Knowage v6.4

Creating Your First Report

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1   Introduction

Knowage is an Open Source Business Intelligence suite, it offers a large range of analytical functions, a highly functional semantic layer often absent in other open source platforms and projects, and a respectable set of advanced data visualization features including geospatial analytics.

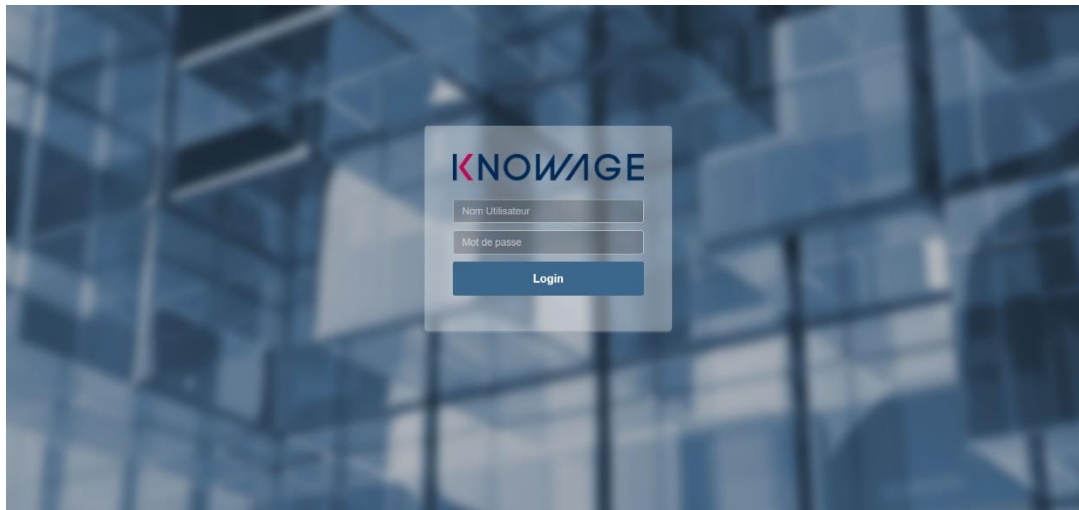### 1.1.1   Supported Browsers

Windows Environment
The system is optimized for Firefox 30+, Microsoft Edge and Chrome.

MacOS Environment
The system is supported by Safari 6+, Firefox 30+ and Chrome.

2 General Graphic User Interfaces (GUIs)

2.1.1 Login

eVision should set username, password and privileges prior the user can log in.

2.1.2 User menu

To open the main menu, simply click the button in the upper left corner of the home page :

Main menu consists in a set of icons associated with basic features. It is divided in two submenus: the general menu, which is collapsed, and the BI functionalities menu. It is important to underline that not all the components of the menu are mandatory, but they may be configured by the administrator according to user's needs.

Menu components - General menu

Icon	Name	Description
👤	Knowage user	Open a hidden menu with extra functionalities.
📇	Select role	Select the authentication role (available if you are associated to more than one role).
🚩	Languages	Language options.
ⓘ	Info	Info about Knowage version.
⏻	Log Out	Log out.

Menu components - BI functionalities menu

Icon	Name	Description
📁	Document browser	Show the archive folders and related documents.
💼	Workspace	Inquiry, navigate and create your data.

Document Browser
It enables you to access the documents shared to you and the functionality trees.

Workspace
Entering the Workspace, you will find the sections: Recent, Documents, Data and Analysis. The "Recent" area shows the latest documents you were working on, while "Documents" contains the analytical documents the user asks to be archived on this area. This way the user has a more rapid and efficient way to retrieve the documents of his interest. The "Data" section is made up of the "Dataset" and the "Models" subsections. In the Dataset one you can access all the self-service BI features.

The **General menu** is identified with the first icon in General Menu and a label containing your user name. Opening the general menu, you have the following extra buttons:

Select role
If your user is associated with more than one role, Knowage requests you to specify the default role. You can select it when executing a document, or right after authentication by clicking on this icon and choosing a default role.

Languages
Select the language of Knowage environment.

Info
View the details of current Knowage version.

3   Summary of features

The process of creating a report with widgets is divided in three parts. First, you create a dataset form a model using the QbE, use one that has been shared with you or one you already created. Next, you create a Cockpit document allowing you to use one or more datasets and display their data the way you want, using widgets. Finally, you save your newly created Cockpit where you want in the functionality tree. You can then view it whenever you want, whether you need to consult it or export it as a file.

3.1   Query by Example (QbE) or Datamart

3.1.1   QbE – Designer

3.1.1.1   Models

The models available to a user are shown in the **Models** section of the user's workspace. You can click on the magnifying glass to open the QbE.
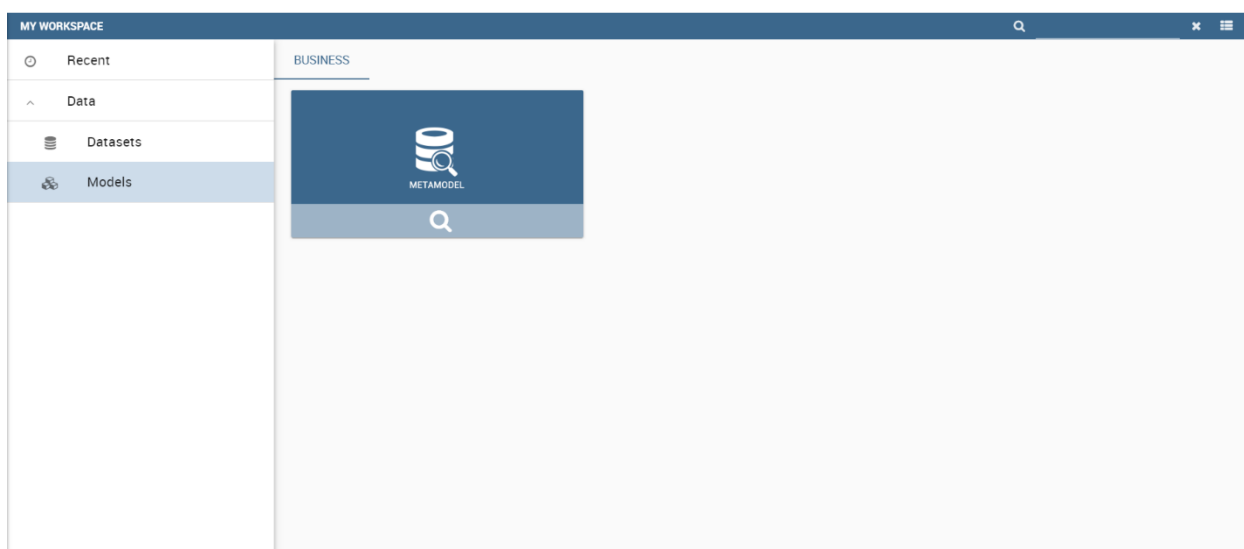
3.1.1.2 Schema

The **Schema** section lists all the repositories available in the selected model. Each repository has its own use and fields. You can use fields from multiple repositories if they are linked together with a relation or if they can be linked by multiple relations.
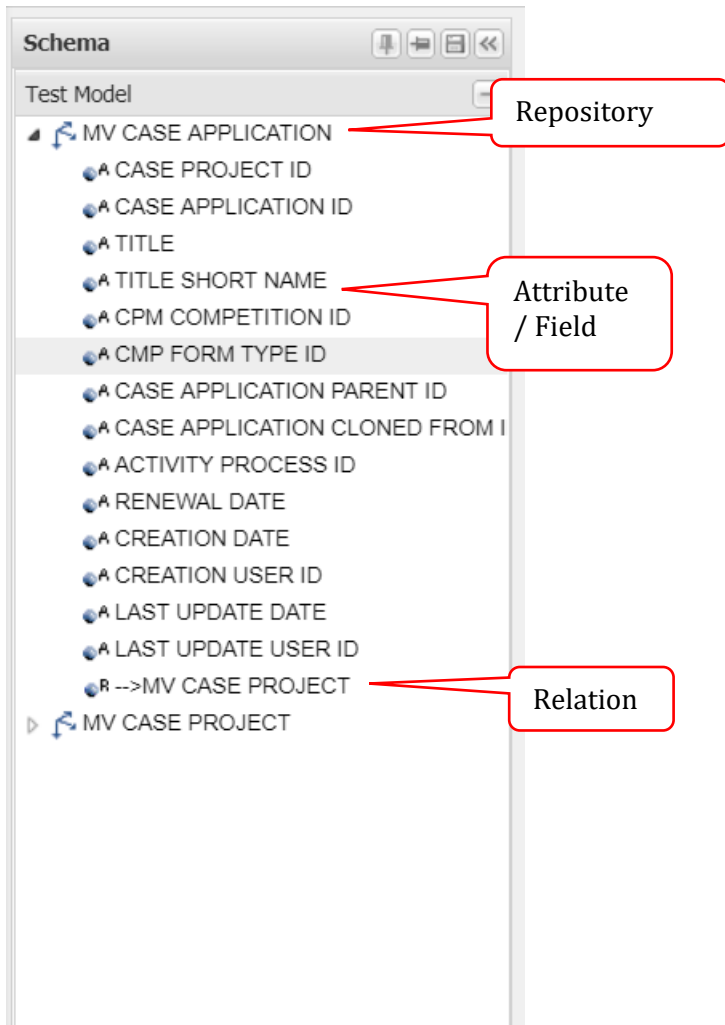
3.1.1.3   Query Editor – Select Fields

Query Editor contains selected attributes/fields for reporting. Select fields of interest (apply grouping or function for each and add calculated fields) from the **Schema** section.
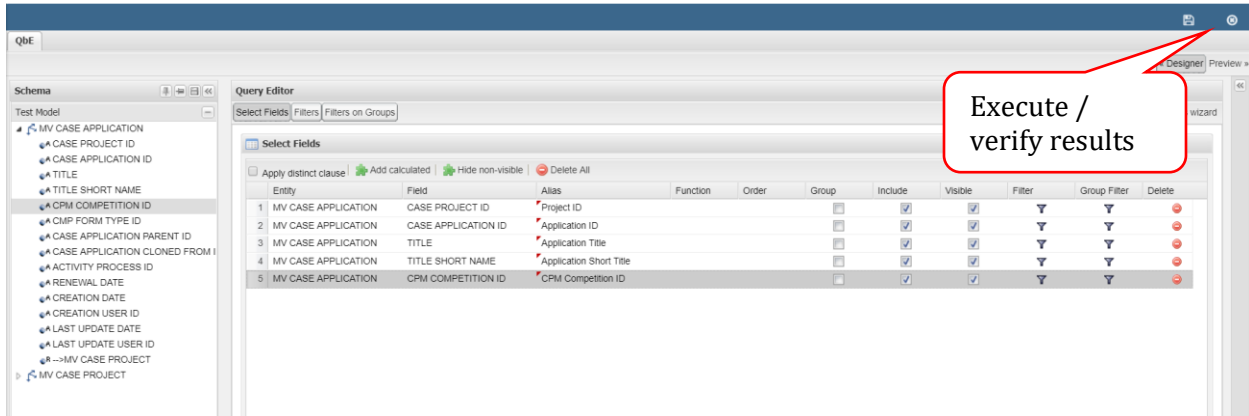
Alias
Specify the name of field that appears on the report. Each field name must be unique in the query, so you must use aliases when needed.

Group
Specify which fields to group for calculations.

Visible
Specify if the field appear on the report or not. Uncheck the box if the field has been choosing only for calculation purposes.

3.1.1.4 Functions

Specify the appropriate function (sum, count ...) for each non-grouped field.

3.1.1.5 Calculated Fields

If you select the "Add calculated" option from the header's context menu, a wizard will appear. You have to fill the name and the expression of the calculated field.

Note that a calculated field cannot be at the beginning of the query editor and it should not be a space between an SQL expression and a bracket (e.g. CONCAT   (….))

You can also use SQL functions in the text area.
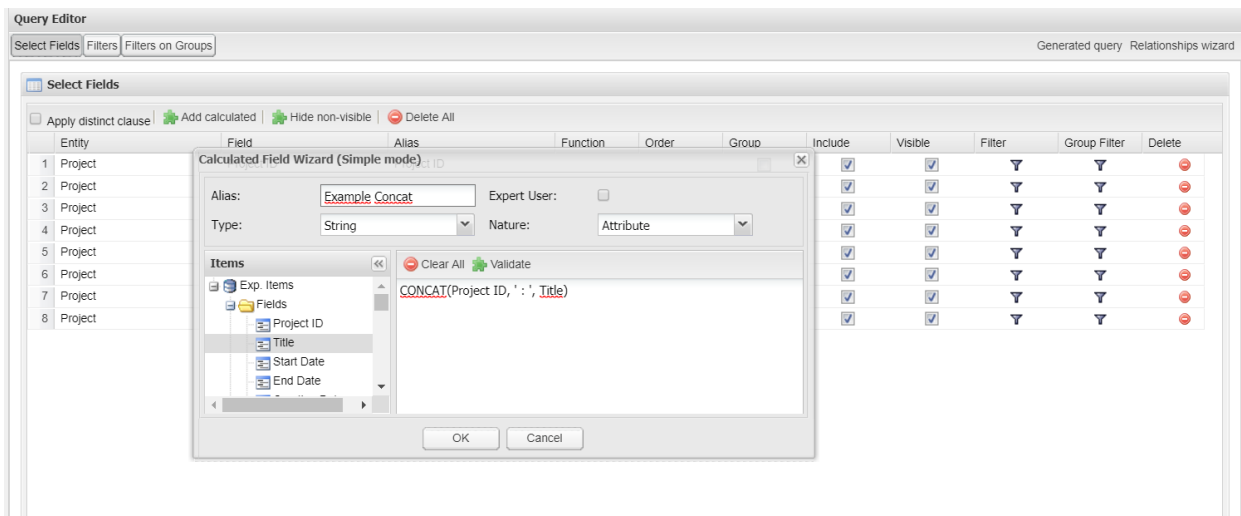
3.1.1.5.1 Available Functions

Fonction	Oracle	MySQL	Exemple
CASE WHEN ... THEN ...	x	x	CASE WHEN Signed = 'Y' THEN 'Yes' ELSE 'No' END
CONCAT	x	x	CONCAT(Dr, '. ', Name) →
UPPER	x	x	UPPER('tremblay') → 'TREMBLAY'
LOWER	x	x	LOWER('TREMBLAY') → 'tremblay'
LCASE		x	LCASE('TREMBLAY') → 'tremblay'
UCASE		x	UCASE('tremblay') → 'TREMBLAY'
INITCAP	x		INITCAP('tremblay') → 'Tremblay'
CHR	x		CHR(116) → 't'
COALESCE	x		COALESCE('Tremblay','Jean') → 'Tremblay'
CHAR_LENGTH		x	CHAR_LENGTH('Tremblay') → 8

| Function			Example
INSTR	x		INSTR('Tremblay', 'e') → 3
LENGTH	x		LENGTH('Tremblay') → 8
LPAD	x		LPAD('Tremblay', 12, 'X') →' XXXXTremblay'
LOCATE		x	LOCATE('Tremblay', 'bla') → 5
RPAD	x		LPAD('Tremblay', 12, 'X') →'TremblayXXXX'
TRIM	x	x	TRIM(' Tremblay ') → 'Tremblay'
LTRIM	x	x	LTRIM(' Tremblay ') → 'Tremblay '
RTRIM		x	LTRIM(' Tremblay ') → ' Tremblay'
REVERSE		x	REVERSE('Tremblay') → 'yalbmerT'
SUBSTRING		x	SUBSTRING ('Tremblay', 4) → 'mblay'
REPLACE	x		REPLACE ('Tremblay', 'ay', 'eau') → Trembleau'
NVL	x		NVL(Nom, 'Tremblay') →'Tremblay'
NULLIF	x		NULLIF('Tremblay', 'Tremblay') → NULL
TO_CHAR	x		TO_CHAR(sysdate, 'yyyy/mm/dd') → '2014/07/02'
DATE_FORMAT		x	DATE_FORMAT(sysdate(), '%W %M %Y') → Wednesday July 2014
TO_DATE	x		TO_CHAR(sysdate, 'yyyy/mm/dd') → '2014-07-02'
CURRENT_DATE	x		CURRENT_DATE → '2014/07/02'
CURDATE		x	CURDATE() → '2014/07/02'
SYSDATE	x	x	SYSDATE → '2014/07/02'
DATEDIFF		x	DATEDIFF('2014-11-30','2014-11-29') → 1
ADD_MONTHS	x		ADD_MONTHS('01-Aug-14', 3) → '01-Nov-14'
DAY		x	DAYOFMONTH('2014-02-03') → 3
MONTH		x	MONTH('2014-02-03') → 2
TRUNC	x		TRUNC(TO_DATE('22-AUG-14'), 'YEAR') → '01-JAN-14'
EXTRACT		x	EXTRACT(YEAR FROM sysdate) → 2014
ROUND	x	x	ROUND(125.315, 1) → 125.315
FLOOR	x	x	FLOOR(5.9) → 5
LAST_DAY	x	x	LAST_DAY(sysdate) → '14/07/31'
NEXT_DAY	x		NEXT_DAY(sysdate, 'TUESDAY') → '2014/07/08'
FROM_DAYS		x	FROM_DAYS(730669) → '2007-07-03'
FROM_UNIXTIME		x	FROM_UNIXTIME(1196440219) → '2007/11/30 10:30:19'
MONTHNAME		x	MONTHNAME('2014-02-03') → 'February'
NOW		x	NOW() → 2014-07-02 13:01:41
QUARTER		x	QUARTER('2014-04-01') → 2
SYSDATE	x	x	SYSDATE/ SYSDATE() → 07/02/2014 13:04:53
TO_DAYS		x	TO_DAYS('2014-10-07') → 735878
WEEK		x	WEEK('2014-10-07') → 40
WEEKOFYEAR		x	WEEKOFYEAR('2014-10-07') → 41

3.1.1.6   Query Editor – Filters

The filters at this stage influence the calculated fields. The system applies filters BEFORE functions and calculated fields. To add a filter, simply click on the field in the **Schema** section and apply the condition you need using an **Operator** and specify the **Right operand** when needed.
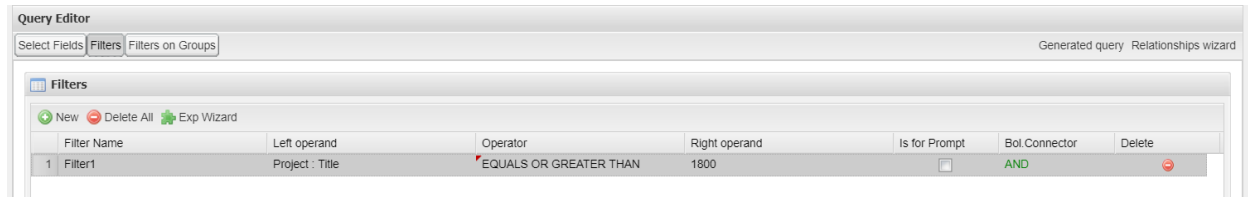
3.1.2　QbE – Preview (non-formatted results)

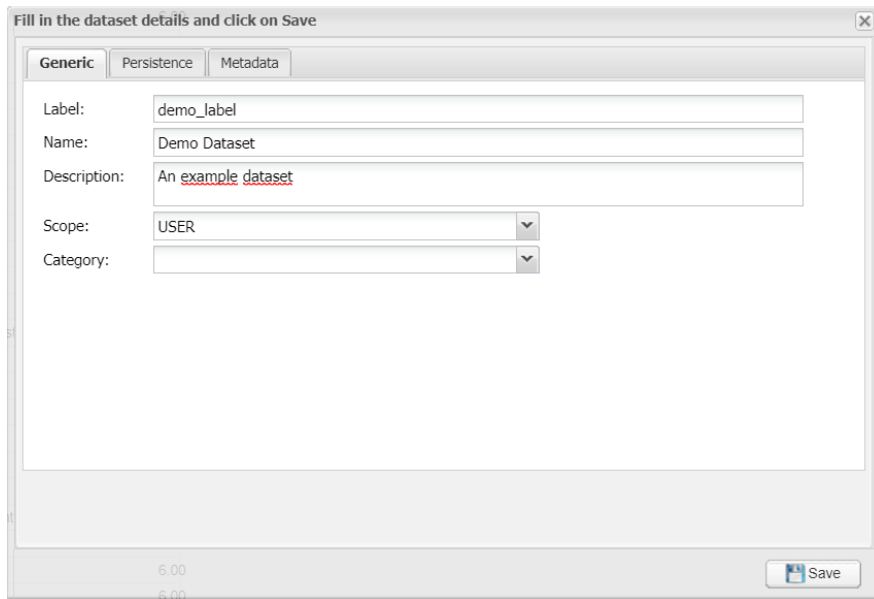Verify data before saving the QbE as a new dataset.
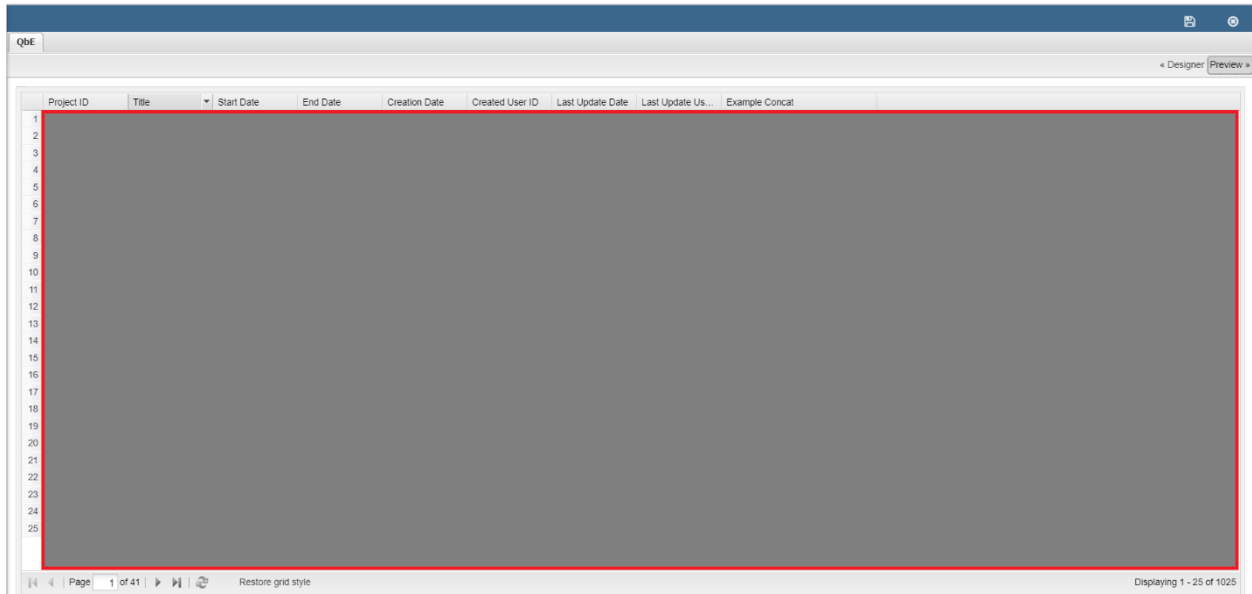
3.1.3　QbE – Save dataset

When you are satisfied with your query's results, you can save it as a dataset using the save icon in the upper right corner.

3.1.3.1　Save dataset - Generic

The Generic tab of the save window is the first one to be filled.

Label
Label of dataset used by the database. This field must be unique for all the datasets and must not contain any special or accented characters. It is preferred to user lowercase letters and separate them using underscores instead of spaces like shown in the figure above. This field is required.

Name
The name of the dataset that will appear in the workspace for all the users having access to the dataset. This field is required.

Description
Optional text providing a descriptions to the dataset for informational purposes.

Scope
The scope of dataset. All users in the selected scope will have access to it. If you choose USER, only you will be able to use it.

Category
Required if selected scope is ENTERPRISE. Provides a category to the dataset to ease the categorization of datasets.

3.1.3.2   Save dataset - Persistence

This tab allows you to make the report persistent, meaning the data that it returns now will be saved in the database. Further uses of the dataset will be faster since the data will have already been fetch. However, the results might be outdated.

Persist
If checked, you will need to specify the name of the table containing the data in the database.

Scheduling
If checked, you will have to choose an interval of time that the dataset's table will refresh its data.

3.1.3.3   Save dataset - Metadata

This tab allows you to specify if each field is an attribute or a measure.

Attribute
An attribute can be used as categories in charts and cross tables to be grouped by.

Measure
A measure can be used in calculations in charts and cross tables. Functions like sum or average can only be used on measures.
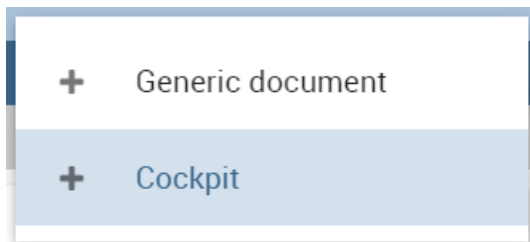
3.2   Cockpit

A Cockpit report allows you to visualize your datasets the way you want. Using widgets, you can filter your results, show them in tables and even use complex charts.
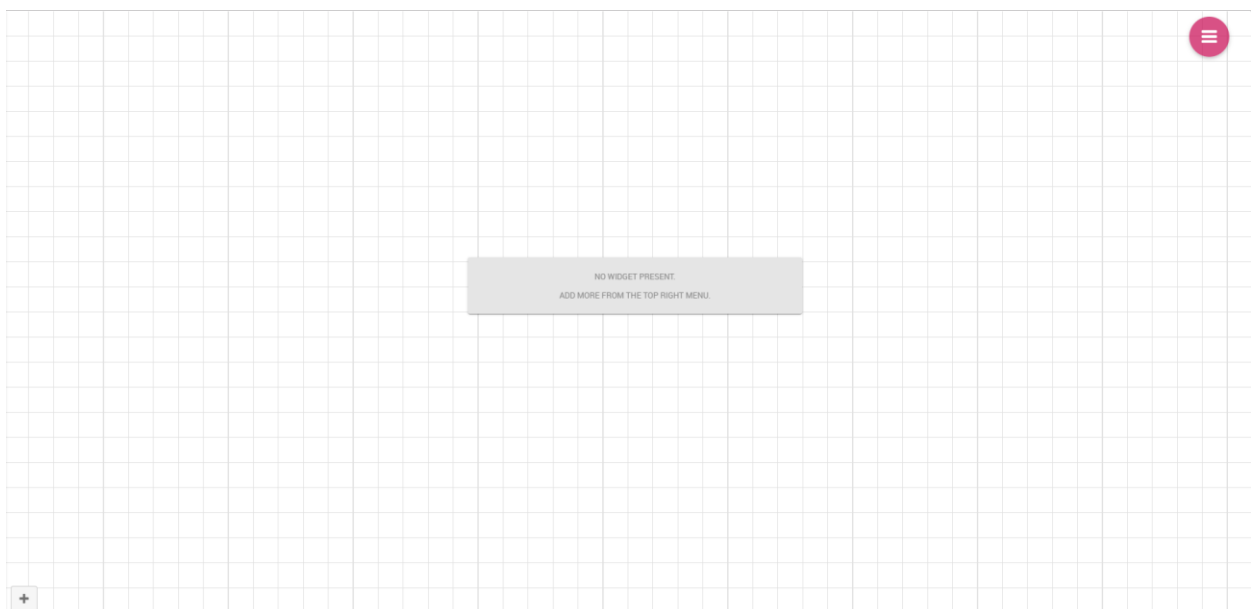
3.2.1   Cockpit - Creation

To create a cockpit, head over to the document browser and in the folder you want to add your cockpit into.

Use the white cross in the upper right corner and choose **Cockpit**

3.2.1.1   Graphic User Interface (GUI)

The cockpit menu, hidden by default, can be expanded after clicking its toggle in the upper right corner.

Cockpit Menu components

Icon	Name	Description
	Clear cache	Open a hidden menu with extra functionalities.
	Selections	It adds a widget that manages selections.
	Data configuration	It opens a window where you can manage the dataset, the association between datasets and the refresh frequency.
	General configuration	It opens the window where you set the general cockpit options (name, label, show menu, etc.) and widgets' default style (header, titles, borders, etc.).
	Add widget	It opens a window where you can create a new chart or table, add texts, images or Knowage documents.
	Save as	It opens the window to save the cockpit document as a new document.
	Cockpit menu	Configuration menu of Cockpit.

3.2.1.2 *Data configuration*

Before creating any widgets, you need to add datasets to the cockpit. These datasets provide you the data you want to show in the widgets.

This feature manages the data storage and usage. In fact, here there is the possibility to save data in cache, create associations between datasets, schedule the (data) refresh frequency and so on. Referring to the figure below, the feature is implemented through several tabs: The **Source** tab, the **Associations** tab, the **Frequency** and the **Template** tab.
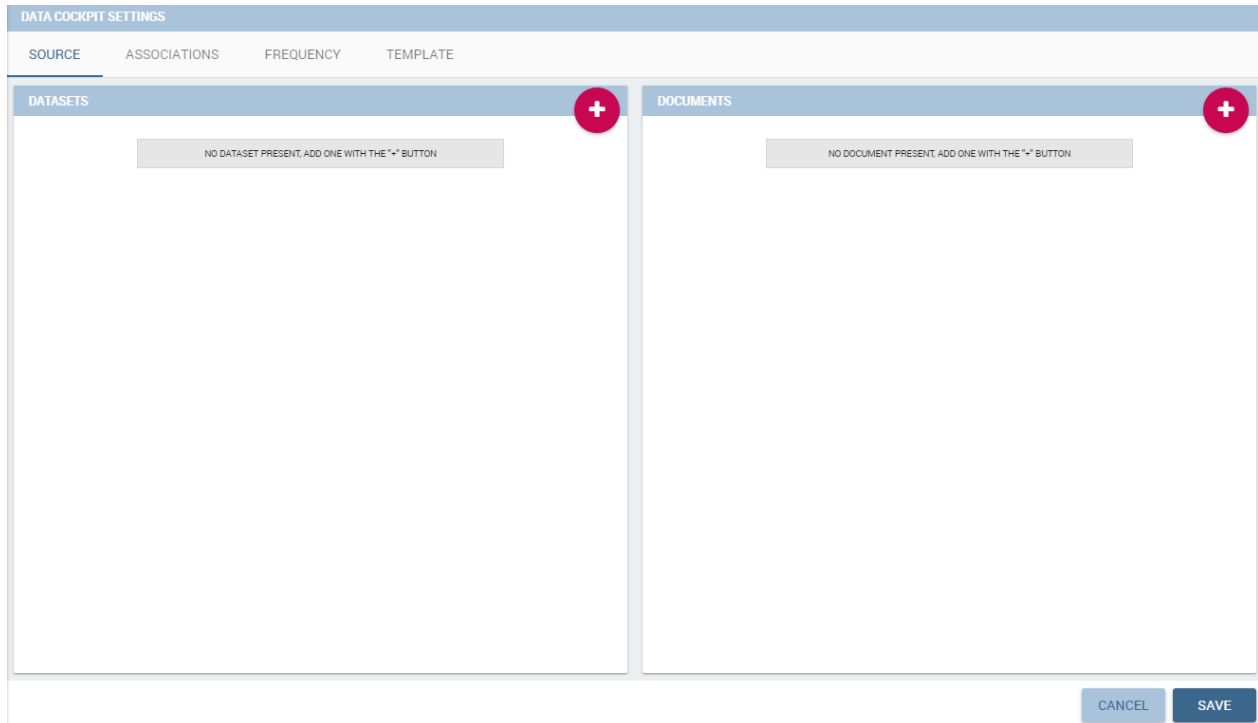
Source
The Source tab is split into two areas. On the left side the user can find the list of those dataset that are currently used by the cockpit. Here it is possible to add new dataset that will be passed to widgets. In other words, datasets inserted in this area will be listed in the dataset combo box of widgets like the Table, the Pivot Table and the Chart one. Note that the user can delete datasets as well.
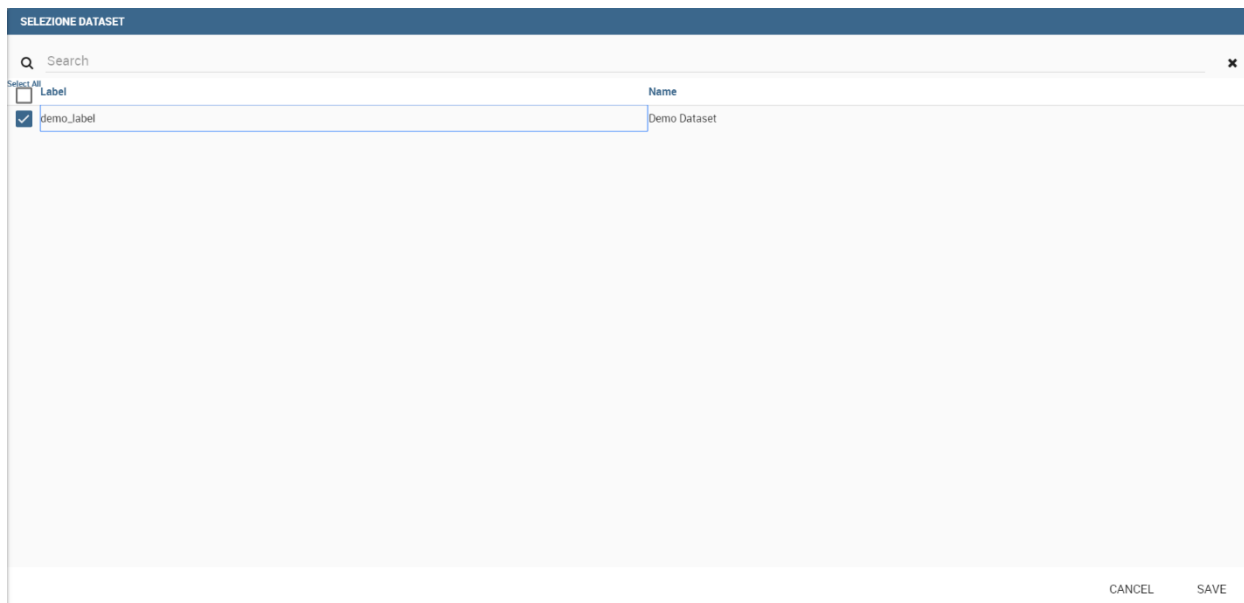
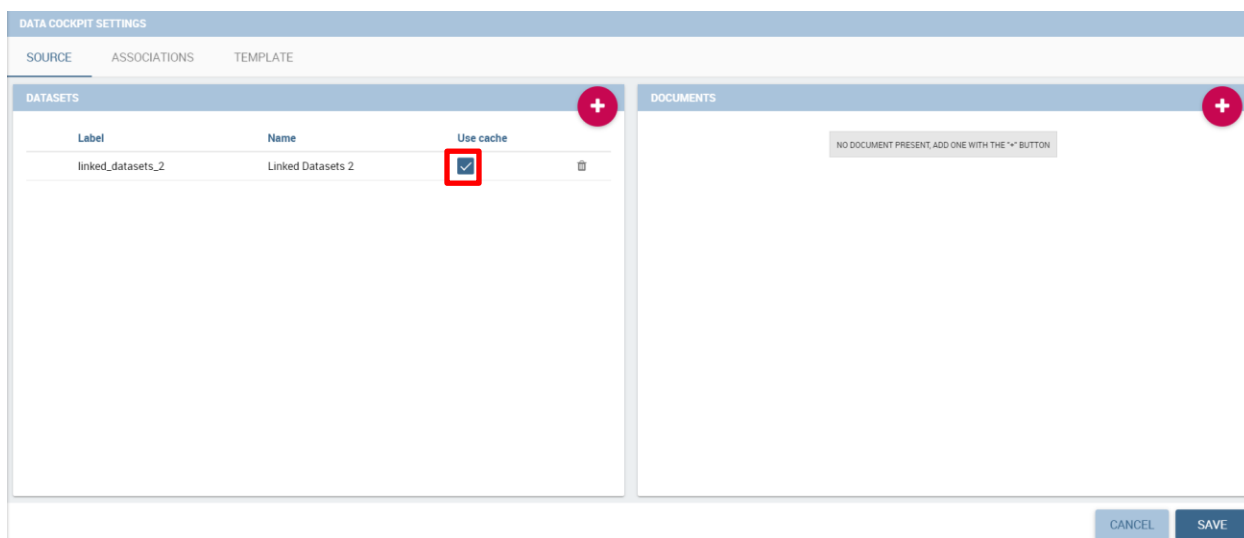When your dataset is selected, you can save this window. Before finishing with the data configuration, you **must** check the box **Use cache** in order to make your report work.

You can now click on save and go on to the next steps.

3.2.1.3 Widgets

Now that we added data to our cockpit report, you will want to display it.

After clicking the **Add widget** item in the cockpit's menu, you can choose the widget you wish to add to the current sheet. You can add as many widgets as you want. In this guide, there will only be examples of these widgets : selector, table and chart. For further explanation on the other widgets, please refer to the Detailed User Guide.

3.2.1.3.1 Table

The **Widget table configuration** opens, and it guides you through the steps to configure the widget. The pop-up opens showing the **column** tab, as you can see from the figure below. It is mandatory to select a dataset using the combo box (only if at least one dataset has been loaded using the **Data Configuration** feature) or clicking on the icon ✚ available aside the combo box line. You can page the table specifying the number of rows per sheet. Consequently, the user can set columns properties.
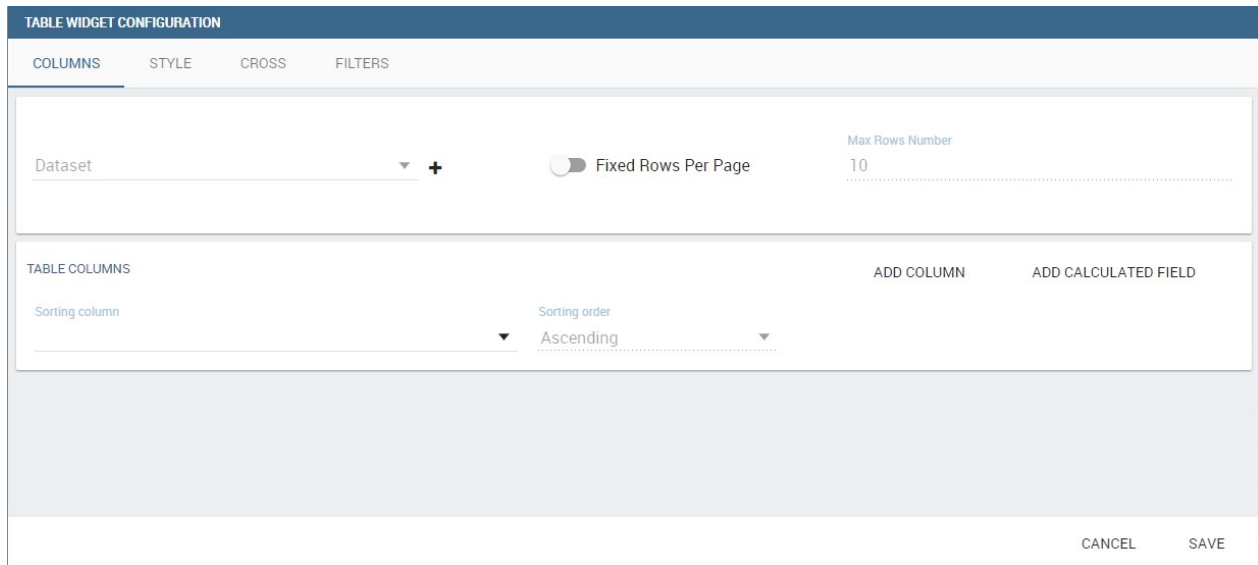
The column area is divided into two parts: on the left side you have columns ordering, on the right the user can add a new column or a calculated field. As soon as the dataset is selected, you can indicate the sorting column or modal selection column.

When a dataset is added to a table widget, all its columns are listed below. If the user wish to exclude some of them, he can use the delete button available at the end of each column row, as shown below.
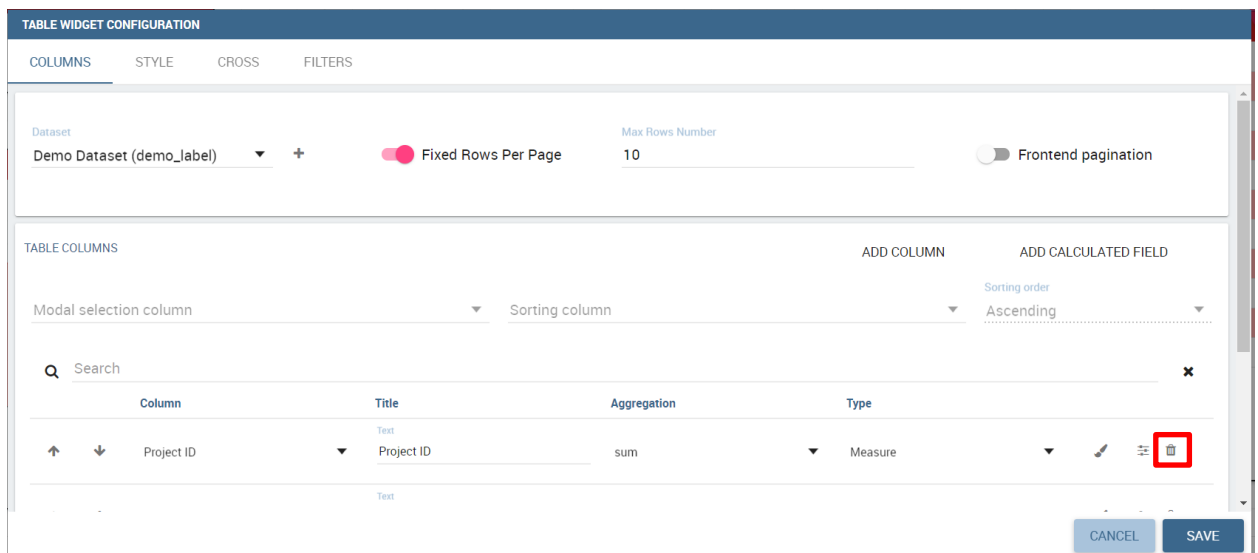
In case of accidental cancellation or new table requirements, it is possible to re-add columns. In order to add a new column, you must click on the **Add Column** icon on the top right of the second box. Once opened you can select one or more columns. When you are finished, you can click on save and your new columns will appear in the field list. Refer to Figure below.

Likewise, to add a calculated field you must click on the **Add Calculated field** icon next to add column icon. These calculated fields differ from the ones in the QbE. Then can only be arithmetic operations, therefore must use numeric columns. In the **Calculated Field Wizard,** you must type an alias for your calculated field in the dedicated area at the top corner. Then you can choose from the **Items Tree** the fields and the arithmetic function you want to use for building your expression. In the middle you can see the expression you have built. If you prefer, you can create or modify the expression manually directly in the panel which is editable. When you are satisfied with your expression you can click on save button and your calculated field appears in the field list.

At the very bottom of the window, you can see the dataset fields listed and you can also sort columns displayed in the table, insert a column alias and customize it by adding font and style configurations using the brush shaped icon, as you can see from the figure below. Here you can find configuration features like the column size, max cell characters, hide on mobile option, etc.

Note that here you can indicate the column type and the aggregation. To add an aggregation to a column you must control the type of data that column has. An aggregation can only be added if the column value is of "number" type. The different aggregation functions are none (you also

can not add any aggregation function), Sum, Average, Maximum, Minimum, Count and Count distinct.

The **Style**, **Cross** and **Filters** are always the same for each widget. Style lets you change the appearance of the widget in the cockpit. Cross lets you specify an element of the widget as enabled to cross navigation. This means when you select the element in your report, it will filter all the other widgets of each sheet of the report to only show data in correlation with your selection. The last tab lets you apply a filter to this widget only.

When your widget is finished, you can save and see your cockpit. Below an example of a style applied to a table.

GRID			
☐ Show Grids	Grids-width		Grids-color / Select a color
☑ Alternate rows	Even-rows color / rgba(255, 0, 0, 0.37)		Odd-rows color / Select a color

🔴 HEADER			
Font-family	▼ Font Size	Font-weight	▼ Font Style
	px, rem or % measure units are available		
Cell horizontal alignment	▼ Font-color / Select a color		Background-color / Select a color

🔴 TITLES		
Title text / Basic Table	Horizontal alignment	▼ Font Family
Font Size	Font Style	▼ Font Weight / **Bold**
px, rem or % measure units are available		
Header Height	Title Color / rgb(255, 255, 255)	Title Background Color / 🟥 rgb(201, 0, 0)

BASIC TABLE

Project ID	Application ID	Application Title	Application Short Title	CPM Competition ID
57,568.00	53,597.00	application		6.00
3,035.00	2,826.00	MY migrated project		12.00
3,052.00	2,843.00	1410-SFU	1410-SFU	6.00
3,051.00	2,842.00	j	j	6.00
3,060.00	2,851.00	gfj	gfj	6.00
3,057.00	2,848.00	Risk Assessment Test	Risk Assessment Test	6.00
3,017.00	2,808.00	fdh	fdh	6.00
9,165.00	8,538.00	jj	jj	6.00
3,058.00	2,849.00	SFUDEV-788 test	SFUDEV-788 test	6.00
3,025.00	2,816.00	hh	hh	6.00

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3.2.1.3.2 Chart

Charts are the most adopted method in presenting BI data since they allow an immediate perception of a phenomenon and are easily understandable. Focused on a visual impression more than a punctual lecture of values, they are specially suited to show trends and comparisons.

For these reasons, charts gain a pervasive level of usage and can be used by anyone to perform both synthetic and detailed analysis. Knowage provides a chart engine to create several types of charts, including:

- Bar
- Line
- Pie
- Sunburst
- Wordcloud
- Treemap
- Parallel
- Radar
- Scatter
- Heatmap
- Chord
- Gauge

My first Chart

Clicking on the **Add Widget** icon, you will be asked to choose among some available widgets. Pick out the **Chart** one and let's now go into details on how to build a chart from scratch. The designer editor is divided into four principal tabs: **Dataset**, **Chart Engine Designer**, **Style**, **Cross** and **Filters**. As soon as you click on the "Add Chart" button, you enter the "Dataset" tab editor. Here you must select, using the "little plus" icon placed just aside the combo box line, one dataset. Then you must switch to the "Chart Engine Designer" tab and choose a chart type among the available ones, as shown in figure below.

After choosing the appropriate chart type you must go into the **Structure** page. Here it is possible to select the measures and the attributes chosen for the chart.
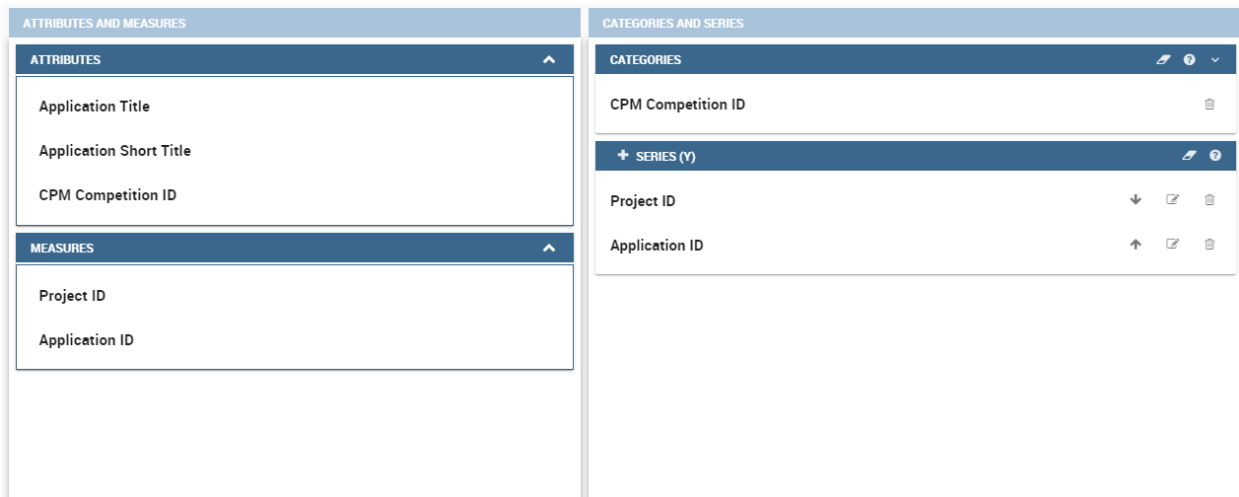
Clicking on the **Configuration** page you will find eight different blocks as you can see in figure below.
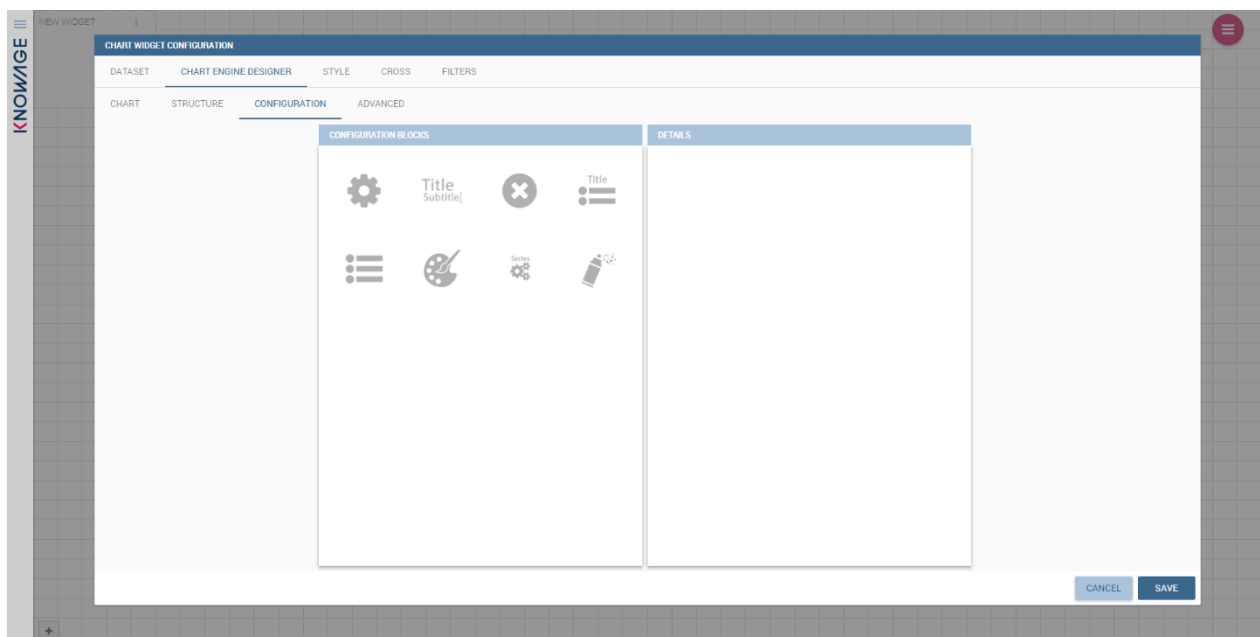
In detail these blocks concern:

- **Generic Details**, as the orientation of the chart, the family and the size font.
- **Title and Subtitle details**
- **No data message** where it is possible to put a message where the data are not founded.
- **Legend Title**
- **Legend Items**
- **Color Palette**
- **Advanced Series Configuration**
- **Custom Colors**

These eight blocks are common to all chart types; anyway, some chart types may have additional blocks.
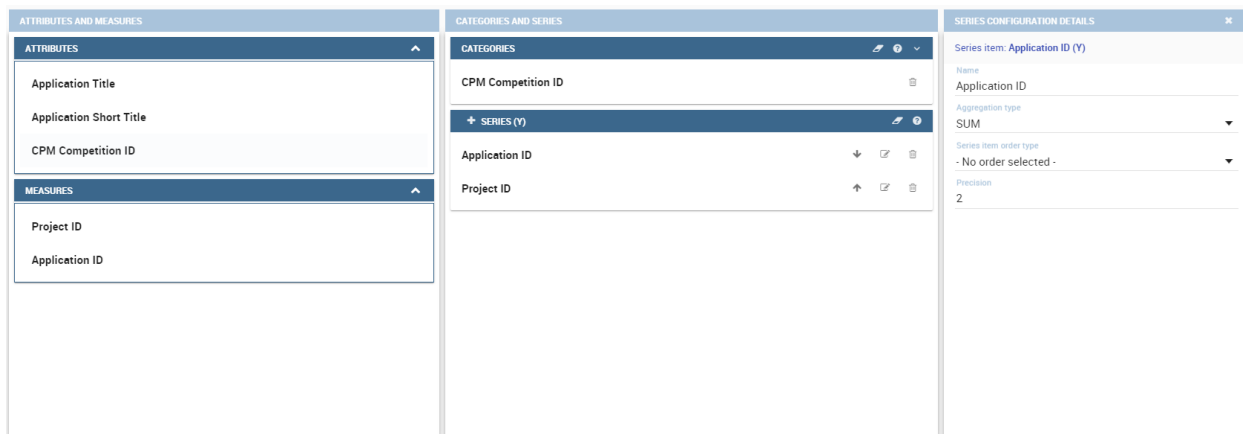
In the next subsections, the available functionalities of the Structure, the Configuration and the Advanced tabs are described in a more specific way.

Structure

The "Structure" tab of the designer is the core of the Chart development. Here it is possible and mandatory to choose the measures and the attributes. When selected, the tab shows a two axes panel. The horizontal axis indicates the X-axis where you must choose one or more attributes. As well, the left axis is the Y-axis and here you must choose measures. You can also insert manually the axis title for both the X and the Y axis if the chart is configured to have axis titles.

Before creating any chart, it is convenient to be sure of what kind of chart you want to develop. We stress that the user can change the chart type afterwards, but at the expense of a loss of just defined settings.

In this section, it's possible to customize the labels of the axis, title and grid style clicking on different buttons. With the arrow button, on the top of the Y-axis and X-axis, it's possible to choose the axis configuration detail, the axis title configuration, the major and minor grid configuration (only for Y-axis) and ordering column (only for X-axis). The pencil button opens a window on the right with the series configuration details where it's possible to choose the aggregation way, the order type of the series, if the data will be shown and so on. Finally, with the strip cartoon button, you can choose the features of the tooltip (font color, text alignment, etc.). If the chart in place does not allow the customization of the axes, the specific button will be disabled or not visible.

ATTRIBUTES AND MEASURES	CATEGORIES AND SERIES	SERIES CONFIGURATION DETAILS
ATTRIBUTES ⌃	**CATEGORIES**	Series item: **Application ID (Y)**
Application Title	CPM Competition ID 🗑	Name Application ID
Application Short Title	**+ SERIES (Y)**	Aggregation type SUM
CPM Competition ID	Application ID ↓ ✎ 🗑	Series item order type - No order selected -
MEASURES ⌃	Project ID ↑ ✎ 🗑	Precision 2
Project ID		
Application ID		

Configuration

The **Configuration** section contains options to define the generic style of the chart. Here you can set the dimensions of the chart, the background color, insert the title and subtitle and define their style, choose the series palette, associate a specific color to a serie or category, add and configure the legend. The listed options are an example of what you can configure in the tab.

Note that for the color palette details you can use one already in the list or you can choose any color inserting the hex color code with the hashtag symbol. This is a very useful feature to customize the output.
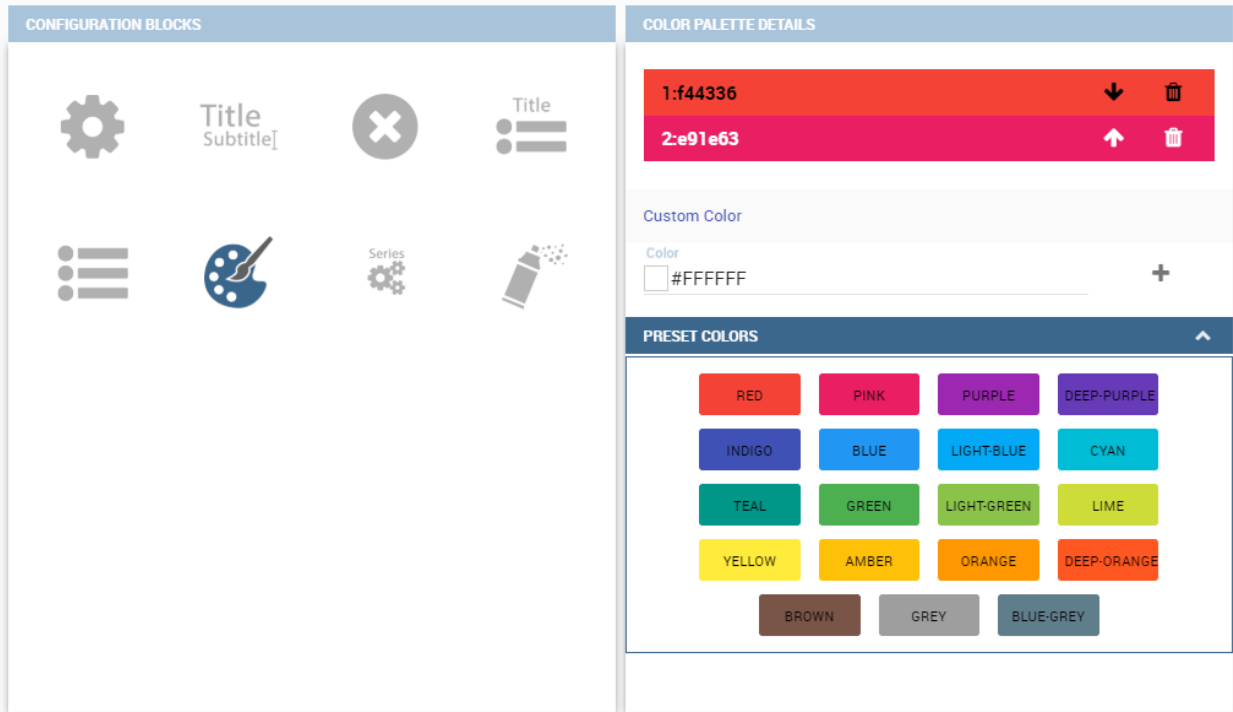
In the 6.3 version, it has been introduced a new configuration option: The Custom Color.
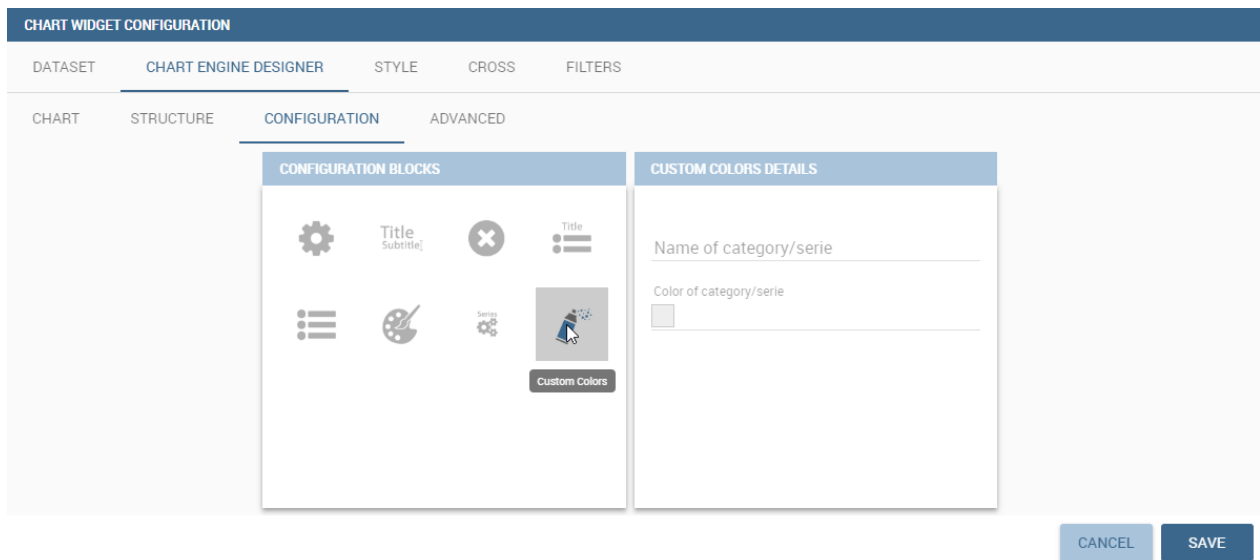
With this new option it is possible to assign a specific color to a category and/or serie or to a value of a category and/or serie. Look at the following figure for an example.
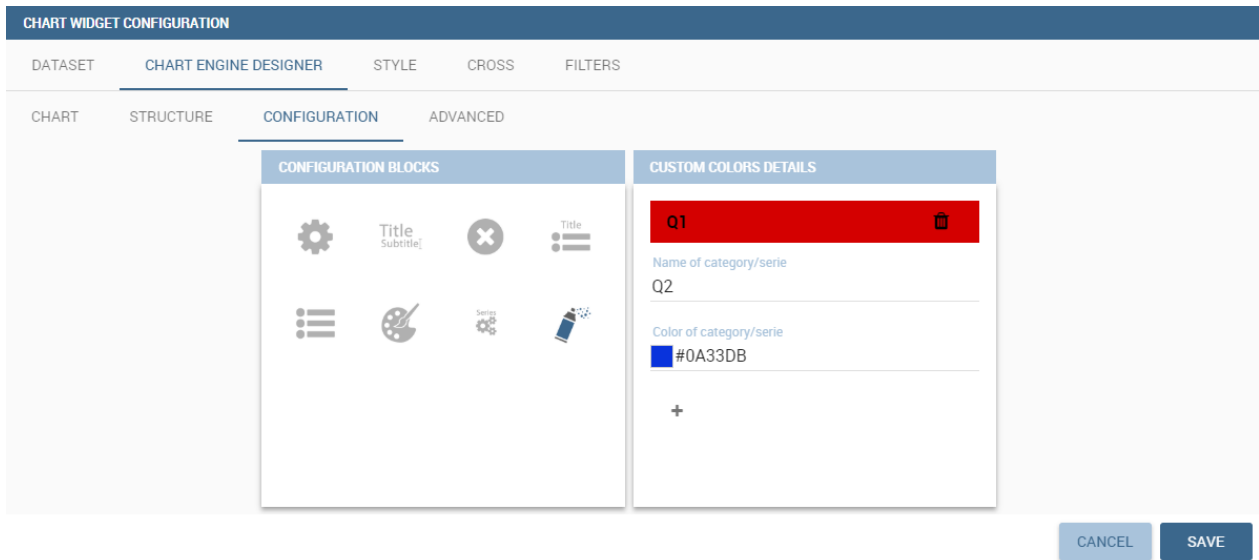
To add a custom color simply write the category/serie value or name, select a color with the color piker and then click on the plus button.

The options available in this tab change according to the chart selected enabling different configurations. See Chart types in detail for a detailed description of the specific options of each chart.

When finished, your chart could look like this :
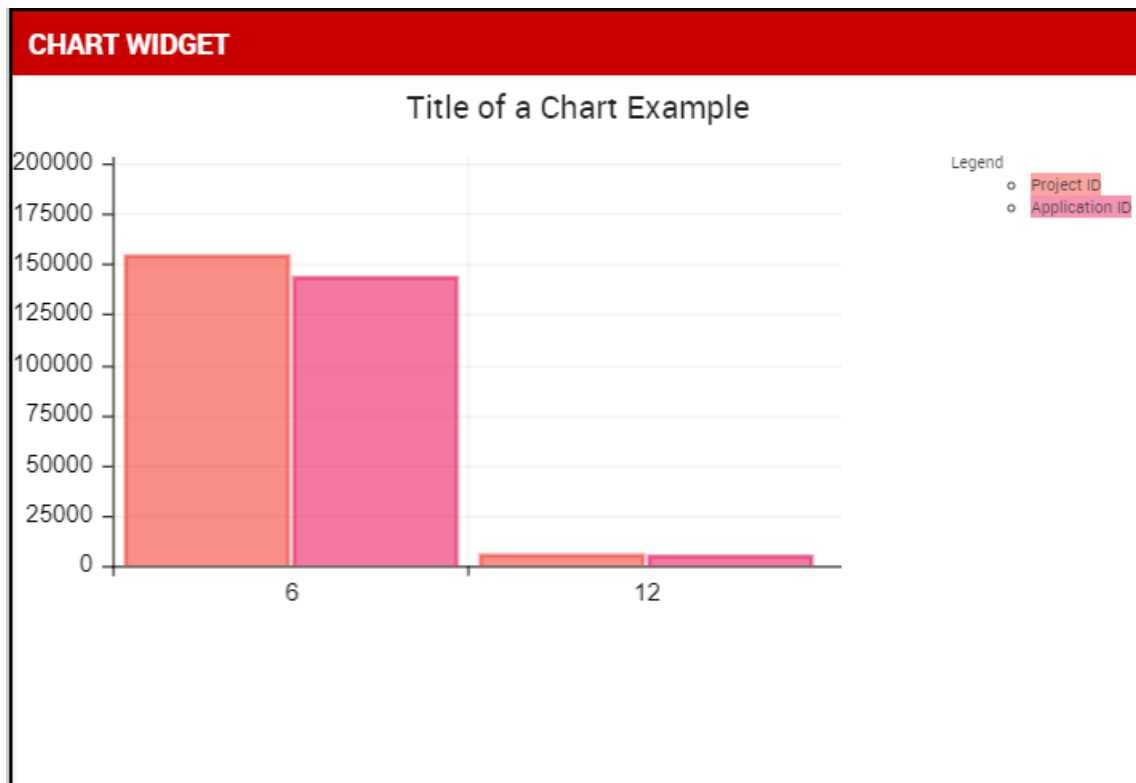
Chart types in detail

This section describes the different types of chart and how to create them within the **Chart Engine** of Knowage.

Traditional charts

Knowage allows you to create the so-called traditional charts like bar, line, pie, radar and scatter chart in a fancy way.

Each chart type is built on a specific dataset. Despite all, there are some general rules that can be applied to those "simpler" and common charts. The minimum requirement is to define/have a dataset with at least one attribute column and one measure column. Then you can select the type of chart you want to use from the **Chart** section; meanwhile using the **Structure** section you can fill in the category box with one or more attributes (typically these will be place in the X-axis) and in the series box with one or more measures (typically placed as Y-axis' values). Refer to *Chart Structure* figure as example.

Once you have selected the attributes and measures you can edit the series style and axis style configurations as explained in My first Chart. Then go to **Configuration** to set the chart dimension, the title, the legend and to choose how to associate colors to series.

For additional information on other chart types, please refer to the Detailed User Guide

3.2.1.3.3 Selector

The selector widget allows you to filter every widget of the current sheet using the columns and values of your choice.

This widget is useful when an end user wants to add a parameter to the document.

In detail, use the **Columns** tab to select the dataset and the dataset column on which you want to apply the filter. Then custom the **Select modality** options; for instance, choose between single or multivalue or to use a list or a combo box. Note that for the list option you can further choose among "vertical", "horizontal" or "grid". You can also decide to add a default value, chosen from main column's first item, main column's last item or to simply assign a static value. Finally, by clicking on the Wrap Text option it is possible to wrap the text shown in the selector; this option is useful when the categories to choose from are sting of long dimensions.

In the case of the selector of type list "grid" it is also possible to set the grid columns width.

Move to the **Style** tab to set the widget style in terms of label, titles, borders, shadows and background color.

Finally use the **Filters** tab to handle pagination or filter on a dataset column.

The Selector widget works effectively as a ready-to-use filter panel.

3.2.2 Cockpit – Save

When you added all your widgets and you are ready to save your cockpit, open the cockpit menu and click on the save icon. A window will appear.

Label
Label of cockpit used by the database. This field must be unique for all the cockpits and must not contain any special or accented characters. It is preferred to user lowercase letters and separate them using underscores instead of spaces like shown in the figure above. This field is required.
Name
The name of the cockpit that will appear in the workspace for all the users having access to it. This field is required.

By default, every cockpit you create will be saved in your personal folder in the document browser.

3.2.3   Cockpit – Edit

To edit an existing cockpit, you must first run the cockpit in question. Once the report opened, you must click on the edit icon in the cockpit's action menu :

Once you're finished with the edition, you can save the cockpit and all its instances will be updated with your latest changes.

3.2.4   Cockpit – Export

You can export the cockpit as so by opening the export context menu :
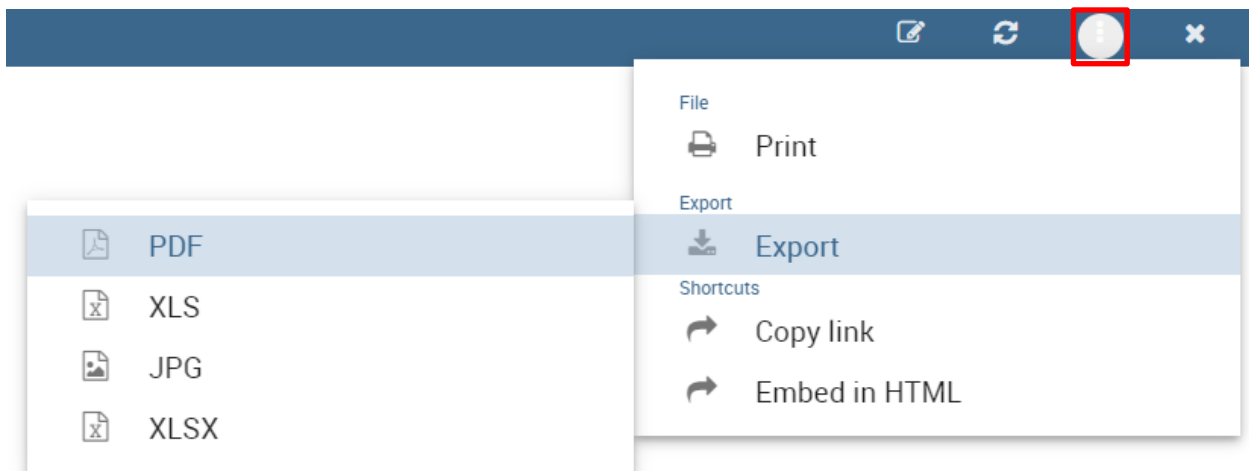
Print
Opens the printing window of your current web browser.

Export
Export the cockpit as the file type of your choice.
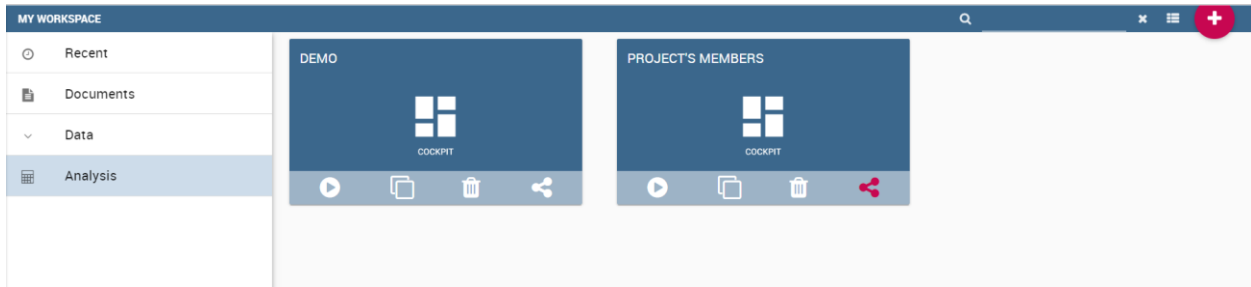
Copy link
Creates a link you can share and use to access the report directly.
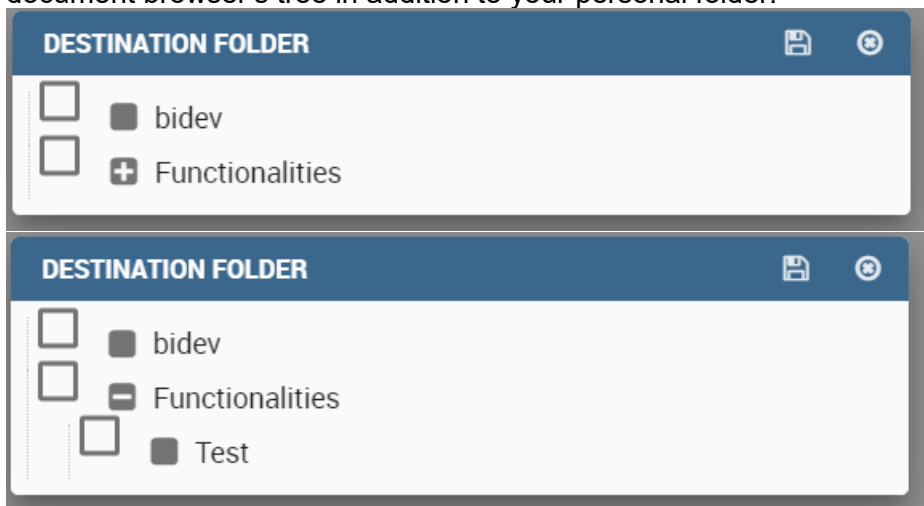
Embed in HTML
Generates HTML code to add to a website or web page that will display the cockpit.

3.2.5 Cockpit – Share

If you wish to share the report with other users, head over to your workspace in the **Analysis** section.

The **Share** button allows you to choose where you want your report to appear in the document browser's tree in addition to your personal folder.

All you need to do is check the boxes of your choice. You can also expand multi-level folders to show their children by clicking the expand button . When you are done, simply click on the save button .

Note
All instances of a report are the same, hence if you edit a report at a specific location, the report will be changed for all other locations as well. If you wish to edit a report without changing the other instances, you must copy the report and apply changes to the copy.