depending on their frequency shown in the records. Upon your selection of the tags, corresponding records would be displayed in the view of the related table. Multiple selections are supported.

Figure 2.11. Add Content Wizard



Available datasources: All, Selected, Unselected.

Figure 2.12. Grid on Perspective



HTML

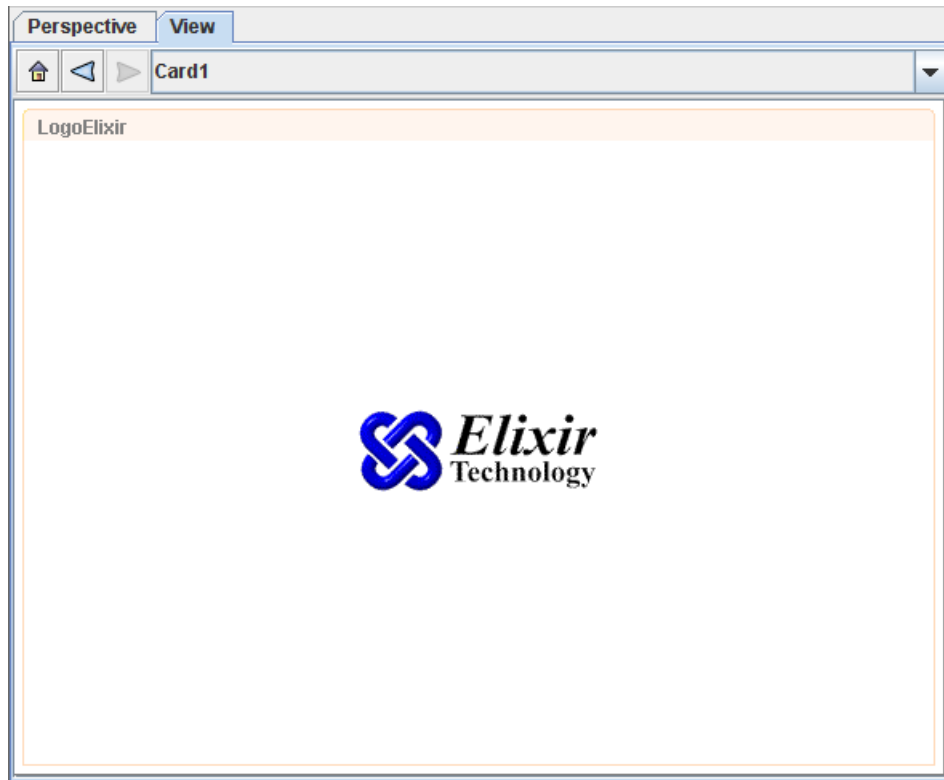
In HTML, user can enter any URL of a webpage and in a frame or page. If Embed HTML in Frame is selected, the webpage will be displayed within the frame. Embed HTML in a Page is seldom used for a webpage as there will be too much to process, since they are scripts from both the perspective and webpage to load.

If user chooses to embed the HTML in a page, there is a choice of Display content from URL and Display content from HTML text. The difference is that one will display the contents of the selected page, while the other will display contents entered by user in the provided field.

If the user selects Display content from HTML text, the user can either choose to enter HTML coding manually, or click Edit HTML whereby when the user finishes entering and/or formatting the contents in the field as seen in Figure 2.13, "HTML Editor", it will be converted into HTML codes automatically, as shown in Figure 2.14, "Completed HTML codes".

Available datasources: None.

Figure 2.15. Image on Perspective



Map

A Map element is a graphical framework that adds a new dimension to data visualisation, which is usually used to represent geographic areas. User can copy the Map element as an image and paste it in desired application by right-clicking on the Map element and select `Copy`.

Available datasources: All, Selected, Unselected

Report

Report templates created by Elixir Report Designer can be shown within a view. By default the templates will be rendered with their original datasources, as if rendered within Elixir Report Designer itself. However, you can also substitute new datasources derived from dynamic views in the Perspective. This allows interactive selection and filtering of data values for reporting. The report can be saved into any Elixir Report Designer output format, including Glint, PDF and HTML. Note that within a Perspective, a report is always shown in Streamed mode (no page breaks, page headers or footers). When the report is saved it is possible to choose either Streamed and Paged versions if the output format supports it.

Available datasources: None.

Figure 2.16. Report on Perspective

The screenshot shows a software window titled 'Perspective View' with a 'Card1' tab. Inside the window, a table titled 'FruitSales' is displayed. The table has 6 columns and 12 rows of data. The columns represent different categories and their associated numerical values.

| FruitSales | | | | | |
|------------|------------|-------|-------|-------|-------|
| A | Apple | 201.0 | 102.0 | 199.0 | 232.0 |
| A | Orange | 323.0 | 32.0 | 55.0 | 23.0 |
| A | Strawberry | 99.0 | 20.0 | 39.0 | 23.0 |
| B | Apple | 201.0 | 102.0 | 199.0 | 232.0 |
| B | Orange | 323.0 | 32.0 | 55.0 | 23.0 |
| B | Strawberry | 99.0 | 20.0 | 39.0 | 70.0 |
| B | Berry | 23.0 | 32.0 | 34.0 | 76.0 |
| C | Apple | 120.0 | 232.0 | 232.0 | 322.0 |
| C | Orange | 323.0 | 32.0 | 43.0 | 787.0 |
| C | Strawberry | 122.0 | 2.0 | 2.0 | 70.0 |
| C | Berry | 343.0 | 232.0 | 23.0 | 332.0 |

SWF

SWF element uses .swf files which cannot be created using Repertoire, but is required for creating a SWF element. User will need to create their own .swf file. In the section called “Case Study 4 - SWF Content”, it demonstrates the use of SWF element in a simplified way.

Available datasources: All, Selected, Unselected

SWF Chart

SWF Chart displays a Chart element in a more attractive and vibrant manner compared to JFreeChart. Moreover, the user will be able to see the change in action when viewing the chart in the web interface of Repertoire Server. In the section called “Case Study 5 - SWF Chart”, it explains the way to create a SWF Chart.

Available datasources: All, Selected, Unselected

Table

A table shows records from a datasource, one row per record. This is a one-dimensional presentation, unlike the cube table which has two dimensions of variation. As with the other datasource-based contents, the records can be filtered before showing, and in the case of table, columns can also be discarded. This means the user can focus on just the few fields that are important. Of course, for even more control than table can be backed with a Composite DataSource that provides additional processing options.

A table provides Single-Select and Toggle Selection options. Toggle Selection changes the commonly-used Single-Select behaviour so that the first click selects an item and a subsequent click on the same

item is required to deselect it. This behaviour is often preferred as it prevents accidentally losing a set of existing selections by forgetting to press Control. To choose from the Single-Select and Toggle Selection option, click on the *Perspective* tab, right-click on a table name. A pop-up menu opens. Select Properties. The Edit Content Wizard opens. Click 4 times on Next, and then you can set the view options. Depending on your needs, select the Single-Click or Toggle Selection checkbox, as shown in Figure 2.17, “Set view options”.

Figure 2.17. Set view options

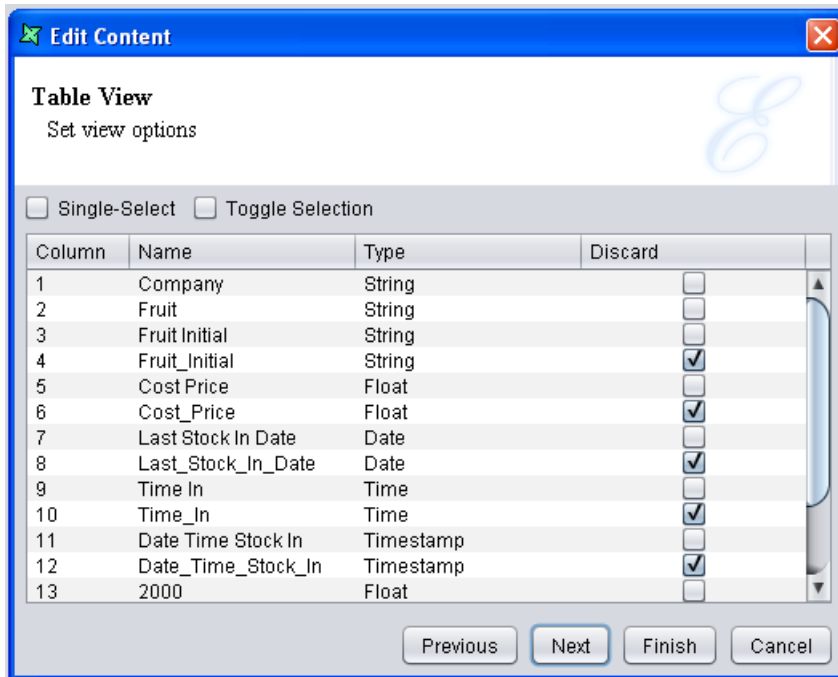


Table data can be saved into a CSV, DataSource, Excel or XML file for subsequent processing.

Available datasources: All, Selected, Unselected.

Figure 2.18. Table on Perspective

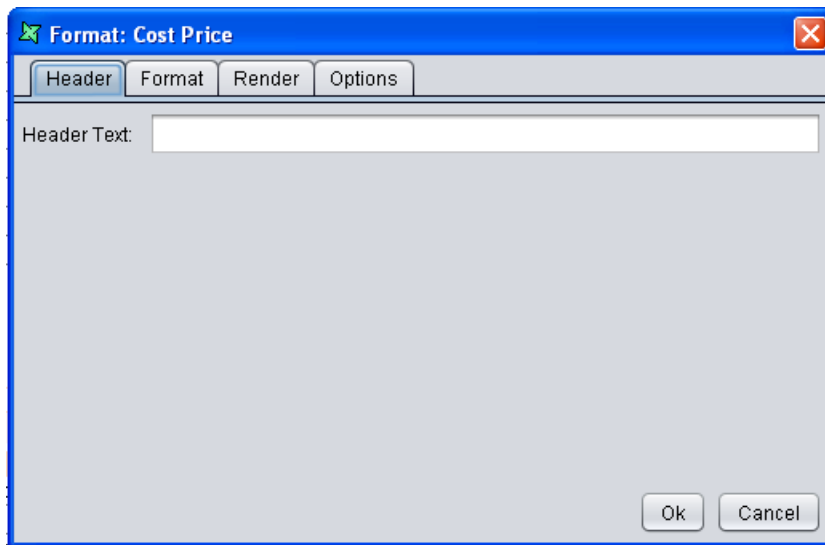
| FruitSales | | | | | |
|------------|------------|-------|-------|-------|-------|
| Company | Fruit | 2000 | 1999 | 1998 | 1997 |
| A | Apple | 201.0 | 102.0 | 199.0 | 232.0 |
| A | Orange | 323.0 | 32.0 | 55.0 | 23.0 |
| A | Strawberry | 99.0 | 20.0 | 39.0 | 23.0 |
| B | Apple | 201.0 | 102.0 | 199.0 | 232.0 |
| B | Orange | 323.0 | 32.0 | 55.0 | 23.0 |
| B | Strawberry | 99.0 | 20.0 | 39.0 | 70.0 |
| B | Berry | 23.0 | 32.0 | 34.0 | 76.0 |
| C | Apple | 120.0 | 232.0 | 232.0 | 322.0 |
| C | Orange | 323.0 | 32.0 | 43.0 | 787.0 |
| C | Strawberry | 122.0 | 2.0 | 2.0 | 70.0 |
| C | Berry | 343.0 | 232.0 | 23.0 | 332.0 |

Note

When user tries to right-click within a particular column of a Table element, an option `Format` is available. The Format wizard has 4 tabs, as shown in Figure 2.19, “Format wizard”.

- `Header` tab allows user to rename a particular column by entering the new name in the Header Text field.
- `Format` tab allows user to select the format type for that particular column. The choice of Currency, Percent, Number and Date/Time is available.
- `Render` tab allows user to change the icon, background and foreground colour of row(s) in the particular column that satisfies the specified condition.
- `Options` tab determines the display of text and icon and also the alignment.

Figure 2.19. Format wizard



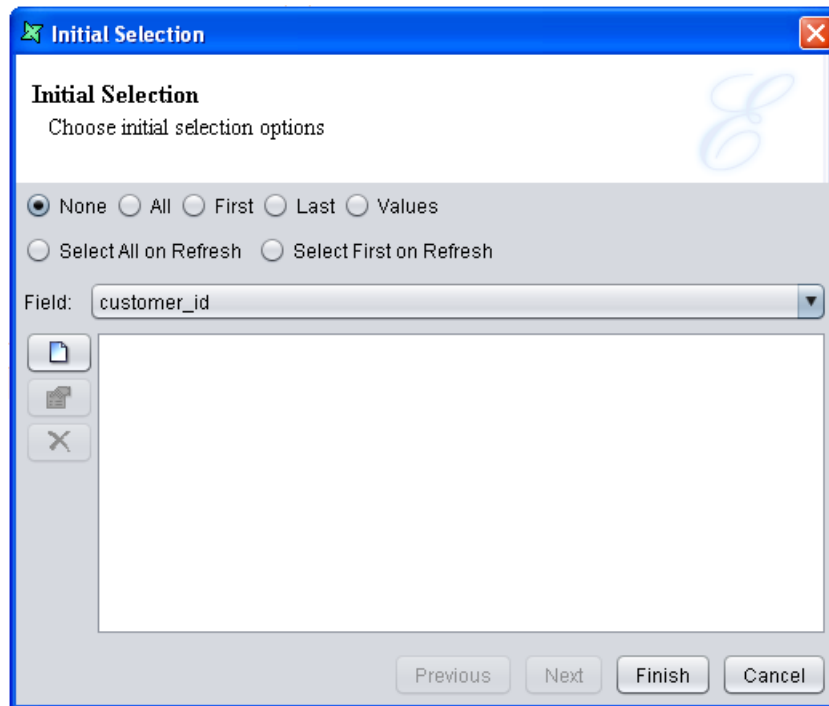
Case Study 1 - Filter, Sort and Extract Data

In this case study, filtering, sorting and extracting data from the wizard and using `${view:ViewName.Selection}` will be covered. The idea of this dashboard is to select a *product_id* from a Grid element and a Table element will display records with the selected *product_id*. The border title for the Table element will display the *product_id* selected.

1. Create a JDBC datasource and name it *Sales* using MondrianFoodMart. Click on the Query Builder button and use the table named *sales_fact_1997*. Select all the fields. Infer the schema and end the wizard.
2. Create another JDBC datasource and name it *Sales_param*. Then, follow the steps mentioned above except in the SQL Query, enter *WHERE sales_fact_1997.product_id=\${id}* after the line that says *FROM sales_fact_1997*. Infer the schema. When prompted for the id, enter *1* and exit from the wizard by clicking on the Finish button.
3. Create a new Perspective and give it a unique name. Drag *Sales.ds* to the perspective. Select Add Grid. When the wizard appears, click on the Next button twice. In the Expression Builder, enter 100 in the Amount field. Then, click on the Set Value button. This will extract the top 100 data from the datasource. Click on Next twice.
4. At this screen of the wizard, the user will need to select the field for the Grid element to display. In the drop-down list, select *product_id*. Finally, exit from the wizard by clicking on the Finish button.
5. The Grid element will be displayed on the perspective with *Sales* as the border title.
6. Drag *Sales_Param.ds* into the perspective. Place it on the right of the Grid element. On release of the mouse-click, select Add Table. At the second page of the wizard, you will see the parameter defined in the datasource. Under Value, change *\${id}* to *\${view:Sales.selected:product_id}*. This will pass in the value selected by the user from the Grid element to *Sales_param.ds* as a parameter. The Table element will display the respective results.
7. At the next page of the wizard, add a Sort by clicking on the Add icon. Select *product_id* and Ascending for the Name and Sort Order respectively. This will sort the data according to the *product_id* in ascending order.

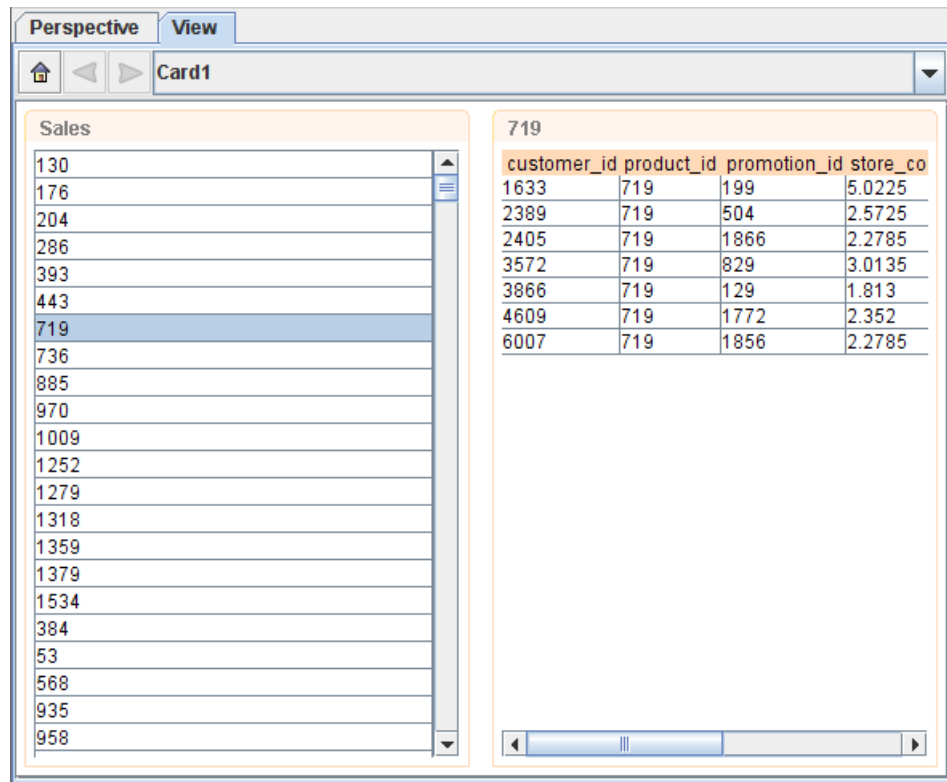
8. Click on the **Next** button twice. Over here, you will be able to do some filtering of data. Under **When of *promotion_id***, select *Not Equals*. As for the **Condition**, enter the value *0*. This will filter away all the records where the *promotion_id* is zero. Finally, click on **Finish** to exit from the wizard.
9. When an error appears saying that there is an error building the datasource table for repository caused by a syntax error in the query expression, this is the correct behavior. This is because when the perspective tries to load the data in all the elements, the **Table** element doesn't have any data to load. There is no value being passed to the parameter, therefore causing the error. To solve this problem, you can add **Initial Selection** to the **Grid** element. With **Initial Selection**, the **Table** element will have a value to pass to the datasource when it loads.
10. To add **Initial Selection**, right-click on the **Grid** element and select **Initial Selection...** You will then see the **Initial Selection Wizard** like Figure 2.20, "Initial Selection Wizard". Select **Select First on Refresh**. For the **Field**, select *customer_id*. Click on **Finish**. With this setting, the first record of the **Sales** element will be selected (based on *customer_id*) each time the view is refreshed.

Figure 2.20. Initial Selection Wizard



11. In order for the border title of the **Table** element to display the *product_id* selected in the **Grid** element, right-click anyway on the **Table** element. Select **Presentation...** The default value for **Border Title** is *#{ContentName}*, which is the name of the element in the perspective. This name is editable at the properties of the element. To change it to reflect the selected *product_id*, enter *#{view:Sales.selected;product_id}* in the **Border Title** field. Click on **Finish** to exit from the wizard.
12. Try clicking on some of the values under **Sales**. The value selected will also be the border title of the **Table** element, which is similar to Figure 2.21, "Results of Case Study"

Figure 2.21. Results of Case Study

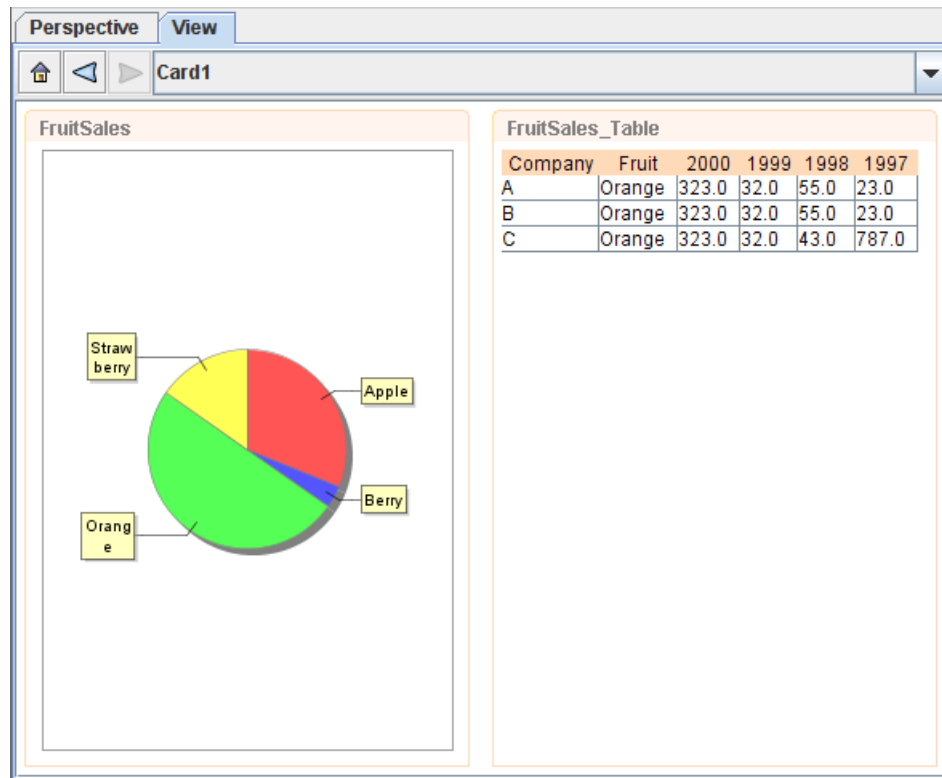


Case Study 2 - Chart Drilldown

In this case study, we will demonstrate how to use the Chart element drilldown function.

1. The first element to create, needless to say will be the Chart element. Drag FruitSales.ds into the Perspective and select Add Chart. After clicking on Next 4 times, you will need to select a chart type. Select *Pie* followed by *Pie chart* then Next.
2. For the Key tab, select *Fruit*. For Value tab, select *2000*. Exit the wizard by clicking on Finish.
3. Next, drag FruitSales.ds again into the Perspective and place it on the right. This time, select Add Table. On the first page of Add Content Wizard, click on the View tab and select *FruitSales* then Selected. Exit the wizard by clicking on Finish.
4. On the Perspective workspace, try clicking on the different slices on the Pie Chart. Since the Key of the Pie Chart is *Fruit*, when the user clicks on the different slice, the Table element will display the records with the selected *Fruit*, which is similar to Figure 2.22, "Results of Case Study 2".

Figure 2.22. Results of Case Study 2



Case Study 3 - Explicit Dependencies

The use of *Explicit Dependencies* will be demonstrated in this case study. For example, there is a Table element and a Chart element that has its column colour changed based on the selection in the Table element. This will require some scripting in the Chart element. In this case, using *view.selected* will not work as the perspective will not know of the dependency by the parsing of scripts. In some other cases, the scripts might be calling some other codes which decides where to read data from. Therefore, we explicitly added the dependency so that the element will be updated whenever there is a change in the other element. It is useful only if the dependencies are hidden in scripts.

1. First of all, create a Tabular datasource named *CompanyName*, with *Company* as Name, *String* as Type.
2. Add 3 columns and name them *A*, *B* and *C* respectively. Click on *Finish* to complete the creation process.
3. Create a Grid element using *CompanyName.ds* by dragging it into the perspective and select *Add Grid*. After 4 clicks on *Next* button, user will reach *Choose grid display options* page.
4. Select *Company* from the dropdown list. Check on *Single-Select* so that only one selection can be done at a time. Click on *Finish* to complete the creation of the Grid element.
5. Then, create a Chart element by dragging the same datasource into the perspective and place it below the Grid element. This time, select *Add Chart*. Create a Column Chart using *Company* as the Key. As for the Values, add 2000, 1999, 1998 and 1997.
6. In the *Script* tab, enter the following script which will change the colour of the columns based on the respective selection:

```

importClass(Packages.com.elixirtech.chart2.custom.
    CustomDrawingSupplier);

var paints = null;
if (cxt!=null)

{
    var select = cxt.getPerspectiveState().getState
        ("CompanyName");

    if (select.getSelectedValue() == "A")
    {
paints = ["rgb(228,54,0)", "rgb(245,121,111)"];
    }

    else if (select.getSelectedValue() == "B")
    {
paints = ["rgb(35,119,47)", "rgb(99,179,143)"];
    }

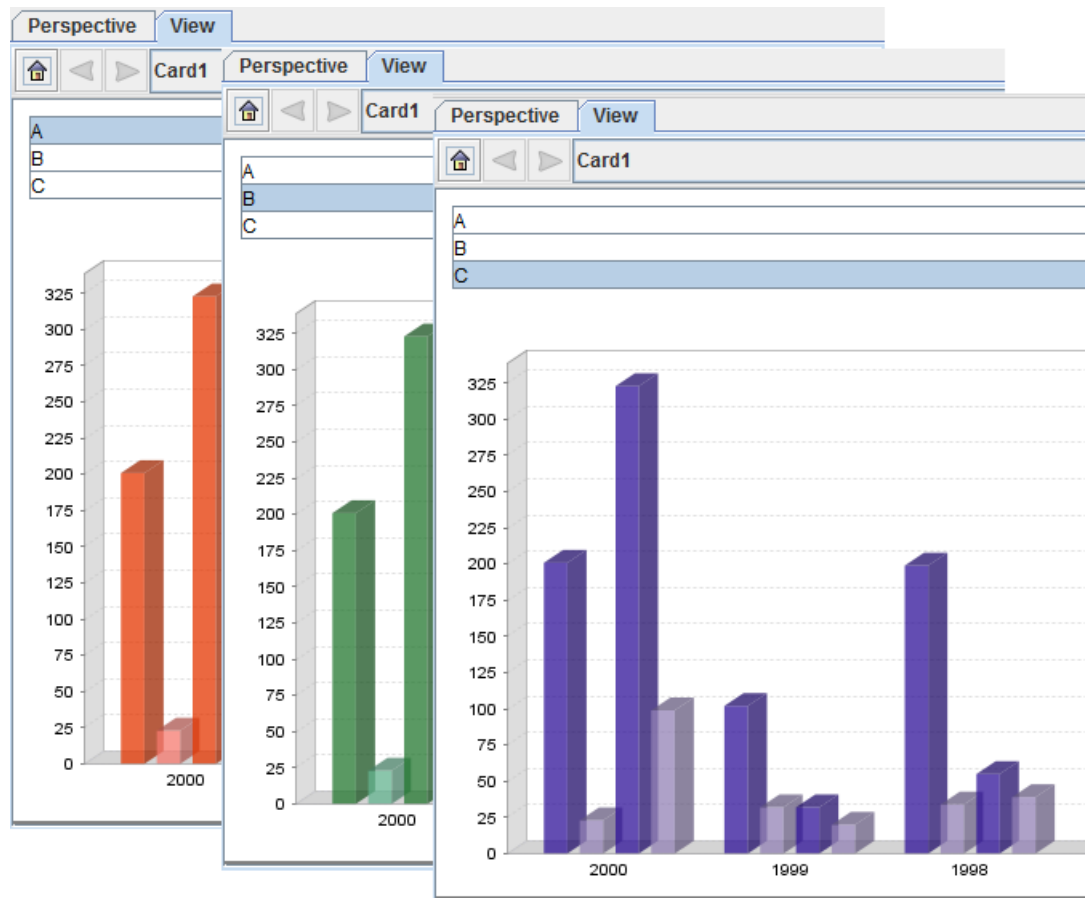
    else if (select.getSelectedValue() == "C")
    {
paints = ["rgb(47,18,152)", "rgb(147,130,182)"];
    }

    if (paints!=null)
    {
        var cds = new CustomDrawingSupplier();
        cds.setPaintNames(paints);
        plot.drawingSupplier = cds;
    }
}

```

7. Click on Next. This is the page where the user can select the explicit dependencies. Select CompanyName. This will let the Chart element know that it will be depending on the Grid element. Click on Finish to create the Chart successfully.
8. Try clicking on the options in the Grid element. The Chart element below will change its colour according to the colours specified in the script, as seen in Figure 2.23, "Final Result".

Figure 2.23. Final Result



Case Study 4 - SWF Content

The purpose of this case study is to demonstrate the way to use a SWF element as a table and displaying the data selected.

1. In a newly created perspective, drag *FruitSales.ds* into the blank space and select Add Table.
2. After clicking on Next once, click on Finish.
3. Next, drag the *Table.swf* to the bottom of the table. This file can be found in ElixirSamples/Dashboard/SWF Dashboard/swfs/.
4. The Add Content window will appear. Click on the View tab and select *FruitSales* and Selected. This will mean that the SWF element will display according to the data selected from the table created using *FruitSales.ds*.
5. After 5 clicks on Next, user needs to enter the respective names for the columns. Enter a parameter name, for example, *columns* for the Name field. For Value, enter the following

```
Company | Fruit | {Year: 4} | 1997 | 1998 | 1999 | 2000
```

The above line will split the table into 6 different columns, with names *Company*, *Fruit*, *1997*, *1998*, *1999* and *2000*. Rows *1997*, *1998*, *1999* and *2000* are split into 4 columns, with *Year* as the heading.

6. Click on Finish to complete the creation.

- To see the SWF element, it has to be opened from Repertoire Server web interface. When the Perspective is opened, it will look like Figure 2.24, “SWF Chart”.

Figure 2.24. SWF Chart

| Company | Fruit | 2000 | 1999 | 1998 | 1997 |
|---------|------------|-------|-------|-------|-------|
| A | Apple | 201.0 | 102.0 | 199.0 | 232.0 |
| A | Orange | 323.0 | 32.0 | 55.0 | 23.0 |
| A | Strawberry | 99.0 | 20.0 | 39.0 | 23.0 |
| B | Apple | 201.0 | 102.0 | 199.0 | 232.0 |
| B | Orange | 323.0 | 32.0 | 55.0 | 23.0 |
| B | Strawberry | 99.0 | 20.0 | 39.0 | 70.0 |
| B | Berry | 23.0 | 32.0 | 34.0 | 76.0 |
| C | Apple | 120.0 | 232.0 | 232.0 | 322.0 |

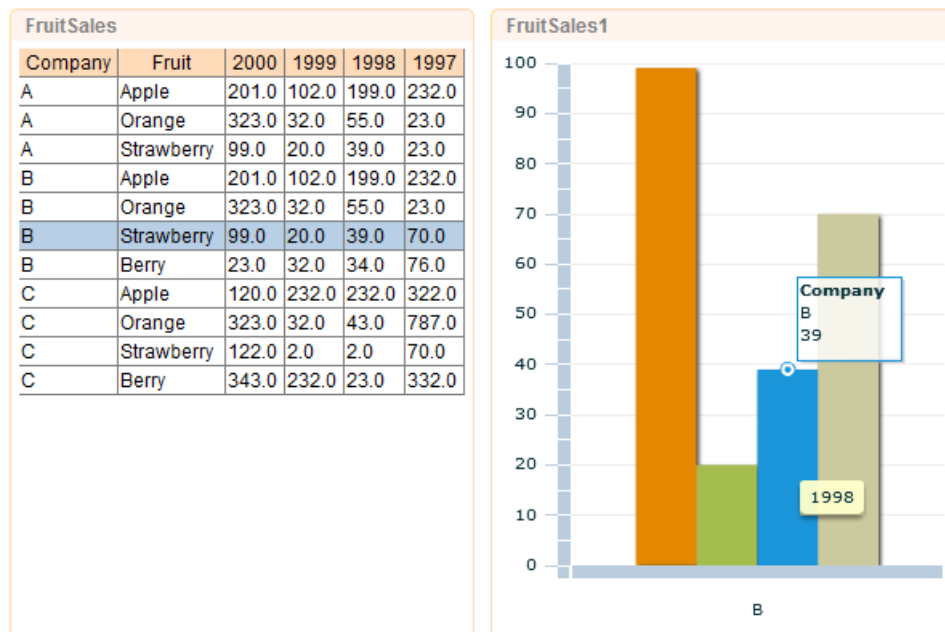
| Company | Fruit | Year | | | |
|---------|--------|------|------|------|------|
| | | 1997 | 1998 | 1999 | 2000 |
| B | Orange | 23 | 55 | 32 | 323 |
| | | | | | |
| | | | | | |
| | | | | | |

Case Study 5 - SWF Chart

A SWF Chart is very similar to the Chart used in Report Designer. The only difference is only the appearance and the variety of chart types available.

- In a newly created perspective, drag *FruitSales.ds* into the blank space and select Add Table.
- After clicking on Next once, click on Finish.
- Next, drag *FruitSales.ds* to the right of the Table and select Add SWF Chart.
- In the View tab, click on *FruitSales*, then select the option Selected. This will mean that the SWF Chart will display data according to the selected row.
- On the next screen, sorting can be done according to requirements. This case study is to illustrate the creation of a simple SWF Chart, so we will skip that.
- After 3 clicks on the Next button, choose a desired chart type. We will use a Column Chart in this case study. It can be seen that the variety of charts available is lesser compared to the usual chart variety. This is because SWF Charts can only be applied to few particular types of charts.
- On the next page of the wizard, select *Company* under the Key tab.
- In the Values tab, check all the available checkboxes.
- In the Group tab, select *On Value* for the Group on drop-down list and select *Sum* for the Operation drop-down list. Then click on Finish.
- In order to see the SWF Chart, it has to be opened from Repertoire Server web interface. When the Perspective is opened, it will look like Figure 2.25, “SWF Chart”. SWF Chart itself will display data of a particular column on a mouse rollover.

Figure 2.25. SWF Chart



11. Try clicking on other rows in the Table element. The SWF Table will react based on the data selected and you will be able to see the chart in action.

Case Study 6 - SWF Slider with Chart

The prerequisite for this case study is to have a .swf file that has the design of a slider. As a reminder, the slider wouldn't be seen in Repertoire Designer nor Remote Designer. The only way to see the slider work is to view the dashboard over the server.

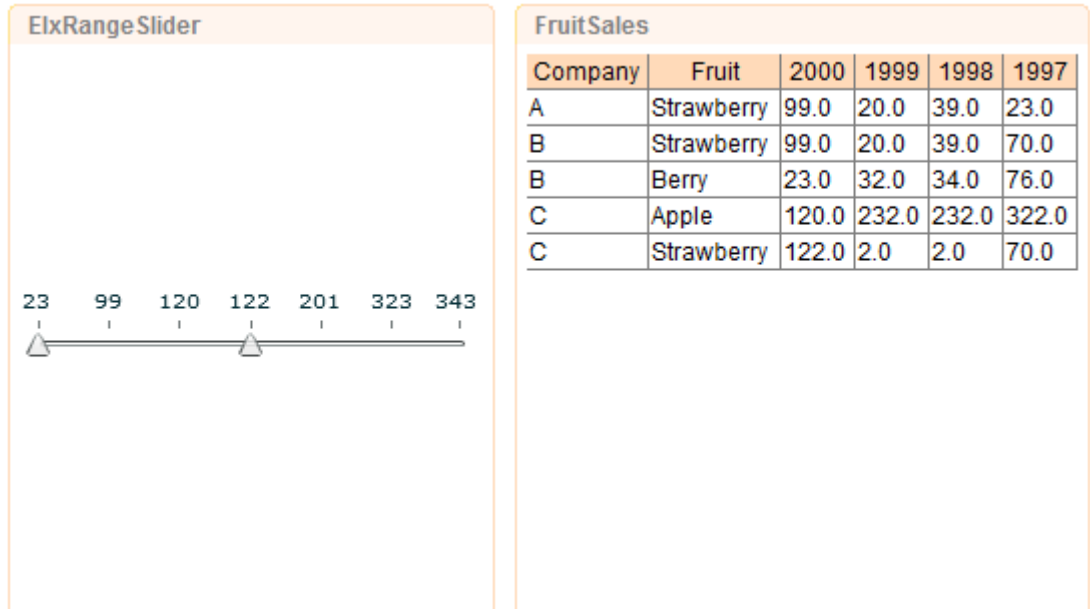
1. In a newly created Perspective, drag the RangeSlider.swf file with range slider design into the blank space.
2. Select the datasource to be used. In this case study, we'll be using *FruitSales.ds*.
3. Click on Next 5 times. The skipped pages are for sorting and filtering of data.
4. This page of the wizard is for the user to enter parameter values to be passed to the .swf file.
 - *nameField* (mandatory) : the field that the slider represents
 - *x* (optional) : the X location within the SWF rectangle. The default value is 0, which is about 5px from the edge due to SWF having 5px padding.
 - *y* (optional) : the Y location within the SWF rectangle. The default value is 0, which is about 5px from the edge due to SWF having 5px padding.
 - *width* (optional) : the width of the slider. The default is set to 100%. However, when entering a figure, do not use percentages. The unit of measurement for width is pixel.
 - *height* (optional) : the height of the slider. The default is set to 100%. However, when entering a figure, do not use percentages. The unit of measurement for height is pixel.
 - *grouping* (optional) : Three different values can be entered. None, Ordered and Sorted. The default value is None. Ordered will list the figures in the order that it is in the datasource. Sorted will list the numbers in ascending order.

- *labels* (optional) : words to show on the slider. This is only applicable when *grouping* is None.
- *snapInterval* (optional) : the number of units moved with each click on the slider.
- *tickInterval* (optional) : the incremental value of each marker on the slider.

For this case study, have 2000 as the value for nameField and *Sorted* for grouping.

5. Click on Finish.
6. Next, drag *FruitSales.ds* to the right of the SWF.
7. In the View tab, select `ElxRangeSlider`, which is the .swf file, then the selected option.
8. Click on Finish.
9. Save the dashboard and go into the web interface of the server.
10. Try dragging the slider to different figures. The table on the right will reflect records ranging between the chosen value, as in Figure 2.26, “SWF Range Slider”.

Figure 2.26. SWF Range Slider



Chapter 3

Views

Introduction

Elixir Dashboard Designer provides a hierarchy of views to control the layout of content. The topmost view is the Card. There may be many cards in a dashboard, but only one card is visible at a time and switches between cards can be done either manually, using the combo box on the titlebar, or based on actions. For example, a double-click on a chart could switch to a card that contains a breakdown of the information in that chart.

Within a card, there may be two kinds of view. One kind is split views, which divide the available space amongst their children, and the other kind is content views, which render content such as a chart or table.

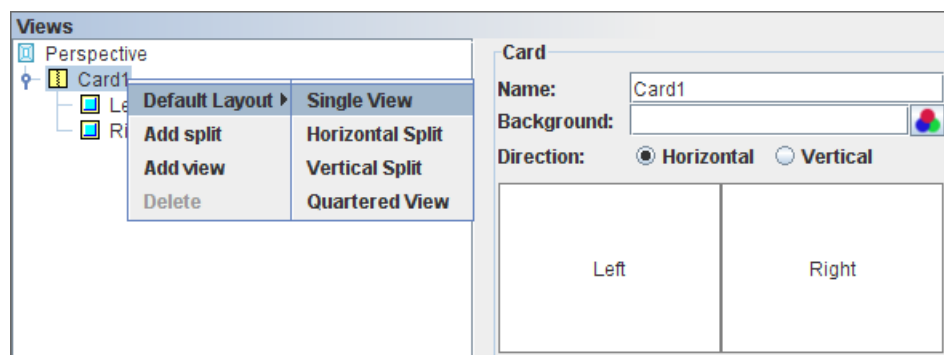
Card

The card is the top level view. As mentioned in the introduction a dashboard can contain many cards, but only one can be visible at a time. Every card must have a unique name, allowing it to be selected in response to user actions. A card is implemented as a kind of split view. So the discussion of split view below also applies to card. Cards can also define a background colour, which will fill the whole background of the dashboard. Individual contents can set their own background colours, which only affects their individual view rectangles. The default background colour is white.

Layout

When the Card is selected, the layout of the views will be displayed accordingly in the Card panel. Also, right-clicking on the Card then "Default Layout" shows options available for setting the layout of the Card, as shown in Figure 3.1, "Layout". The name, background colour and direction of the Card can be changed from here.

Figure 3.1. Layout



Single View : A Single View, as seen from the name, will only 1 view can be seen.

Horizontal Split : A Horizontal Split will split the dashboard into 2 halves and each view placed beside each other. Only 2 views can be seen in the dashboard.

Vertical Split : A Vertical Split will split the dashboard into half and 1 view will be on top of the other. Like the Horizontal Split, only 2 views can be seen in the dashboard.

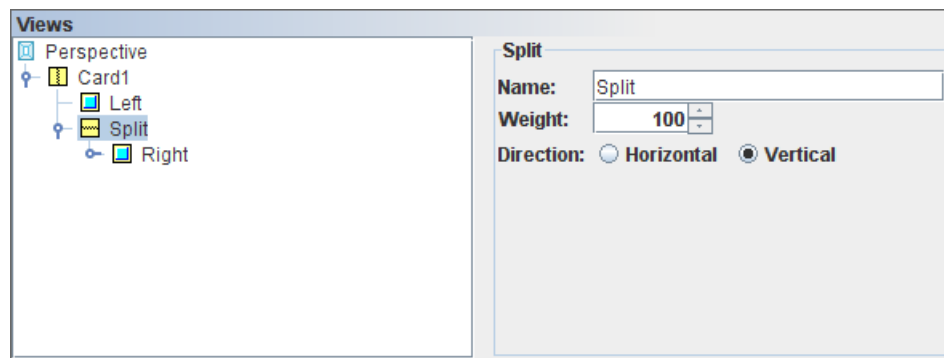
Quartered View : A Quartered View will split the dashboard into 4 equal squares.

After setting the Default Layout, a user can still add view(s) to the dashboard manually.

Split View

A split view will present it's child views (which may be content views or more splits) in a sequence, either left to right (horizontal mode) or top to bottom (vertical mode). The amount of space given to each child depends on the weight attribute of the child. Each child is given a space proportional to it's weight divided by the sum of all child weights. The default weight is 100, and unless changed will give equal spacing to each child. Weights are used rather than explicit sizes, in pixels or inches etc. so that the Perspective output can scale properly to be shown on different size devices. Editing can be done in the screen as shown below.

Figure 3.2. Split View



Splits can also be resized manually by dragging the gap between views. Resizing varies the weights of the cells on either side of the gap being dragged. This is a useful option for direct manipulation of the views themselves, in conjunction with drag and drop described in the section called “Drag and Drop”.

Content View

Each content view identifies a content by name to be shown within it. The content can be changed dynamically by the user, explicitly choosing a new content, or through an action which can trigger the content change. Each content view should have a unique name so that it can be referenced as part of a `view: URL` to link records to other contents.

If the content is dependent on a datasource, instead of another content, right-clicking on that particular content will allow the user to open the datasource as one of the options.

Maximize

A single content view can be maximized to fill the entire Perspective. The view can be maximized by choosing the Maximize option from the titlebar, or by double-clicking on the titlebar. Similarly the view can be restored to it's original size by choosing the Restore option from the titlebar, or by double-clicking again on the titlebar.

It is also possible to maximize and restore a view with a user action, such as double-clicking. In this case, the view to be maximized might not even be on the current card. In this situation, the chosen view will be maximized as expected, and on restoration the original card will remain visible. This

approach means it is easy to use other cards to hold a number of "popup" views and maximize them based on different user actions. Actions can also be used to restore views to their normal size, which has the effect of returning to the original card.

Drag and Drop

As well as populating cards using the wizard, it is possible to create views dynamically. Dragging and dropping glint files, report templates and datasources from the repository onto a card enables interactive positioning. With this approach, the tool will automatically insert the split views necessary to support the content views that are dropped.

When dragging over a view, a blue box is shown to indicate the current drop region. When near to the edge of a view, any drop will create a new content view on that side, introducing a split view if necessary. When dropping directly over a view, the old view will be replaced by a new one showing the new content. Note that when creating views this way, the content and view names are initialized automatically by the tool to ensure they are unique. It is possible to adjust the names later if desired.

Chapter 4

Actions

Introduction

Many kinds of content can fire events when the user interacts with them. These events may in turn trigger actions that manipulate or update the views being shown. This chapter describes the events that each kind of content can generate, what kinds of actions can be performed and then explores how to handle those events in order to trigger actions.

Content Events

Users interacting with content generate events that consist of three pieces of information `<content,view,event>`. The content attribute is the name of the content that the event occurred on. The view attribute is the name of the view the event occurred on. The event attribute is the name of the event. An example event might be: `<Employees,LeftTable,doubleClick>`. In this section we will describe the events that each kind of content can generate.

| | |
|------------|---|
| Chart | <code>click:{key}[:{value}]</code> , <code>doubleClick:{key}[:{value}]</code> , refresh, select |
| Cube Table | <code>click</code> , <code>doubleClick</code> , refresh, select |
| Glnt | <code>click[:{url}]</code> , <code>doubleClick[:{url}]</code> , refresh |
| Report | <code>click[:{url}]</code> , <code>doubleClick[:{url}]</code> , refresh |
| Table | refresh, select |
| Grid | <code>click:{key}[:{value}]</code> , <code>doubleClick:{key}[:{value}]</code> , refresh, select |
| Map | <code>click:{key}[:{value}]</code> , <code>doubleClick:{key}[:{value}]</code> , refresh, select |
| HTML | <code>click:{key}[:{value}]</code> , <code>doubleClick:{key}[:{value}]</code> , refresh |

Elements written in braces like this: `{xxx}` are substituted by dynamic values depending on where the event occurs. These are usually preceded by a colon symbol (`:`). Elements written in square brackets like this `[yyy]` are optional, and may not be present if the information is not available. For example, a bar chart will have both a key and value string available, whereas a pie chart will only offer a key.

Here's a description of when each event is sent:

| | |
|--------------------------|---|
| <code>click</code> | A click event is sent whenever a user clicks on a supporting view. The click may include extra information after the event name, for example <code>click:{url}</code> if the click occurs over a mouse-sensitive region in a glint or report, or <code>click:{key}[:{value}]</code> if the click occurs over a chart. |
| <code>doubleClick</code> | A <code>doubleClick</code> event is sent whenever a user clicks twice on the same view within a short period of time and without moving the mouse. A click event will always precede a <code>doubleClick</code> event. |

| | |
|---------|--|
| refresh | A refresh event is sent each time a view is rendered because the underlying data has changed. It is not necessary to respond to this event to update dependent views, this is handled internally. |
| select | A select action occurs when a user changes the selection state of those contents that maintain a selection (e.g. table). It is not necessary to respond to this event to update dependent views (e.g. those that depend on view:XXX.selected), this is handled internally. |

Available Actions

When an event is received, it can trigger zero or more actions. The available actions are:

Maximize Action

The maximize action controls the maximized state of a named view. There are three types of action possible: Maximize, Restore and Toggle. Note that it is possible to maximize a view from a different card and it will show over the current card until it is restored or toggled off. The current card will not be affected by the action.

Refresh Action

The refresh action forces a named view to render its content. The refresh action is usually handled internally for dependent views, but may be useful if the data is changed from outside Perspective, for example through JavaScript or because of a timed change.

Show Action

The show action replaces the current content of a named view with a different content.

Show Card Action

The show card action shows a named card in place of the current one.

Reset Action

The Reset action reverts the dashboard back to the default contents and initial selections. This action is particularly useful for web-based dashboards where the server session remembers the current state throughout the user session. Add a button image with a Reset action to your dashboard so that the user can easily reset the dashboard to its original state without having to logoff and logon again.

Render Report Action

The Render Report action will render the selected report in the perspective with the renderer selected by the user. The output is identical to the rendering in the Report Designer. Often dashboards will be created so that the user can dynamically construct the report contents by navigating through the data views. You can then provide a button image so that the final report can be preserved.

You have the option to control which section(s) in the report will display in a dashboard and which section(s) will be rendered. Open the report template. Click the **Functions** tab. Type the following function in the **Function Definitions** tab pane:

```
function isInDashboard()  
{  
  var mimeType = Renderer.getMimeType();
```

```
var rd = Renderer.getRawReport().getRenderDetails(mimeType);
return (rd!=null && rd.getParameterValue("elx.dashboard.reportview"
)=="Yes");
}
```

To make sure the function works on the selected sections(s), you also need to use script. Double-click a section. The Section Wizard opens. Click the **Scripts** tab. Type the following script in the **Render If** field, and repeat the steps on all the selected section(s):

```
isInDashboard();
```

When you render the report, you will find out whether the function and script works as anticipated.

It is useful to know whether a report is being run on its own, or as part of a dashboard. This information can be extracted from the render details available from the **Renderer** object. The parameter "elx.dashboard.reportview" will have the value "Yes" if the report is being rendered as part of a dashboard. Under these circumstances, you might make adjustments to the report content or access information from the dashboard so that the report shows more appropriate contextual information.

Generate Data Action

The Generate Data action can generate data in the selected element to 4 different formats. They are XML, Excel, Comma Separated Data (CSV) and Datasource. This action outputs the data as records, so any formatting of the display is not preserved. If you need to preserve the format of a dashboard cube then use the Generate Excel Cube Action below.

Generate Excel Cube Action

The Generate Excel Cube action can generate data in the selected cube as an Excel spreadsheet. Unlike the Generate Data Action, this action preserves the cube structure and cell rendering that you see on the dashboard.

Script Action

The Script action is the most powerful, because it can interact with the Perspective views, contents and even actions directly. This action is intended for power users and developers.

The JavaScript code executes in the context of the Perspective application itself, which provides some useful helper functions to access content and views.

- Content `getContent(contentName);`
- Panel `getPanel(panelName);`
- void `refresh(panelName);`

In addition, some context objects are available:

- Parameters: Use `Parameters.get("Name")` to access any dynamic parameter values.
- State: The overall dashboard state - from here you can navigate and interact with all parts of the dashboard.
- `thisState`: The state on which the event was triggered
- `thisEvent`: The event (String) that was triggered

Note

The full Perspective scripting API is described in Chapter 5, *Script Reference* and the separate PML Object Model documentation.

Triggering Actions from Events

Actions are defined using the Actions table on the Perspective tab. Each action identifies the trigger conditions by defining the combination of <content,view,event> that it responds to. An empty value means that it matches all possible events. For example <CubeData,select> matches the select event on CubeData (the content) in any view. For event name matching, only the text string up to the first colon is matched. This allows <MyChart,MyView,click:SomeURL> to be matched by an action defining <MyView,click> - which means any click on MyView.

Only actions which are marked as enabled are eligible to be invoked in response to an event. This allows a subset of actions and events to be tested and verified without side-effects from others.

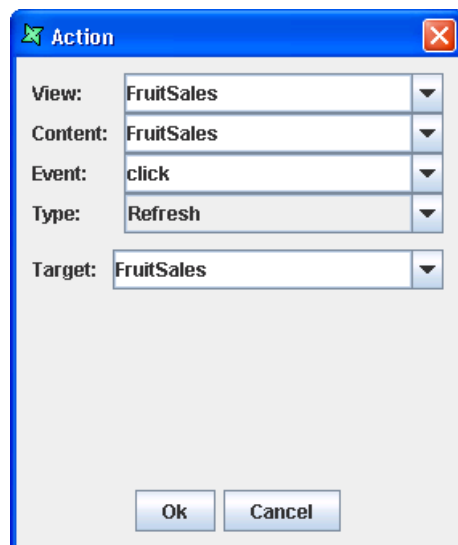
Multiple actions can be triggered by a single event, if they all match the event attributes. The order of invocation is based on the order of actions in the Actions table. Actions can be raised or lowered in the action list to control the order of execution.

Case Study 1 - Generate Data

This case study will do a simple illustration on how to use the `Generate Data` action.

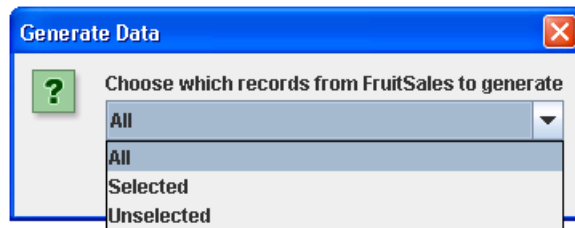
1. Create a Perspective and give it a unique name.
2. Drag `FruitSales.ds` (available in `/ElixirSamples/DataSource`) into the perspective and select `Add Table`. Click through the wizard and click on `Finish` to exit from the wizard.
3. The Table element will be created on the perspective. To add an action to generate data, go to the `Perspective` tab. At the bottom of the screen, click on the `Action` tab, then click on the `Add` icon and the Action Wizard will appear, as shown in Figure 4.1, "Default screen of Action Wizard". With this action, on double-clicking on `FruitSales` (the Table element), you will be able to generate the data in `FruitSales`.

Figure 4.1. Default screen of Action Wizard



- In the Action Wizard, you can customize the actions you want. In this case study, for View, select *FruitSales*. For Content, select *FruitSales*. For Event, select *doubleClick*. For Type, select *Generate Data*. For View, select *FruitSales*. Exit the wizard by clicking on the Ok button.
- Go to the View tab. Try selecting a few records in *FruitSales* while holding on the *Ctrl* key. After selecting, double-click within the Table element and Generate Data Wizard will appear as shown in Figure 4.2, “Generate Data Wizard”. All will mean saving all the data in the Table element. Selected will mean saving only the selected records in the Table element. Unselected will mean saving all the records other than the selected ones.

Figure 4.2. Generate Data Wizard



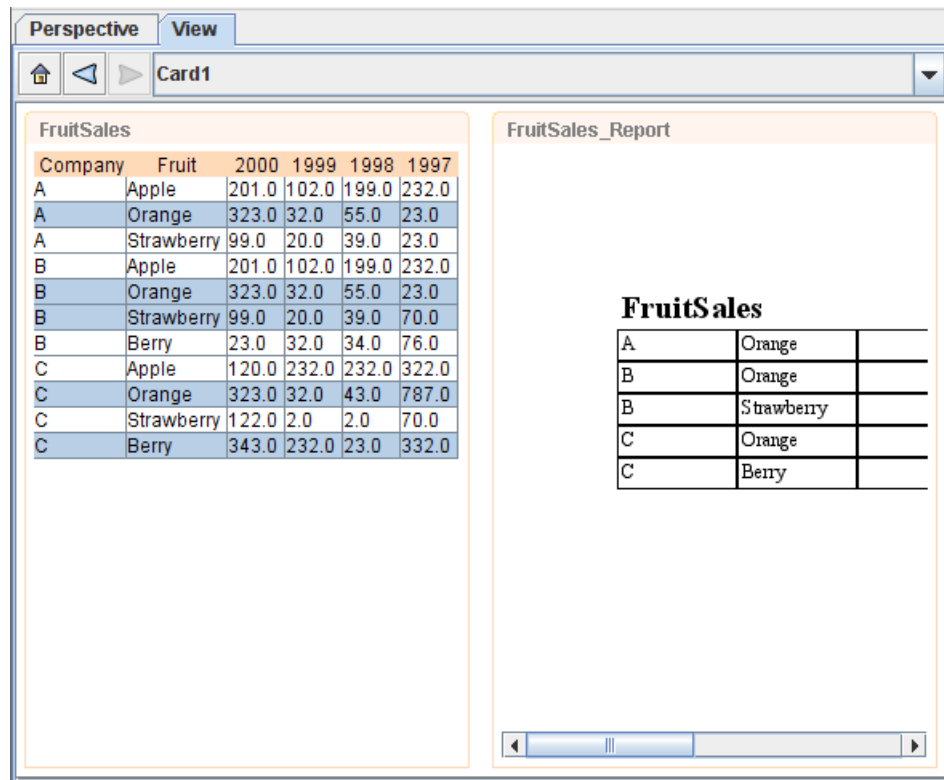
- Clicking on the OK button will lead you to the page for selecting the format you wish to save to, designate the location for saving and the name of the file. Clicking on Save will generate the file.

Case Study 2 - Render Report in Perspective

In this case study, we will demonstrate how to render a report in a Perspective which is similar to the Report Designer using Action. We can continue using the Perspective created in Case Study 1.

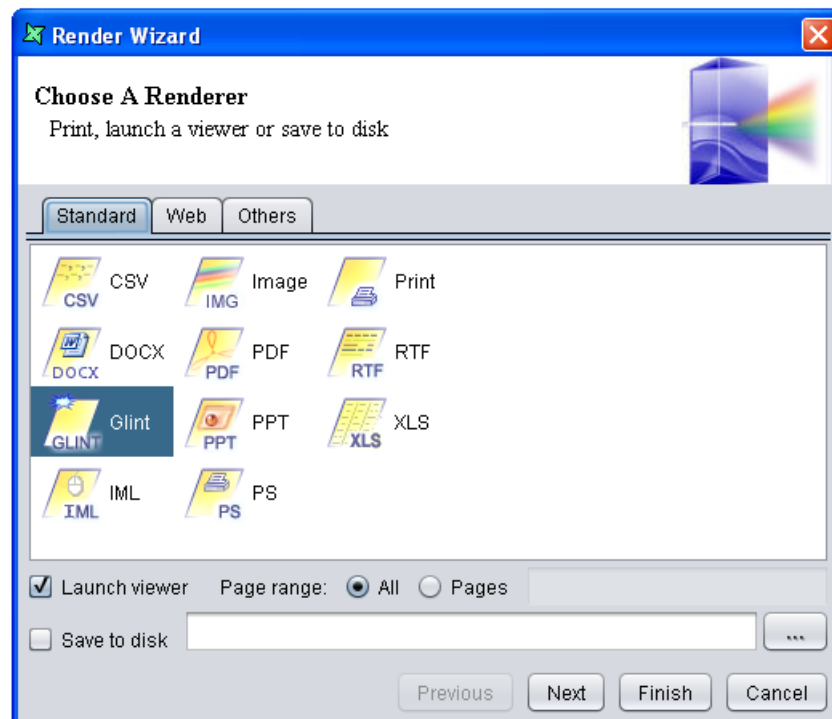
- Since we are rendering a report, we will need a report template. Create a new report template and give it a unique name. In this case study, we name it *Fruit Report*. Click Next. For the datasource, we will use *FruitSales.ds* (available in */ElixirSamples/DataSource*). Click Next. As for the report type, we will use a Standard Report, Tabular Report. Click Next. For simplicity, we will use all the fields in *FruitSales.ds*. To move the fields to the *Report* column all at one go, you can click on the second button from the top. Click on Finish to exit from the wizard.
- On exiting of the wizard, the report template would have been created. To add this report template to the perspective, go to the perspective and simply drag the file to the perspective. In this case study, we will add it to the right of *FruitSales*.
- At the second page of the Edit Content wizard, click on the empty field under Mapping, then click on the . . . button. In the DataSet Chooser wizard, click on the View tab. Select *FruitSales*, then Selected. Exit the DataSet Chooser wizard by clicking on Ok. Exit the Edit Content wizard by clicking on Finish.
- To add an action to generate the report template, go to the Perspective tab. At the Action tab, click on the Add icon and the Action Wizard will appear. For the View and Content, select *Fruit Report*. For the Event, select *doubleClick*. For the Type, select *Render Report*. For the View, select *Fruit Report*. Exit the wizard by clicking on the Ok button. With this, the report template will display records selected from *FruitSales*, and you can render the report by double-clicking.
- Now, try selecting some records from *FruitSales*. The report template will show the selected records, which is something like Figure 4.3, “Sample”.

Figure 4.3. Sample



- To render the report, double-click within the area of the report template (as configured in the Action wizard). The Render Wizard which is similar to the one in Report Designer will appear, as shown in Figure 4.4, "Render Wizard". Select the format you wish to render the report to and run through the wizard if you need to do any extra configurations.

Figure 4.4. Render Wizard



7. The report will be generated to your desired format after clicking on `Finish`.

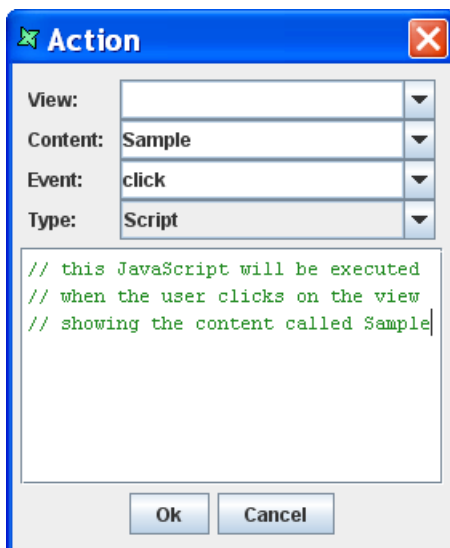
Chapter 5

Script Reference

Introduction

Dashboards are scriptable using JavaScript Script Actions. This chapter will introduce the essential APIs for controlling the Dashboard through scripts. Each view that is positioned on a card in the dashboard is accessible through a state object. The view itself is not accessible, because it may be a graphical view (i.e. in the Designer or Remote tool) or it may be an HTML view in a browser. The states can be identified by the name of the view they represent. To create a JavaScript action, choose the Perspective tab on the designer and add a new Action to the Action table at the bottom right. Choose Script as your Action type and proceed to add your script in the available field. The dialog is shown in Figure 5.1, “Script Action”

Figure 5.1. Script Action



Parameters

The Parameters object holds the dynamic parameters the user has entered.

- String get(String name)

This is equivalent to using `${name}` in other parts of the dashboard. Within scripts `${substitution}` will work, but `Parameters.get("name")` should be preferred because it is more efficient.

State

The State object represents the dashboard as a whole. It provides a set of useful services and acts as a container for the named states which link the contents and views that you define. To access a particular state, you need to append the name to the State object. For example, if you have a view named "MyCube", you can access the state of that view like this:

```
State.MyCube
```

If your view name contains spaces, then you need to use an alternate JavaScript syntax:

```
State.[ "My Cube" ]
```

to achieve the same effect.

We will start by reviewing the API of the State object itself. Note that most of these services are available through the Action mechanism, so you don't have to use scripts to perform these commands - these services are only for situations where you want to chain a few actions together in a certain order, or maybe add some additional scripted logic.

| | |
|---|--|
| <code>void excelCube(String cubeName)</code> | Generate the presentation of a cube as an Excel spreadsheet. The user will be prompted to enter a filename. |
| <code>void generate(String contentName)</code> | Generate the data shown by a particular content as a file. The user will be prompted to enter a filename and output type (e.g. XML, CSV, XLS etc.) |
| <code>String getCurrentCard()</code> | Get the name of the current card |
| <code>String getParameterValue(String name)</code> | Get the value associated with the parameter name, or null if the parameter is not found. |
| <code>Perspective getPerspective()</code> | Get the Perspective object which represents the whole dashboard. See the PML Object Model documentation for full details on the dashboard object model. |
| <code>IState getState(String name)</code> | This provides another mechanism for getting the individual state objects, it is synonymous with <code>State.name</code> as described above. |
| <code>void maximize(String viewName)</code> | Maximize the named view, which need not be on the current card. The current card does not change, on restore the original card will show again. |
| <code>void render(String reportName)</code> | Render the named report. The user will be prompted to enter the render type and destination. |
| <code>void reset()</code> | Reset the current dashboard state back to the initial default view states and selections. |
| <code>void restore()</code> | Restore any maximized view back to the normal position. |
| <code>void show(String view, String content)</code> | Show the named content in the named view. |
| <code>void showCard(String perspective, String card)</code> | Replaces the current card with a new one, which could come from the same dashboard file, or jump to another dashboard. The perspective parameter should contain the full URL of a pml file (e.g. "repository:/User/jane/mydash.pml") or null, if the card is located in the current dashboard. |

Individual States

All state objects support the `refresh()` service, to force a refresh of the view. In most cases this is handled automatically by the dashboard when it detects that the display needs to be updated. All state objects also provide a `getName()` service, which will return the name of the state. Further to this, states which support selection allow scripted access to the selection values as described below:

- | | |
|------------|--|
| CubeState | <ul style="list-style-type: none"> • DataTable getDataSource() • List<DataRecord> getSelectedRecords() • BitSet getSelection() • boolean hasSelection() • void setSelection(BitSet sel) |
| GridState | <ul style="list-style-type: none"> • boolean allSelected() • DataTable getDataSource() • List<DataRecord> getSelectedRecords() • String getSelectedValue() • BitSet getSelection() • String[] getValues() • boolean hasSelection() • void setSelection(BitSet sel) |
| TableState | <ul style="list-style-type: none"> • DataTable getDataSource() • List<DataRecord> getSelectedRecords() • BitSet getSelection() • boolean hasSelection() • void setSelection(BitSet sel) |

The infrastructure objects exposed by these APIs are `DataTable` and `DataRecord`, `DataSchema` and `DataType`. These are all in the `com.elixirtech.data2` package. The useful services of these classes include:

- | | |
|------------|--|
| DataTable | <ul style="list-style-type: none"> • int getRecordCount() • DataRecord getRecord(int idx) • DataRecord[] getRecords() • DataSchema getSchema() |
| DataRecord | <ul style="list-style-type: none"> • Object getData(int idx) • Object[] getData() • DataSchema getSchema() |
| DataSchema | <ul style="list-style-type: none"> • int getColumnIndex(String columnName) • String getColumnName(int idx) • DataType getColumnType(int idx) |

The following `DataType` constants are defined:

- BLOB

- BOOLEAN
- BYTE
- BYTE_ARRAY
- CHAR
- CLOB
- DATE
- DOUBLE
- FLOAT
- INTEGER
- LONG
- OBJECT
- SHORT
- STRING
- TIME
- TIMESTAMP
- UNKNOWN
- XML

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