



Command Analytics

SAP BusinessObjects Web Intelligence

Author Course

CANADIAN ARMED FORCES

FORCES ARMÉES CANADIENNES

National Defence Défense nationale



Canada

UNCLASSIFIED

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1. Introduction

Welcome to the Command Analytics (CA) SAP BusinessObjects Web Intelligence course. During this course you will use your own account to learn how to generate Web Intelligence Documents (WID) both from a new document and from a template. You will learn to pull data from DRMIS data warehouse (SAP BW) as well as Microsoft Excel files. You will be able to modify those reports to allow for interactive input controls, which allow consumers to filter the information that they require. All the content and exercises during this course are yours to keep.

1.1. Web Intelligence

Web Intelligence (WebI) is a web based ad hoc reporting and analysis tool in the SAP BusinessObjects (BOBJ) platform that enables governed agile self-service analytics.

SAP BOBJ is a suite of front-end applications for SAP Business Intelligence (BI). SAP BI is comprised of a set of processes driven analytical tools and WebI is one of those tools. Analytics is the discovery, interpretation, and communication of meaningful patterns of data. Command Analytics is the process of using data to inform key command decisions.

WebI helps command to make effective decisions quickly. It also allows those who own the business to efficiently examine and create reports to support evidence based decision-making.

WebI is used to query the data warehouse, to make report, to carry out analysis, to share key data, and to make appropriate command decisions. It also allows users to access and analyze data from various online and offline sources.

1.2. Key Performance Indicators and Critical Success Factors

Key Performance Questions (KPQ), Key Performance Indicators (KPI), and Critical Success Factors (CSF) are important elements to Command Analytics.

KPIs are the data that are essential in answering the KPQ. Reports must provide graphical representation of the KPIs in order to answer the questions.

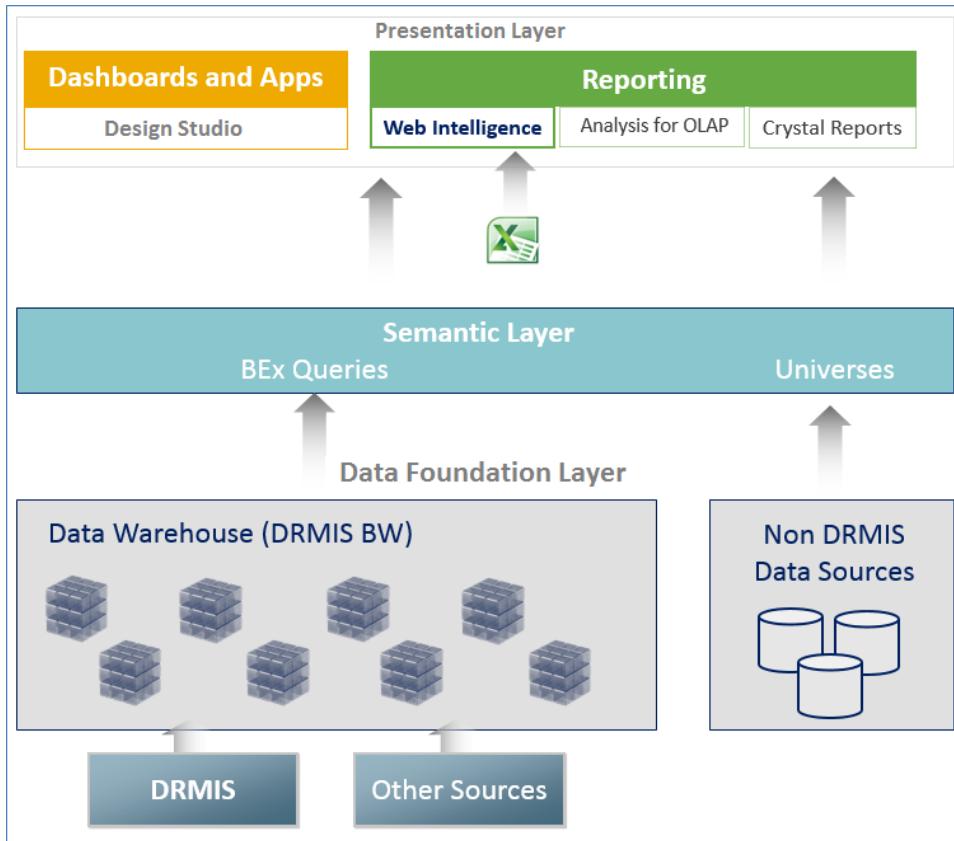
However, unless there is a clear understanding of the desired outcomes of the KPQs, the KPIs will not answer the KPQs. Certain elements of data can be identified as CSFs, and reports with action plans can be created to address these elements.

1.3. WebI Architecture

WebI has three-tier architecture.

- **Data Foundation Layer**

Data foundation layer extracts and merges transactional and historical data from SAP and non-SAP source systems when executing queries.



- **Semantic Layer**

Semantic layer exposes data from the Data Foundation Layer to Presentation Layer Subject-Area oriented repositories (Data Sets) designed to facilitate Querying and Reporting Business-Friendly Characteristics and Measures. WebI Author uses semantic layer to create reports and analyze information, and then share it with other online or offline users. The semantic layer is everyday business vocabulary of an organization's data without technical complexities. The semantic layer is presented by one or more Universes and/or BEx queries.

- **Presentation Layer**

Presentation layer offers flexible set of tools, like, WebI, Design Studio, Analysis of OLAP, Crystal Report, etc., for the end users to access, visualize and analyze data.

1.4. How to access Web Intelligence (WebI)

A WebI user (Author/Consumer) uses an Internet browser to log onto the BI Portal, called SAP BusinessObjects BI Launch Pad, and then view a WebI document to analyze data.

The BI Launch Pad also stores Dashboards, Crystal Reports, Analysis Workspaces, Excel Spreadsheets, etc.

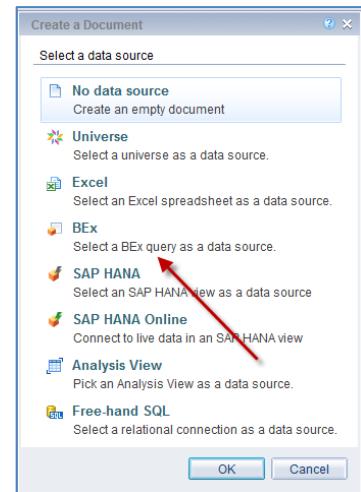
1.5. WebI Document

A WebI Document is comprised of one or more reports organized as tab pages along the bottom of the window. Each Reports may contain one or more blocks of formatted texts, tables and charts.

1.6. WebI Data Sources

WebI allows users to create reports based on Universe, BEx Queries and Excel SpreadSheets. WebI can access data from various sources:

- Relational database via Universe
- Online Analytical Processing (OLAP) server
- **Excel SpreadSheet**
- **Business Explorer (BEx) query on BW Info Provider**
- Analysis View
- SAP HANA and SAP HANA Online
- Free-hand SQL on a relational connection



1.7. Core Functionalities

The core functionalities of a WebI Author are Querying, Reporting, Analyzing and Sharing.

1.7.1. Querying

A WebI Author uses the **Query Panel** to add a Query on a selected source (like, a Universe, a BEx query or an Excel SpreadSheet) and then add objects (dimensions and measures) from the Query into the Results Objects section. For most sources, query filters can also be used to restrict the data being fetched from the database.

When executed, the query is being converted into equivalent SQL statement and this statement is then being sent to the WebI Server for processing. WebI Server sends the SQL statement to database to retrieve data correspond to the selected objects. The rows of data returned by the database are stored in **microcube** in WebI Server, called a **Data Provider**. A WebI document can contain multiple queries which are being fed to the corresponding Data Providers.

1.7.2. Reporting

The WebI Author then creates one or more reports by dragging and dropping objects from these Data Providers into various design components, like, charts, tables, etc. He/she also formats and organizes the data, highlights important ones, creates formulas and variables, adds multidimensional analysis techniques, like, drill-down or drill-through capabilities, etc.

1.7.3. Analyzing

The WebI Author uses the WebI reports for various ad hoc queries and analytic reporting purposes for him/herself, and also for others in the organization.

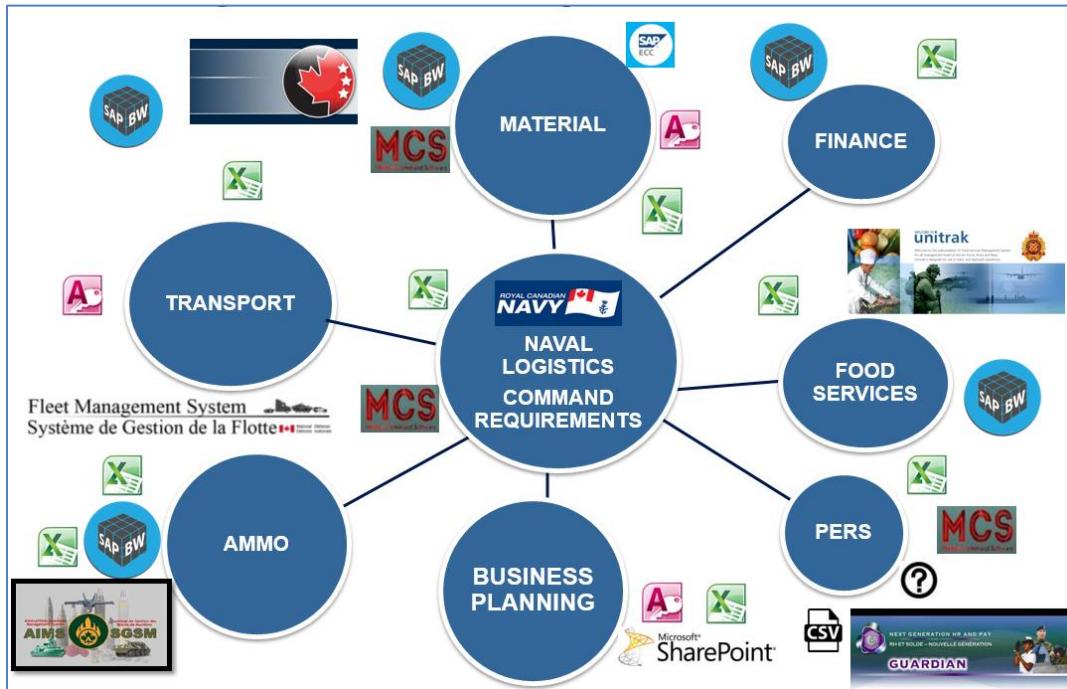
1.7.4. Sharing

The WebI Documents are stored centrally in the BI server for everybody in the organization to access them as per their authorization.

A WebI Document can be scheduled to run on a periodic basis so that one could access up to date data without waiting for the report to execute lengthy database queries.

The WebI document can also be disseminated to online or offline (i.e. users without BI account) users via e-mail as either WebI Document, Adobe PDF, Excel SpreadSheet, Comma-Separated Value (.CSV) or Plain Text.

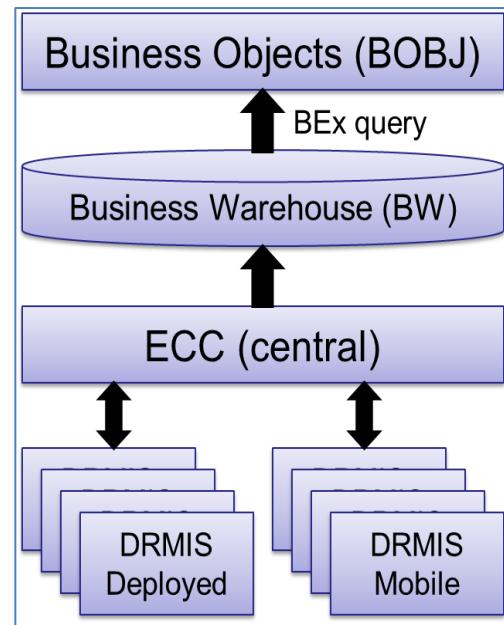
2. DRMIS System Landscape



2.1. DRMIS Environment

There are many parts to the DND information management and analytical toolset as shown in the above diagram. The DRMIS enclave is accessed through the Virtual Private Network (**VPN**). SAP's various ECC (ERP Central Component) modules form the central DRMIS ECC Production instance. Additionally, each ship has a Deployed DRMIS server and each submarine has a Mobile DRMIS server. These Deployed and Mobile servers communicate with the central server.

The DRMIS Business Warehouse (**BW**) is a data warehouse that stores current and historical data from DRMIS. DRMIS ECC data is uploaded to DRMIS BW at various intervals, some are either daily or weekly or monthly (as per business/technical requirements). BOBJ tools, like, WebI, Crystal Report, Dashboard, etc., uses Business Explorer (**BEx**) queries to access DRMIS BW data.



2.2. Types of BOBJ BI Accounts

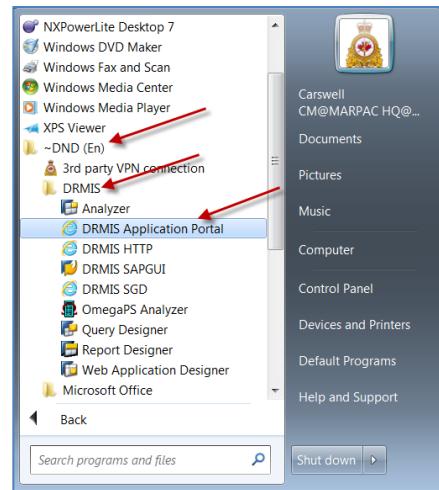
There are different types of BOBJ BI accounts:

- **Authors** are able to create reports, run BEx Queries, and manipulate reports fully. This is the type of access you will have when performing this Webl course.
- **Consumers** are able to view reports and make basic manipulations of the report. This is the most common account and most users fall under this access.
- **Delegated Administrators** allow the maintenance of the system.
- **Publishers** are able to schedule reports to be updated at scheduled times, as well as produce PDF reports for distribution.

2.3. Signing into BI Portal

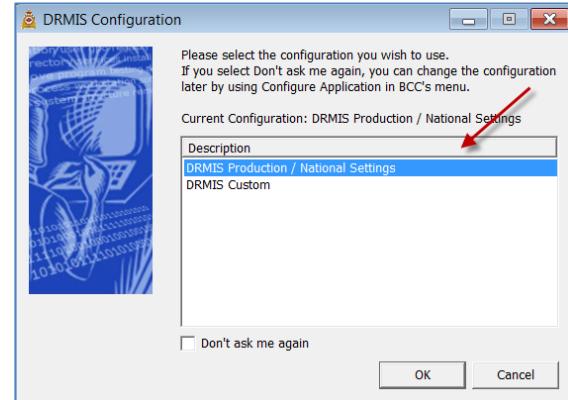
To access Webl and make reports, you must first access the BI Portal. To do so, you will need to access the Virtual Private Network by following this process.

1. Enter your PKI card into your PKI reader
2. Click on the Windows' "Start" menu, "All Programs", "~DND (En)", "DRMIS", and the "DRMIS Application Portal."

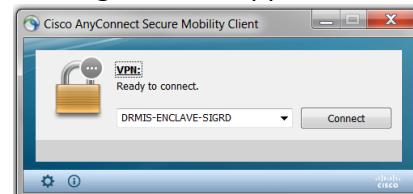


3. Click on "DRMIS Production / National Settings" in DRMIS Configuration. Click on "OK."

Note: Either setting is fine as we are just using the DRMIS application for the use of the VPN.



4. Click on “Connect” when the Cisco AnyConnect VPN login screen appears.



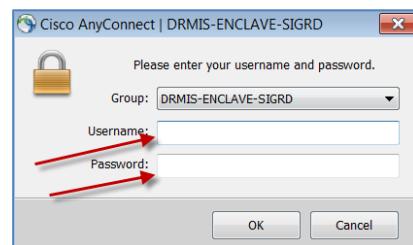
5. Your Cisco AnyConnect – Certificate Selection will appear, click on OK



6. Enter the PKI PIN, then click OK



6. Enter your DWAN username and password.



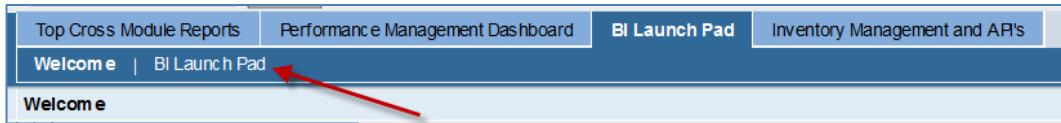
7. Within the DRMIS Portal Application webpage, enter your BI User ID and Password.



8. Within the SAP NetWeaver Portal Application, click on the “BI Launch Pad” tab from the top menu.



Then, click on “BI Launch Pad” below the top menu.



This will open the SAP BOBJ BI Launch Pad in a new Web Browser tab. The default is to be on the “Documents” page.

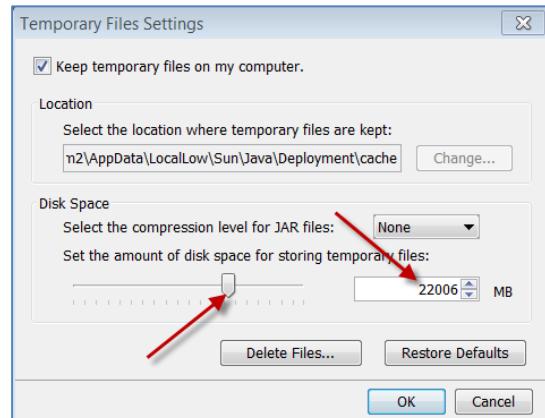
2.4. Setting Java preferences

To ensure that WebI reports open and load quicker in Java Applet mode, one needs to change the Java settings. It is recommended to do this if the WebI has long load times. These steps will need to be carried out on user's personal workstation and as well as any other PC that he/she may be using to display WebI Reports, like, conference room or board room PCs, etc.

1. Goto Windows Start menu and then “Control Panel” -> “Java (32-bit).”
2. In the General tab, click on the “Settings...” button under Temporary Internet Files.



3. Set the Disk Space for storing temporary files to around 22000 MB.
4. Click on “OK.”



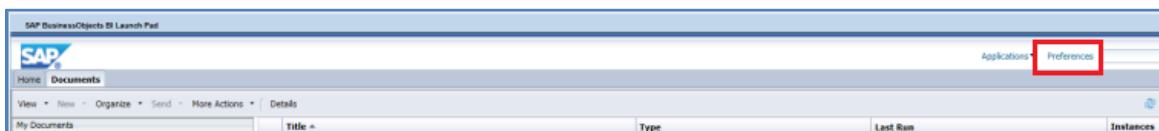
2.5. Setting WebI preferences

It is important that users ensure their WebI is setup with the proper settings. This will make reports load quicker.

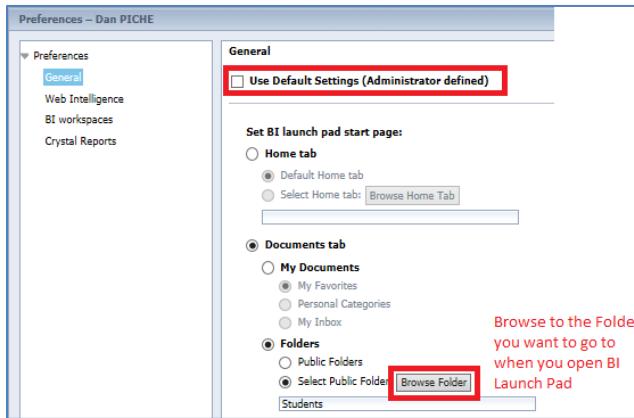
1. Click on “BI Launch Pad.”



2. Click on “Preferences.”

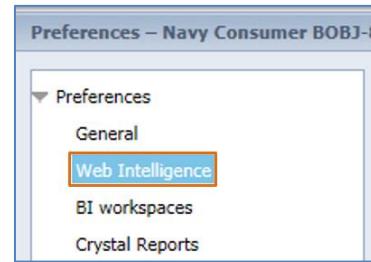


3. Click on the “General” on the left panel.
4. Unclick Use Default Setting (Administrator defined).
5. Under Folders, click on “Browse Folder” to set the folder to the ‘Students’ folder of this course.



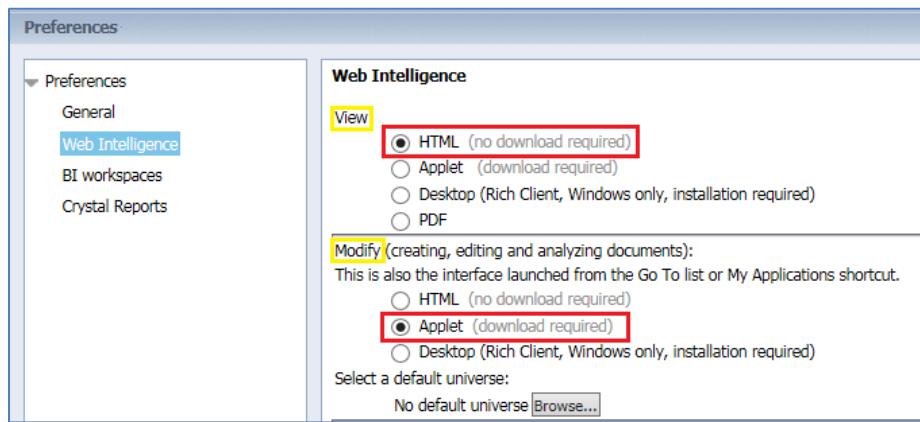
6. Click on “Web Intelligence” on the left panel.

7. Within the “View” options, applying the HTML setting allows you to open and view documents faster. This is the recommended setting.

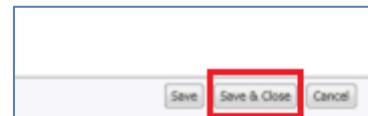


The Applet setting allows you to easily switch to Design (editing) mode. The PDF setting allows for more options in exporting a document. This is discussed more in section “Exporting Data.”

8. Within the “Modify” options, applying the Applet setting allows you to open in Design (editing) mode. This is the recommended setting.



9. Click on “Save and Close.”



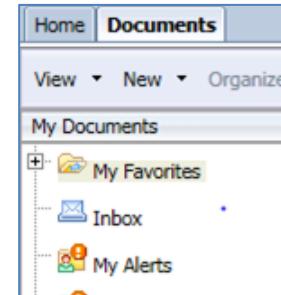
Note: you can change the Modify option to HTML as well, but this will prevent you from editing a BEx query or creating a document from a BEx query. You will have to reset the Modify option to Applet to be able to edit/create a BEx query.

In order to apply these settings, users must exit the BI Launch Pad and re-enter. These setting will be saved and applied.

2.6. Folder Structure

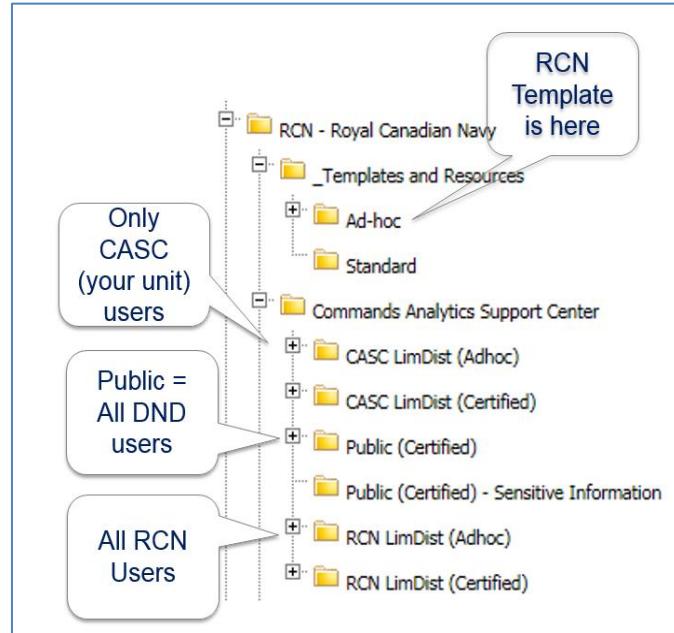
Within the “Documents” page is your “My Documents” file structure associated with your account. There is also the public folders under the “Folders” section. Within this section is a folder for each identified line of business within DND that currently uses BOBJ.

Folders will often be labeled “(Adhoc)” or “(Certified).” Certified reports have been approved by the Business Owner and the Solution Owner and have gone through the CASC Certification process. They are ready to be used for reporting within that line of business.



Adhoc report folders will hold all works in progress, which may be accurate, up to date, and relevant but may not have necessarily been certified and published. Many reports saved within Adhoc folders can be used as examples or provide ideas to help you create your own reports.

The Command Analytics Document Certification process and the Command Analytics Document Publishing Procedure are available on the CASC SharePoint site:



<http://collaboration-navy-marine.forces.mil.ca/ent/casc/CASC%20Shared%20Documents/Forms/AllItems.aspx>

2.7. Course Documents

This course has a set of pre-made examples and templates to help you in learning Webl.

You can find them within the folders tab under “**Public Folders\RCN – Royal Canadian Navy_Analytics Training\RCN LimDist (Adhoc)\Web Intelligence\Current Courses\Students>All Students**”

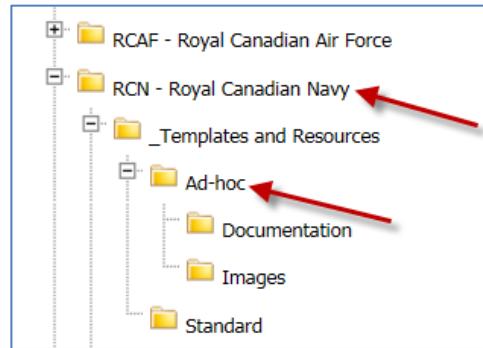
Copy the folder “**All Students**” and rename it to your CA username in the same folder in upper case. You can use this folder for this course.

You can also copy this folder into your “My Favorites” folder under “My Documents.”

Within that folder you will find a “RCN – Template - Empty” document.

You can also find updated Navy Favorite Templates under the “RCN – Royal Canadian Navy” folder, and “_Templates and Resources.”

As new editions of the Navy template get created, they will be posted in this folder.



3. Basic WebI Operations

3.1. Opening a WebI Document

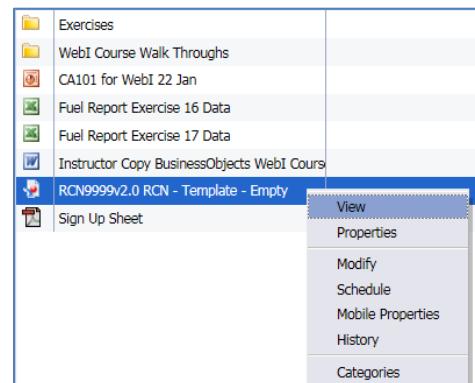
A WebI Document can be opened in view mode or in modify mode. Based on the Preferences set for Web Intelligence in BI Launch Pad, view or modify window will open in either HTML, Applet or PDF mode.

3.1.1. View or Reading Mode

Right click on the name any WebI Document to get the Context Menu and click on “View” to open the document in Reading mode.

In the reading mode you would be able to do following:

- Create, open, save, print and search document
- Refresh a document’s query(s)
- Use the Track, Drill, Filter Bar and Outline options
- Export data to PDF, CSV, Excel and Text format



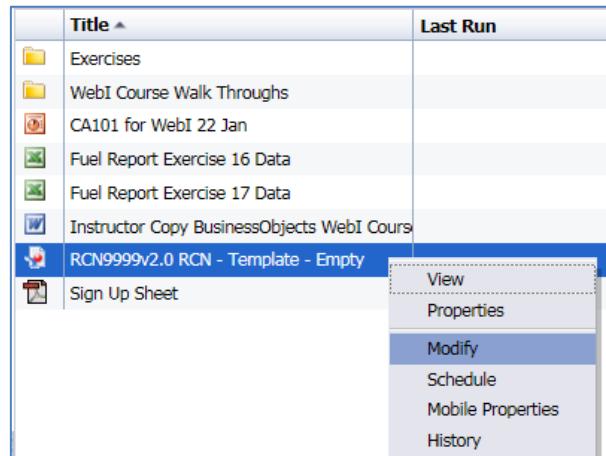
Based on the Preferences set for Web Intelligence in BI Launch Pad, this will either open in HTML, Applet or PDF mode.

3.1.2. Modify or Design Mode

Right click on the name any WebI Document to get the Context Menu and click on “Modify” to open the document in Design mode.

In the Design Mode, you would be able to do everything from the Reading mode plus all the formatting and analysis features, like, Report Element, Formatting, Data Access, Analysis and Page Setup.

Based on the Preferences set for Web Intelligence in BI Launch Pad, this will open in either HTML or Applet.



3.2. WebI Application Modes

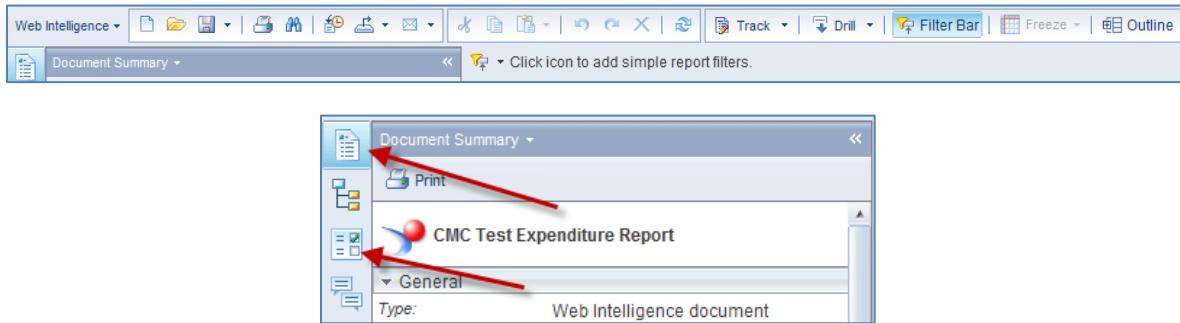
In the Applet mode you will find three ways to interact with the document on the top right corner: Reading, Design and Data.



In the HTML mode there are only two modes: Reading and Design.

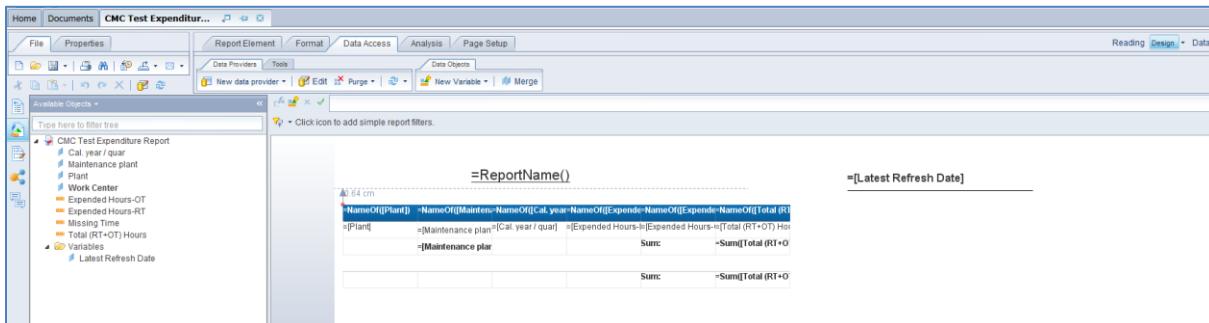
3.2.1. Reading Mode

The reading mode shows what consumers can see and how the report is presented. It has a smaller Top Menu and a limited left-hand menu, focusing on the Document Summary and Input Controls.

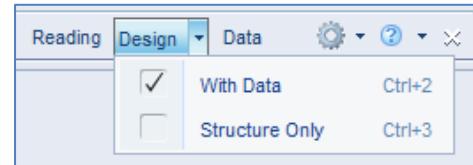


3.2.2. Design Mode

The design mode allows the user to manipulate the report. It is available only to authors and publishers.



It has two view settings, "With Data" and "Structure Only." The "Structure Only" view shows the tables and formulas, and the data script that populated them.



3.2.3. Data Mode

The Data mode (only available in Applet mode) shows what data providers, i.e., queries selected, for the reports.

In this mode you can create, edit, purge or refresh a data provider, merge objects from different sources, change an existing data source by replacing with another equivalent data source, and export data directly from the data provider into CSV file.

The screenshot shows the 'Data' tab in the WebI interface. On the left, a tree view lists 'CMC Test Expenditure Report' and its components, including 'ZCXX_ZBWFMO1_CATS019' and 'Query 1'. 'Query 1' contains items like 'Cal. year / quar', 'Maintenance plant', 'Plant', 'Work Center', and various time-related metrics. On the right, a table titled 'All data providers of "CMC Test Expenditure Report"' shows one provider: 'Query 1' from 'ZCXX_ZBWFMO1_CATS019' with a refresh date of '9-Mar-2017'.

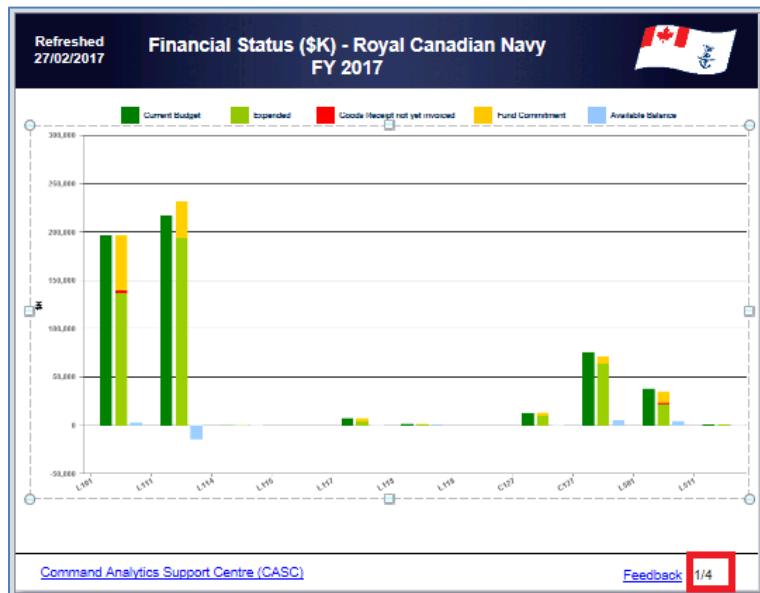
3.3. WebI Viewing Modes

In the Reading and Design modes, you can choose either Page view mode or Quick Display view mode. Two buttons are available at the right bottom area of the WebI screen on the status bar to switch between these two modes.



3.3.1. Page view mode

This mode displays the page layout of the report using margins, headers and footers. All the formatting options are being utilized and displayed in this mode. In addition, what you see in this mode is what you can expect when you would print your report as PDF document or via a printer.

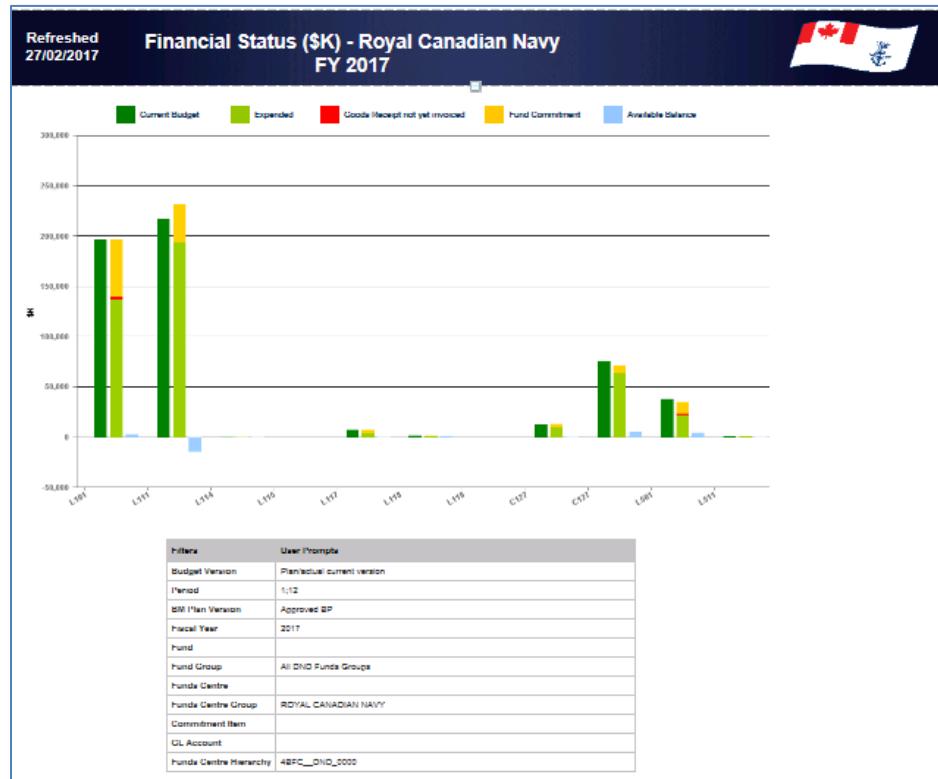


3.3.2. Quick Display view mode

This mode is based on data, rather than the physical size of report pages and all the formatting options.

For tables and sections, it displays maximum number of records vertically and horizontally, depending on the Quick Display settings. You can specify the minimum page width and height and the amount of padding around the edges of the report for the Quick Display mode.

This mode is used to focus on analyzing results, add calculations or formulas, or add breaks or sorts to tables to organize results.



3.4. WebI Application Structure

The mostly used Design mode has following areas:

3.4.1. File tab page

A toolbar that contains buttons for open, save, print, find (in the current document), history (of the scheduled instances), export data and send document (as Mail or FTP).

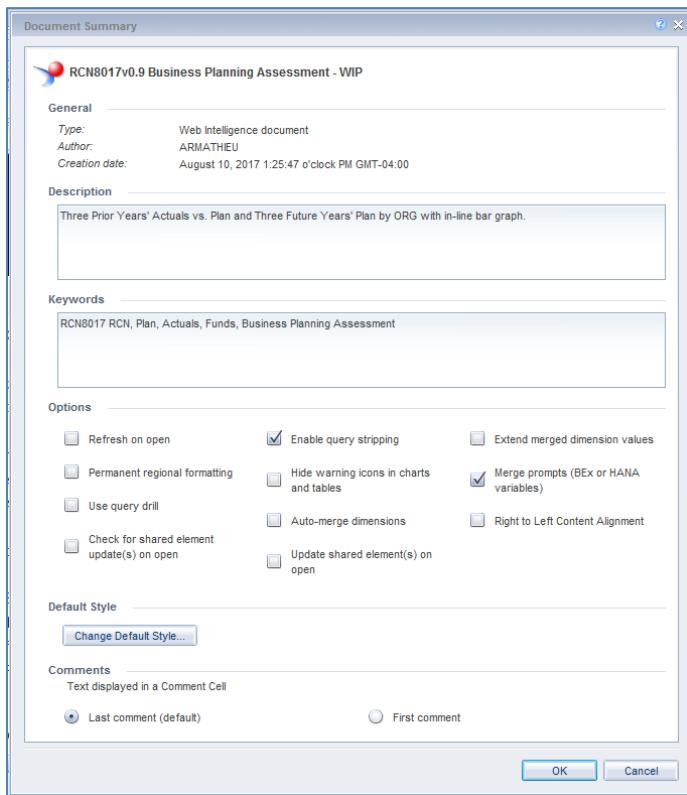
3.4.2. Properties tab page

A toolbar that contains buttons for document properties, application properties and display format of the different areas and panels in the application.

The Document Properties contain few important options:

- The Description and Keywords input box which should be filled up by every Author for his/her WebI Document/Report
- Refresh on open (select this option to update data automatically on open so that the user can see data that he/she is authorized to)

- Enable Query Stripping (only retrieve data for the objects that contribute to the reports)
- Auto-merge dimensions (under certain conditions)
- Merge prompts (BEx or HANA Variables)
- Which text to display in the Comment Cells, either the first or last one
- Check for shared element update(s) on open
- Update shared element(s) on open



3.4.3. Toolboxes

The top toolboxes contain tabs for Report Element, Format, Data Access, Analysis and Page Setup. Each of these tabs has other sub-tabs and toolboxes to carry out different reporting designing and analyzing tasks.

3.4.4. Side panel

Side panel contains several panes that provide various views of the document.

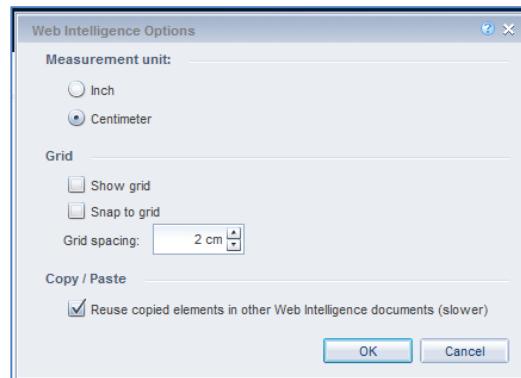
3.4.5. Status bar

Status bar is in the bottom of the design mode page status bar contains data tracking button, page count, page mode, zoom setting and refresh all data button.

3.4.6. Tools

Tools in the top right hand corner, the Tools menu lets you setup some options for measuring units, show/snap grid and copy/paste settings.

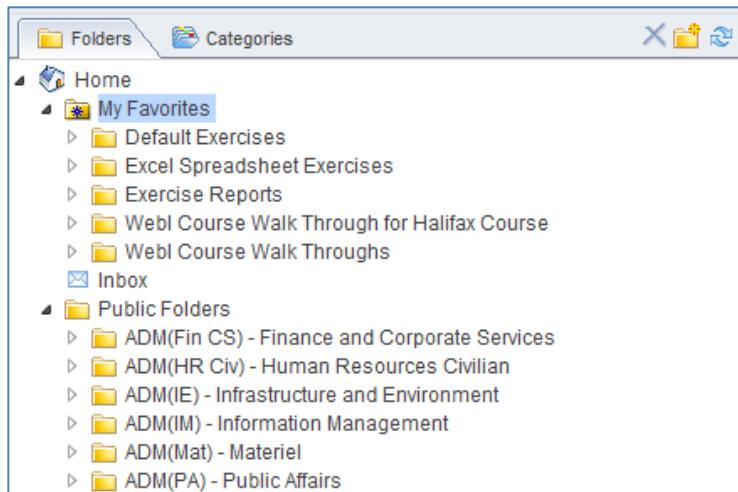
This can also be accessed through the Application Properties.



3.5. Saving a WebI Document

WebI documents can be saved to two different locations.

You may click on either the “Save” or “Save as” button . You may save your WebI document in your “My Favorites” Folder or in any of the Public Folder that you have write access to.

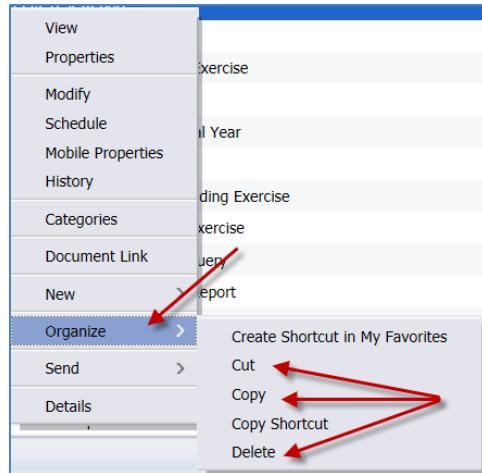


The “My Favorites” folder allows the author to save a document that can only be accessed through their own BOBJ account.

The Public Folders include a file structure for each line of business and includes relevant sub-folders. You can save your reports under your line of business’ folder structure.

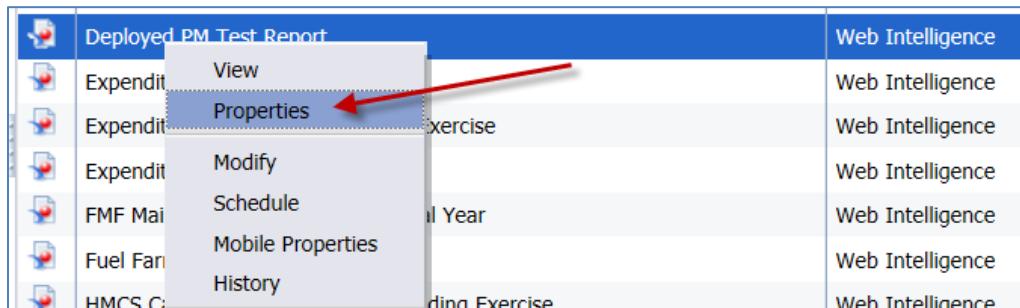
3.6. Cut, Copy or Delete a WebI Document

Additionally, you can cut, copy or delete documents within the WebI folders. To copy, cut, paste, or delete an item, right click on the document name and click on “Organize.”



3.7. Document Properties

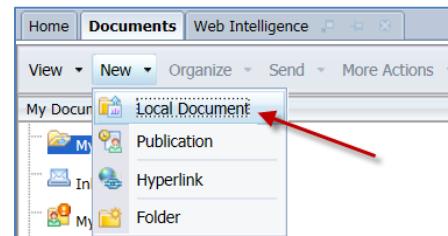
To set various document properties, right click on the document name and click on “Properties.”



3.8. Uploading a document or an Excel spread sheet

Within the Documents tab and within the BOBJ file structure, you can add files to your favorites or to the public folders by selecting “New” and “Local Document.”

Then, click on the “Browse...” and insert the document that you wish. Generally, you will be inserting Excel SpreadSheets.



You can also create new folders by right clicking within the folder structure and selecting “New” and selecting “Folder.”

3.9. Saving within the Web Intelligence Course Folder

In this course you will be asked to create multiple Web Intelligence Documents (WID). Save all documents to the following file structure within your folder that you named with your CA User ID (example: JSMITH).

3.9.1. Naming your documents

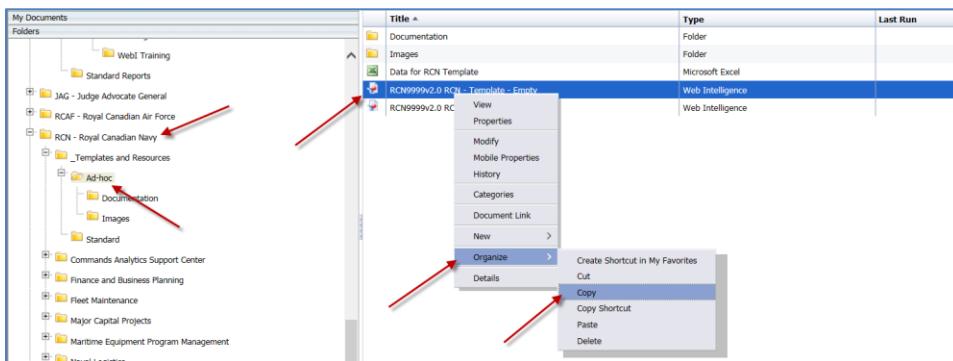
Save your documents following the naming convention outlined in each exercise. For Example, “Exercise 1” requests that you save your document as your “last name”_QueryPanel_1-4.”

3.10. Creating New Webl Document

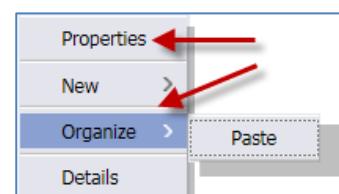
3.10.1. Using a Template

When creating a new document, it is recommended that you create a new document from the template (e.g. RCN Template).

1. To select a template, copy the latest template from the “_Templates and Resources” within the RCN – Royal Canadian Navy folder and paste it into your “My favorites” folder.



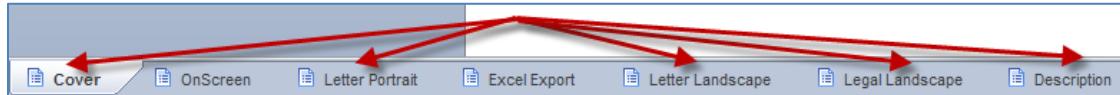
2. Paste the template document. Rename the document by right clicking on it and selecting properties and changing the name. Also, remove the description of the template and change the Keywords to reflect the document you are creating. The Keywords will be the script that the Webl search function uses to allow others to find your report. Add what keywords will be important for your report so other authors and consumers can find it through the Webl search engine.



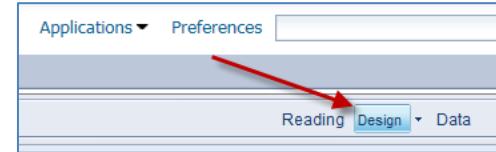
The 'General Properties' dialog box is open. It contains the following fields:

- Title: Basic Template (highlighted with a red arrow)
- Description: RCN Report Template. (highlighted with a red arrow)
- Keywords: RCN, Report, Template, WebI (highlighted with a red arrow)
- Created: 4-Jul-2017 6:04 PM
- Last Modified: 11-Jul-2017 3:51 PM
- Locale: English (Canada)

3. Open the document. The template will come with blank, pre-formatted “reports.” Reports are tab like features at the bottom of the screen in a document. The template will come with a cover and description report as well as a report in Letter Portrait, Letter Landscape, and Legal Landscape.



4. When you open the document, it will open in the “Reading” Mode. Click on “Design” mode to be able to edit the document and add content (like, data provider, query, table, chart, etc.) as necessary.



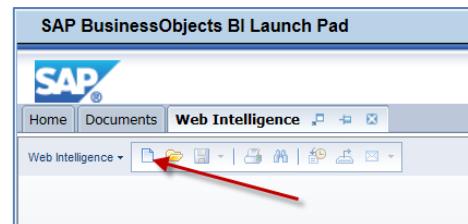
3.10.2. Using a Blank Document

To create a blank unformatted document, follow these steps:

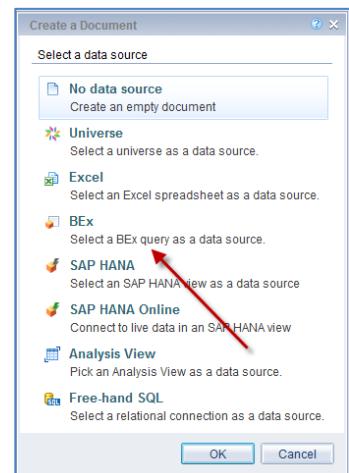
1. First, you will need to open the WebI application within the BI Launch Pad by selecting the Applications button on the right, and selecting “Web Intelligence.”



2. To create a new Document and choose a BEX query for your report, click on the “New Document” button.



3. A new window will pop up asking you to click on your data source. Click on “BEx.”



4. Data Provider and Query

Once a new WebI Document is created you would need to add queries in your document to create reports. Queries can be created from different sources, like, BEx queries, Excel SpreadSheets, Universes, etc.

Click on the “Edit Data Provider” button to access the “Query Panel” where you can add/edit queries as needed.



4.1. Adding a Query based on Excel SpreadSheet

Microsoft Excel SpreadSheets can be used as a data source in WebI. However, some formatting and configuration with the Excel SpreadSheet is required to be able to import them.

4.1.1. Layout of the SpreadSheet

The preferred layout is to have a simple vertical table of data where the first row should have the column headers and all your data underneath it. The number of records (rows) can grow or shrink as needed.

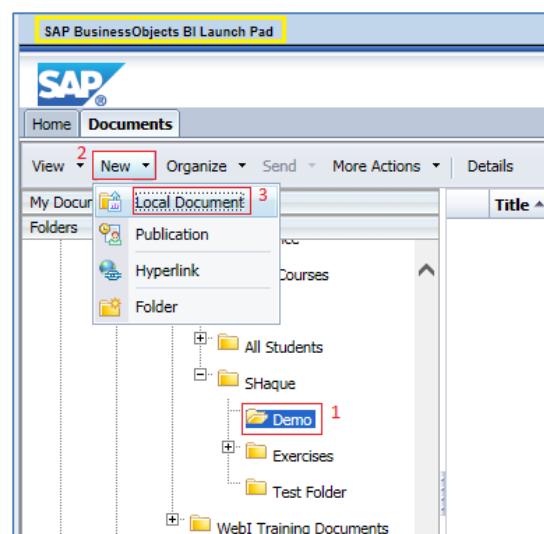
You may have multiple tabs in a single SpreadSheet to reflect different data sets, and use them in one or more WebI Documents/Reports.

Categories	FY 14-15 O&M	FY 15-16 O&M	FY 16-17 O&M	FY 17-18 O&M	Total Cost %
CR-1 Conceive, Design & Acquire	11,596,082.82	7,546,723.31	6,872,356.25	7,959,688.22	0.04
CR-2 Support Services	203,997,894.22	72,271,240.54	56,929,946.56	65,937,302.2	0.31
CR-4 Readiness (FP&R)	94,314,463.32	113,400,036.83	112,149,950.22	129,894,117.36	0.6
CR-4 Readiness (Gen Forward)	-0.31	8,470,218.77	7,713,329.36	8,933,718.71	0.04
CR-5 Employment	3,708,420.08	2,413,437.47	2,197,775.36	2,545,503.5	0.01
Example	123,456	123,456	123,456	123,456	0
RCN O&M	313,616,860	204,101,657	185,863,358	215,270,330.39	1

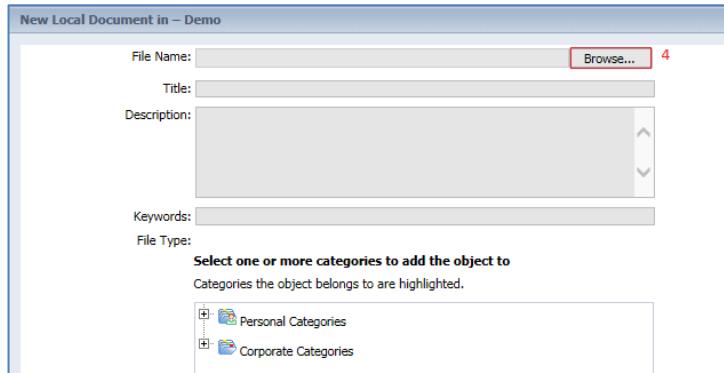
4.1.2. Uploading a new SpreadSheet in BI Launch Pad

In order to load a SpreadSheet (or, any other document) in BI Launch Pad, follow the steps below:

1. Within the “Documents” tab, navigate to the folder that you’d wish to upload the file into.
2. Click on “New.”
3. Click on “Local Document.”

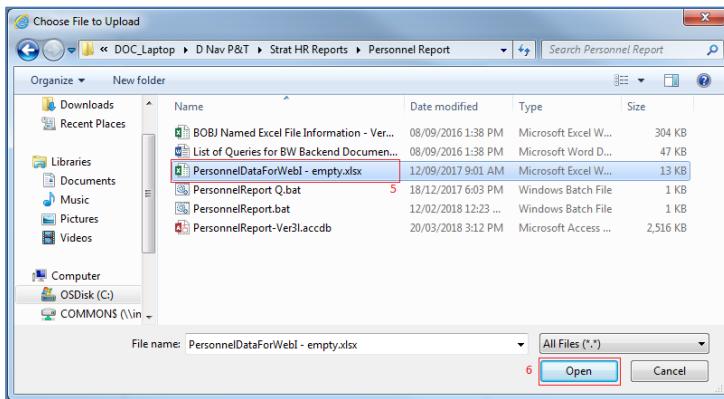


4. Then click on the “Browse...”



5. Click on the Excel SpreadSheet from your local/network drive.

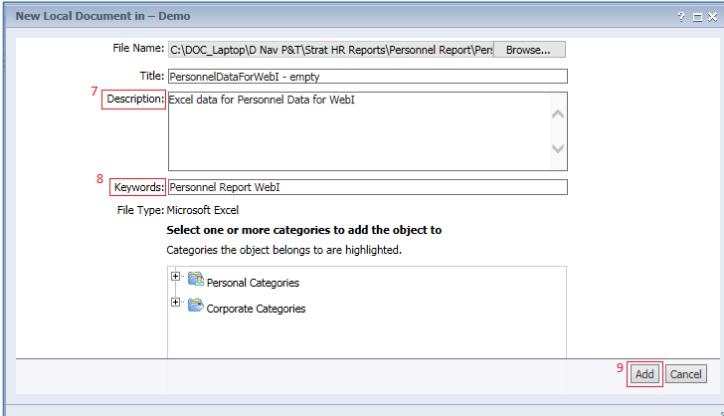
6. Click on “Open.”



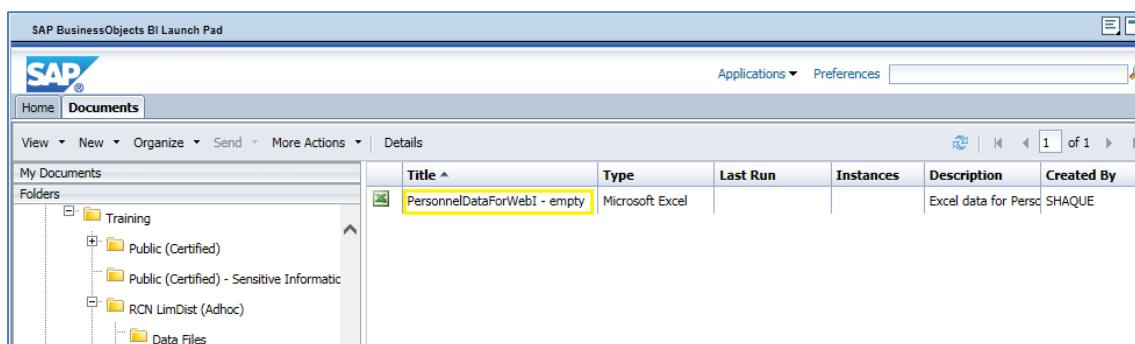
7. Enter “Description” of the Excel SpreadSheet.

8. Enter “Keywords” for the file being uploaded, this would enable easy search of this file in future.

9. Click on “Add” to add the file.

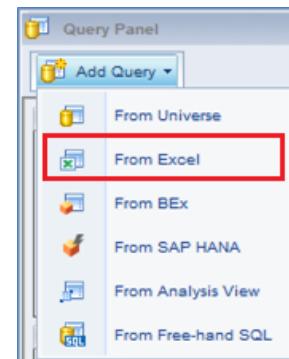


10. The file should now show up in the folder:



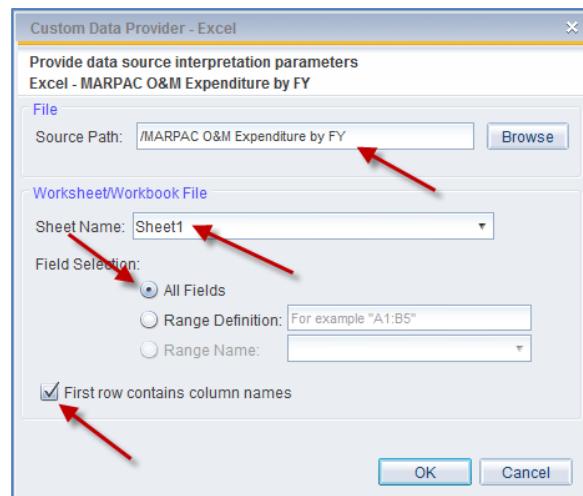
4.1.3. Adding the SpreadSheet via a Query

1. Inside Edit Data Provider, click on “Add Query” and click on “From Excel.”

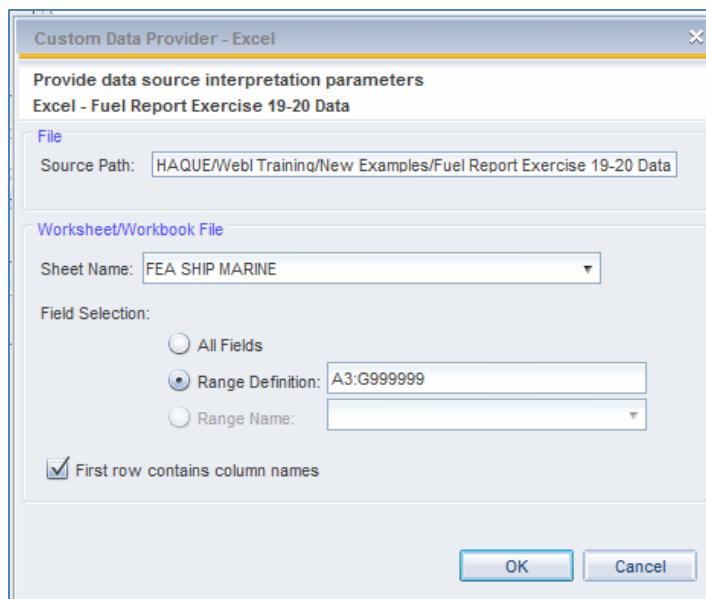


2. Find the desired Excel SpreadSheet for the BI Server.

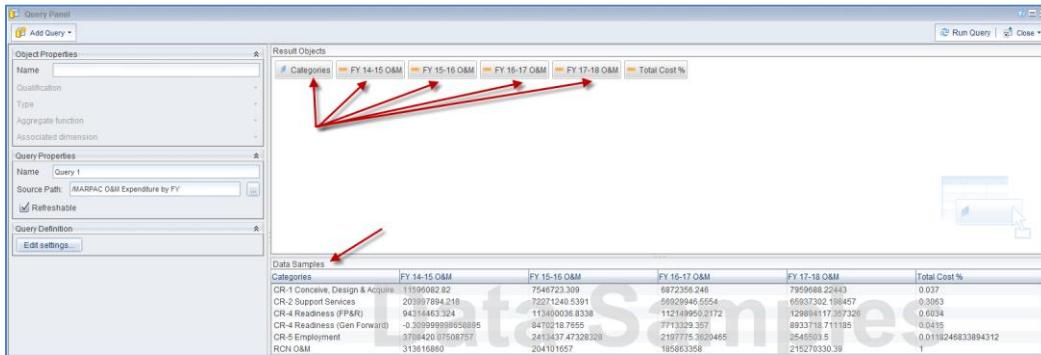
3. Choose the following options in the Custom Data Provider – Excel window: the name of the sheet (/tab) in the Excel SpreadSheet you want this query to be based on. It is recommended to have only necessary data in the SpreadSheet. If this is the case, select “All fields.” If the Excel SpreadSheet was formatted to the specifications outlined above, you will be able to have the box “First row contains column names” selected.



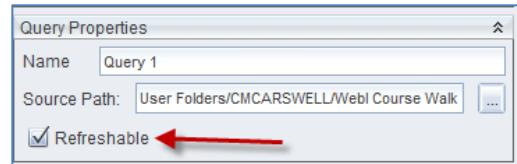
If you have couple of lines of title(s) or text before your column header in your Sheet (/tab), you would need to specify a “Range Definition” to avoid those rows/columns:



4. Click on “OK.” This will take you to the Query Panel. When importing data from an Excel SpreadSheet, the Query Panel is different in subtle ways.



5. In the Query Properties, always ensure that the “Refreshable” check box is selected.



6. The Data Samples box gives an example of what the data includes. The first row of the SpreadSheet was taken as the names of each object. WebI is able to surmise if an Object is a dimension (name, date, place), or a Measure (data, numbers).

However, if WebI has not properly allocated the right qualification to an Object, you can change it through the Object Properties box. You can change an Object’s qualification or its type.



7. After the data has been set up appropriately, run your query. Within the Report panel, you will manipulate the objects of this query to create reports.

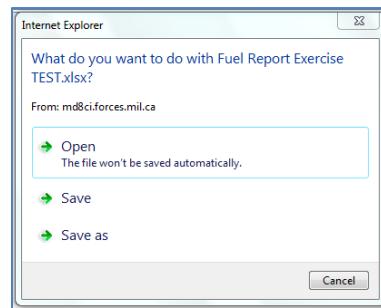
4.1.4. Exercise 1: Creating a Document with an Excel SpreadSheet

Refer to the Exercise booklet.

4.1.5. Downloading an SpreadSheet from BI Launch Pad

If you double-click on a SpreadSheet's name you will be prompted by the browser whether you would like to open the file directly, or do a "Save" or "Save as."

It is better to click on "Save as" and then save the file in your desired location on your local computer or in any network drive.



4.1.6. Updating the data of a SpreadSheet

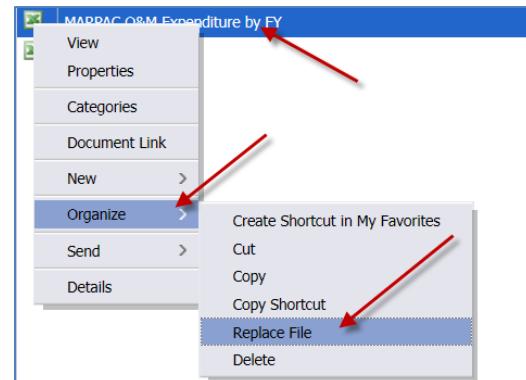
1. To update the data in a report that uses an Excel SpreadSheet as a data source, you have to update the Excel document.
2. If you do not have a local copy, you can first download the Excel document from BI Launch Pad on to your local/network drive.
3. Now, you can add as many new rows of new data as needed. You may also delete any rows of data that are not needed.
4. You should ensure that the structure of the spreadsheet remains same. That means, a numeric column should remain numeric, a string should remain as string, and the order of the currently used columns should not change.
5. You may add more columns into your tabs after whatever tab was there before, but you preferably should not rearrange or delete any existing columns. Your existing WebI Reports would not work properly if that happens.

4.1.7. Refreshing a SpreadSheet in BI Launch Pad

It is essential to know that the columns of the updated file must match with the file that is being replacing. You may add more columns to the spreadsheet, but only at the right of the columns in sheet that were there before. If you reorganize (add or delete) the existing columns, all WebI reports that reference that spreadsheet will either fail or show wrong data.

In order to update an existing Excel SpreadSheet, the filename of the new file does not have to be same; however, the sequence of the existing columns must remain same. Even if you have updated an existing SpreadSheet with a SpreadSheet having a different name, the name of the file on BI Launch Pad does not get changed.

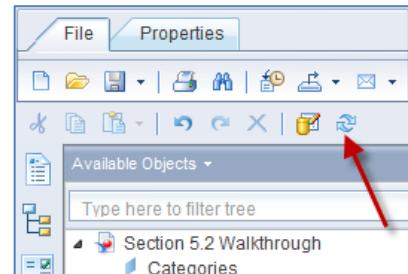
1. In BI Launch Pad, right click on the Excel SpreadSheet that you would like to change and click on "Organize" and "Replace File."
2. Then click on the "Browse..." and navigate to the the Excel SpreadSheet from your local/network drive.



3. Click on "Open" and then Click on "Replace." This will replace the old Excel SpreadSheet with the updated one.

4.1.8. Refreshing the WebI Document after refreshing the SpreadSheet

After uploading the new version of the Excel SpreadSheet, open your WebI Document and click on the Refresh  button to refresh all the data sources.



4.1.9. Exercise 2: Editing a Document with an Excel SpreadSheet

Refer to the Exercise booklet.

4.2. Adding a Query based on BEx Query

All DRMIS ECC and other DND transactional systems' data that are being stored in DRMIS Business Warehouse (BW) are accessed in WebI through BEx queries. BEx queries pull pre-determined sets of data gathered from DRMIS Business Warehouse (BW) Info Providers.

Info Provider usually have one or more Info Cubes and/or Data Store Objects (DSO) connected to it in DRMIS BW. Additionally, data can be loaded from external sources directly into BI using Excel SpreadSheets or CSV files.

Data in DRMIS BW is updated from DRMIS ECC (Source Systems) periodically, depending on the requirement, either once a day or a week or may be a month. Therefore, majority of the DRMIS BW data is at least one day behind from the DRMIS ECC data. When a WebI Report is being refreshed, it pulls DRMIS BW data instantaneously using the BEx queries.

Note: the SAP BusinessObjects Web Intelligence BOW 310 and BOW 320 courses teach more about Universes than BEx Queries. Universe is another type of Data Provider that can pull SAP and non-SAP data rather seamlessly. However, in DND universe is not being used at the moment.

4.2.1. Enabling a BEx Query for WebI

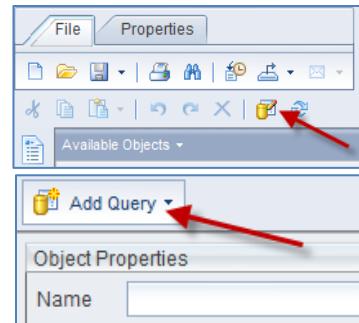
Not all BEx queries are available within WebI. There are BEx queries that not OLAP Enabled. To enable a BEx query for WebI, please put a request in with your local CASC team. They will put in a request with DDRMIS who will ensure that a query is enabled or created that meets business needs. The CASC team will need the BEx Query name, function, business case for using the data and any other relevant information on the query you want OLAP Enabled.

4.2.2. Z and Y BEx Query

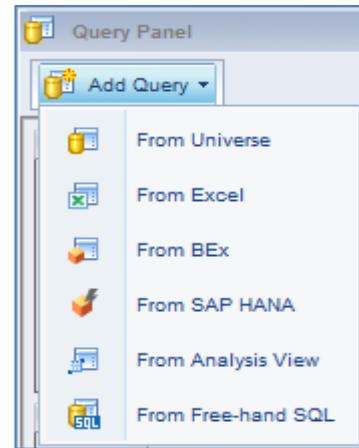
Queries with the technical name beginning with "Z" have been created by the DRMIS BI team, while those with the technical name beginning with a "Y" have been created by super users. Some "Z" and "Y" queries may share the same description, but have separate technical names and may display different data. "Y" queries are created to fill a temporary need, and are periodically deleted. Do not use "Y" queries unless you are directed to by a member of the CASC and use with caution as they may be a work in progress or may not function properly.

4.2.3. Selecting the BEx Query

1. Click on the “Edit Data Provider” button in the top left corner. This will open the Query Panel screen.



2. Next click on the “Add Query” button in the top left corner of the Query Panel.



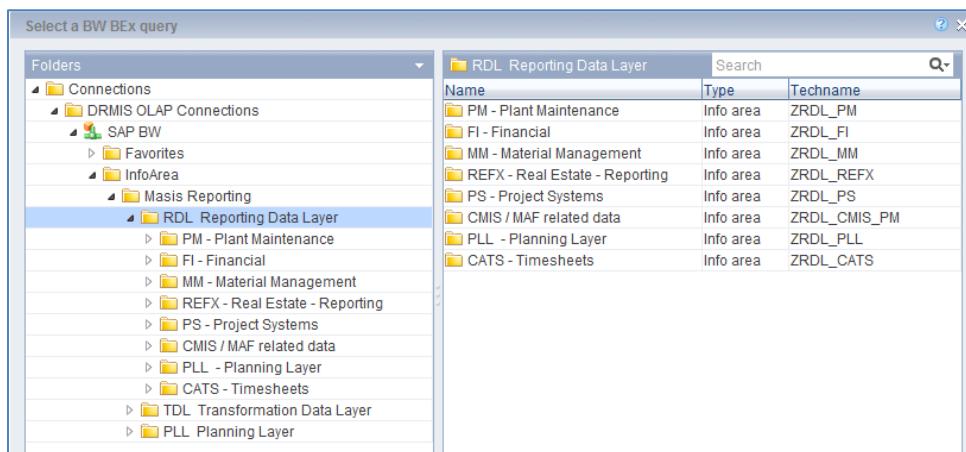
3. This will open a window asking you to select the data source of your choice. Click on “From BEx” as your data source.

4. Now a set of folders will open. Drill down within the folders to get to the level where you can see “Reporting Data Layer” (RDL), the “Transformation Data Layer” (TDL), and the “Planning Layer” (PLL) folders (i.e. Info Areas).

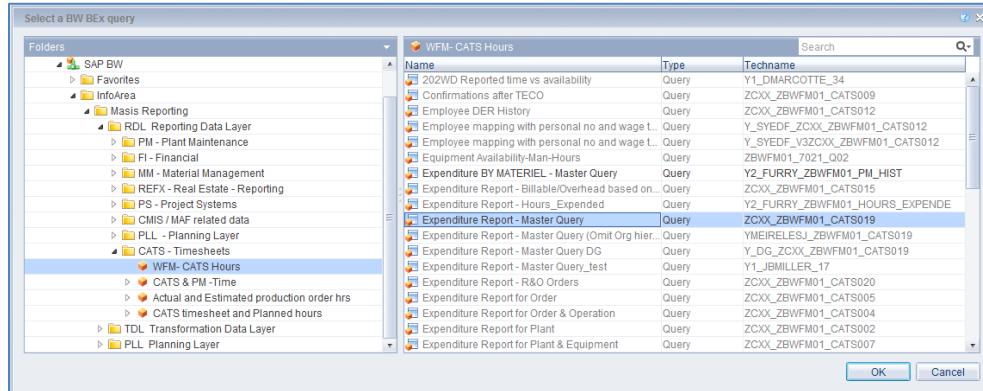
The majority of available BEx queries are under RDL Info Area which is sub-divided into few other Info Areas that are named after few primary DRMIS ECC modules (like, PM, FI, MM, PS, CATS, SCI, etc.).

There are further Info Areas under each of these Info Areas to better organize the Info Providers (i.e. Info Cubes, Data Store Objects, etc.). Under each Info Provider folder, you would find one or more BEx queries that return data from the corresponding Info Provider based on the logic and design of each queries.

It is important to navigate within these Info Areas and Info Providers, and familiarize yourself so that you would be able to find the appropriate BEx query for your report.



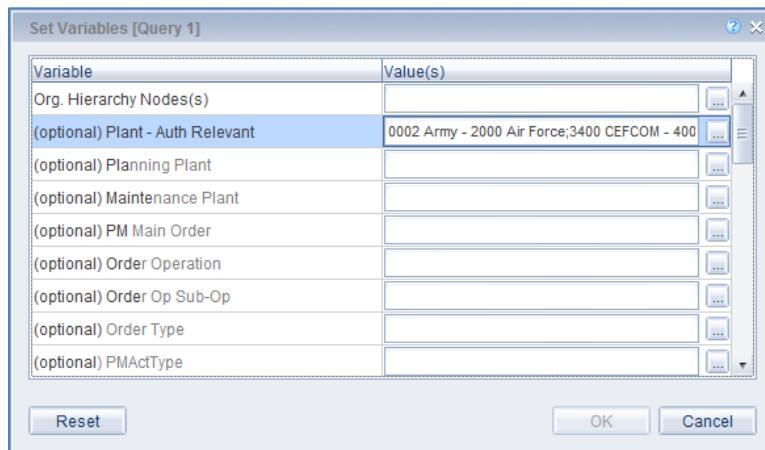
5. The BEx queries that appear in black font are available to use within Webl. Queries with grey color font are not available to be used in Webl at the moment but can be requested to be made available as discussed above. Each query has a technical name that can help you to refer to that query in the future.



Note: When drilled down to at least “SAP BW”, the search function will appear in the top right corner. You can search by either Technical name or Description by selecting the drop down arrow beside the search field.



6. Select the query you want and click “OK.” This will open the variables for that query, some of which are optional and some are mandatory. In some queries, some variables (e.g., authorization related objects) will be auto-populated.

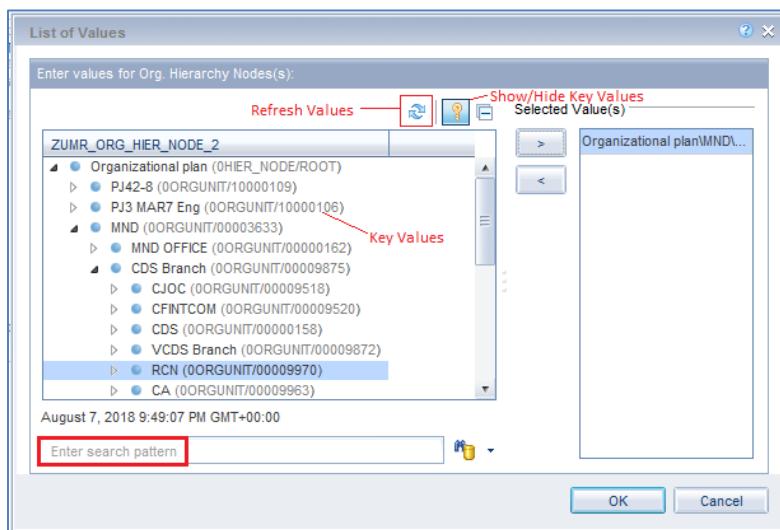


7. Click on the ellipsis button beside the variable to change the values.

Click the Refresh Values  button to see all available values which are displayed based on the user's authorization and access level in DRMIS BW Info Providers.

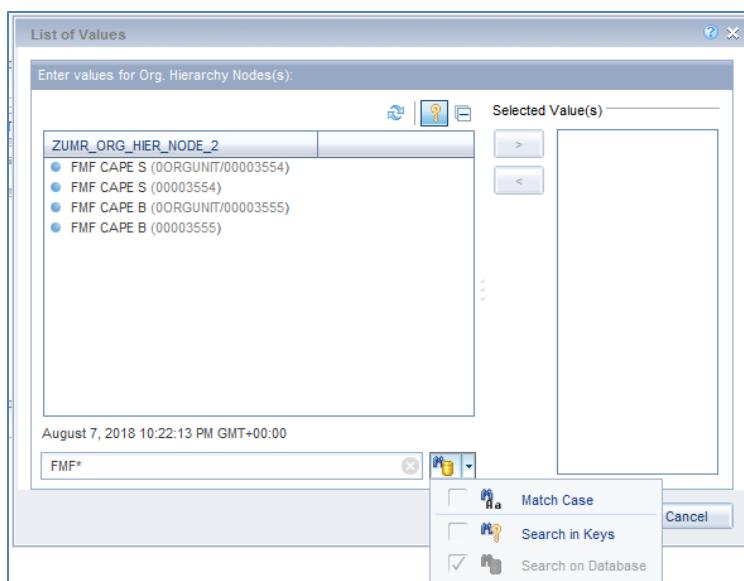
Select the value(s) you want by double clicking them or single clicking and clicking the  button.

You can click on the “Show/Hide key values”  button to see the Key associated with that value text.



8. You may enter a wild-card pattern (like, FMF*, *RCN*, etc.) in the “Enter search pattern” field (shown in the previous image), and get the list of values that matches that pattern.

Although the search pattern for this kind of input field is usually case insensitive (especially if you keep the “Match Case” un-checked), but it is a good idea to try both cases if the search is not returning any values and if you are not sure about the pattern of the data in DRMIS BW Info Provider.



In addition, you can check the “Search in Keys” check box if you would like to search by the technical key value of the object.

9. Unselect any auto-populated variables you may wish to remove and select any mandatory variables or optional variables that you wish to enter. Different queries will have different required variables.

You can change any selected variables at a later time as well.

10. Click on “OK” and WebI will bring you to the Query Panel.

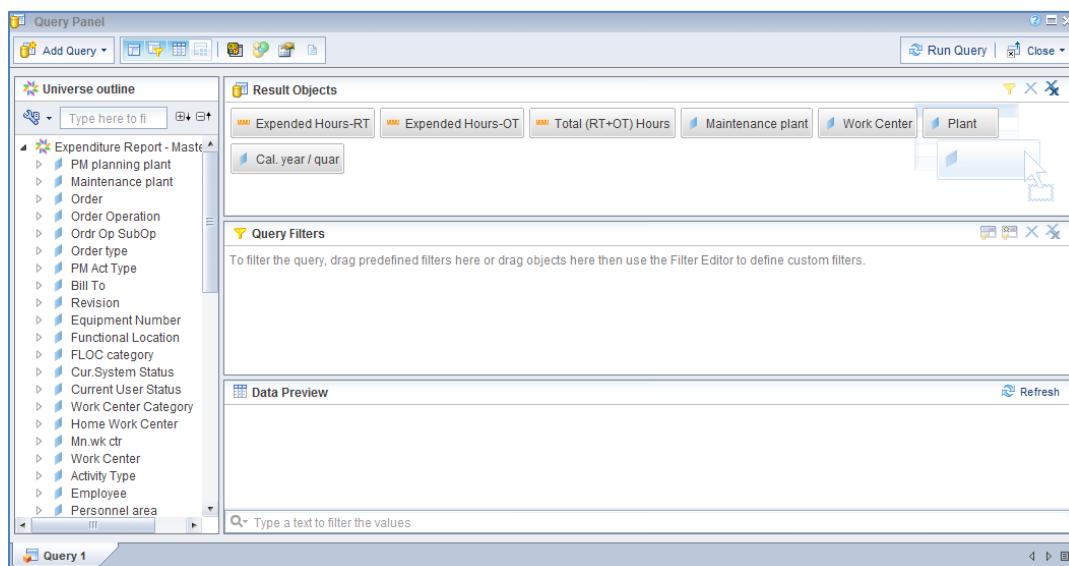
5. Query Panel

Query Panel lets you add new query, modify existing ones, choose what objects to make available in the Data Provider for you to make reports on, restrict the amount of data being fetched from the database to improve performance, and also allows you to preview the data before adding the query into your report.

The interface of the Query Panel varies based on the data source type. However, for most the Query Panel consists of following: Outline, Result Objects, Query Filters and Data Preview. For Excel SpreadSheet based queries, the Query Filters section is not available.

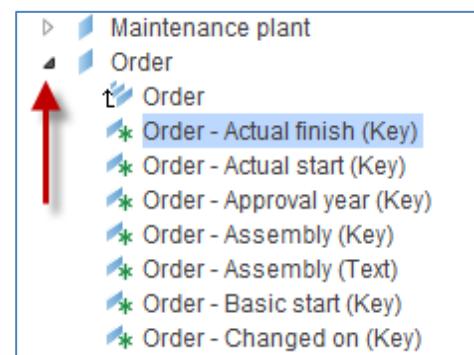
5.1. Selecting Result Objects

1. Within the Query Panel, select objects from the “Outline” box on the left-hand side. By double clicking on an object, it will be populated in the “Result Objects” box.

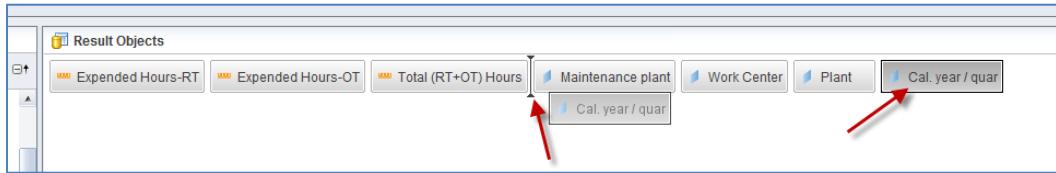


Within a BEx query, there are different types of objects such as “Dimension”  , “Attribute”  , and “Measure”  objects. Dimension and Attribute objects present a descriptor (ex. plant, calendar year). Measures present numerical data (ex. total hours).

To select “Attribute”  , click on the arrow beside the “Dimension”  to open a breakdown list of all String dimensions attached. Attributes are details about a dimension defined within DRMIS BW that are available to be selected individually for reporting purposes. They can be used to give greater granularity of data. Generally, there will be a “Key” and a “Text” option for each Dimension and Attribute.



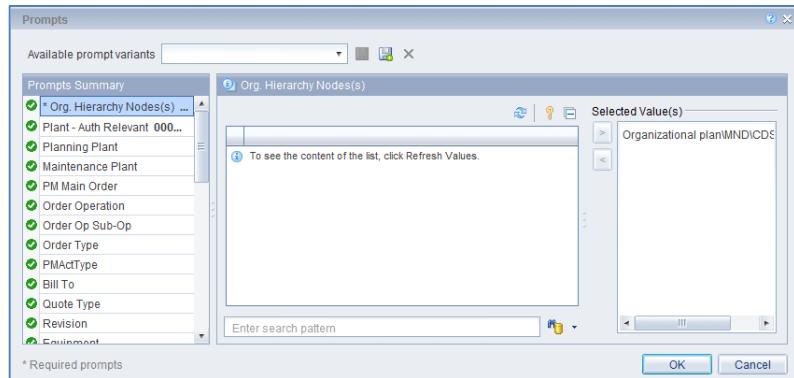
Alternatively, you can select an object by clicking and dragging it into the Result Objects box. You can also move the order of an object by clicking, dragging, and placing it in between objects, as shown below.



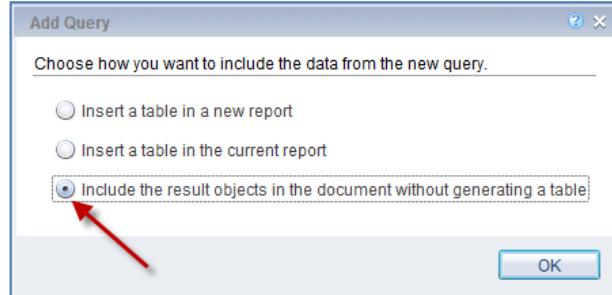
2. Click on “Run Query” in the top right hand corner and WebI will generate your report based on the data you have chosen.

Note: Due to BOBJ data being stored in remote DND Data Center, some queries may take lengthy time to refresh depending on your location and connection type.

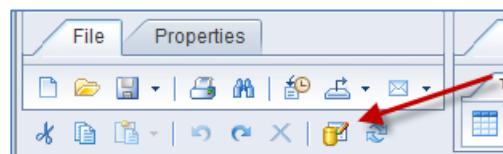
3. When you click on “Run Query”, WebI will prompt you with a list of variables similar to the menu when you initially opened the BEx Query. The values chosen when the BEx query was initially opened will be populated as default values. You are able to edit your variables at this time.



4. When you run the report, you will be prompted to create a new table in a new report tab, in the currently selected report tab, or to not create a new table. This table will include all of the objects you selected in the Query Panel. Select the third option to not generate a table.

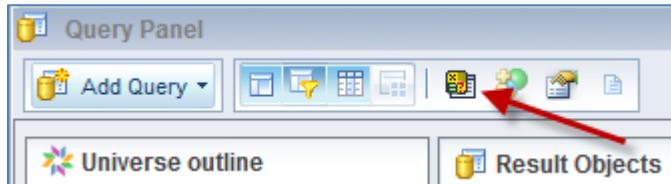


5. Within the Report Panel, you can always change your query by selecting the “Edit Data Provider” button on the top left panel. This will take you back to the Query Panel.

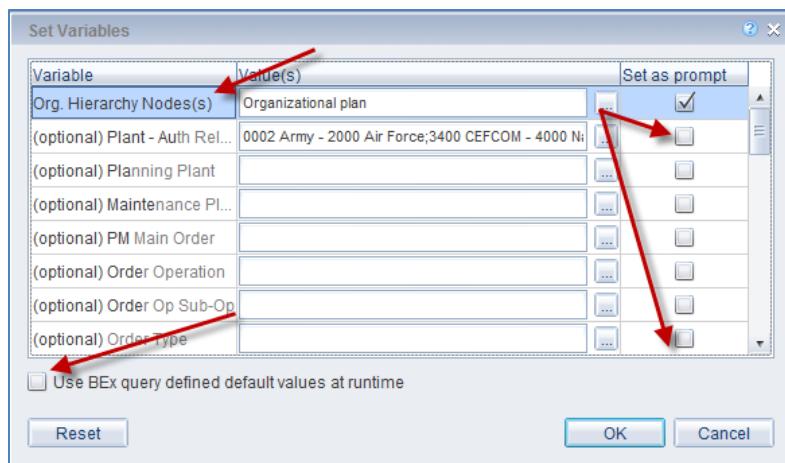


5.2. Changing Default Prompts thru Set Variables

1. To change what default prompts come up when a BEx query is being executed, go into the Query Panel and click on the “Set Variables” button in the top left corner.



2. Un-select the BEx Query defined default values and un-select any optional prompts you do not want. You can only unselect optional prompts; you may not remove any mandatory prompts. Click on “OK.”



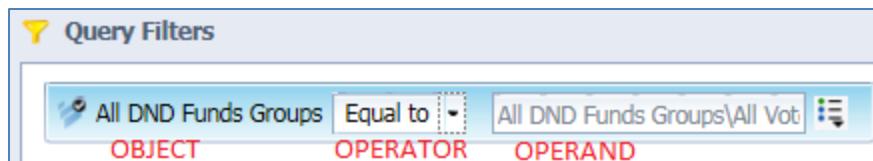
5.2.1. Exercise 3: Create a WebI Document with a BEx Query

Refer to the Exercise booklet.

5.3. Setting Query Filters

For most types of data sources, Query Filters can be used within the Query Panel to retrieve only the data you want. Query Filters improves performance by reducing data being transferred over the network from the database to the WebI Document.

Query Filters have three parts:



- **Object** – the report object to be filtered
- **Operator** – relationship between the object and operand, like, equal to, greater than, etc.
- **Operand** – the value of the object to be filtered

5.3.1. List of Operators

- Single value operators:
 - Equal to
 - Not Equal to
 - Less than
 - Less than or Equal to
 - Greater than
 - Greater than or Equal to
- Multi value operators:
 - In List
 - Not In List
- Range Operators:
 - Between
 - Not Between
- Pattern Matching Operators*:
 - Matches pattern
 - Different from pattern
- Null Matching Operators*:
 - Is Null
 - Is not Null

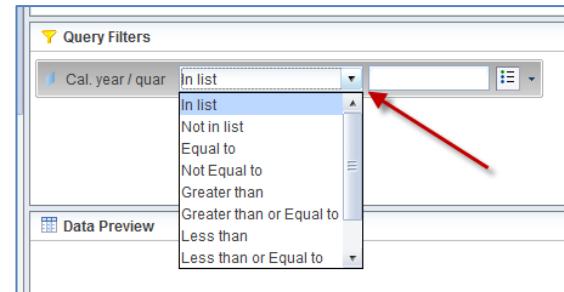
5.3.2. Types of Query Filters

- Single value filters comprised of Single value operators
- Multi value filters comprised of Multi value operators
- Filters with Prompts
- Complex filter with nested with And and Or

5.3.3. Creating a “In List” Filter

1. Drag and drop an object from either the “Results Objects” or from the “Available Objects” box into the “Query Filters” box.

You can select how you want to filter the object by selecting the drop down option and selecting the appropriate filter.

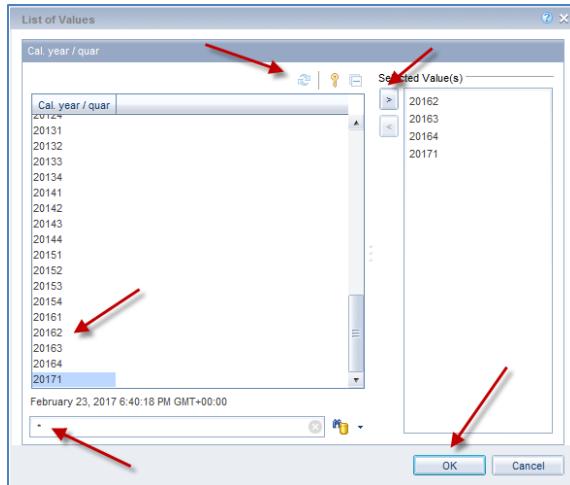


Click on “In List.”

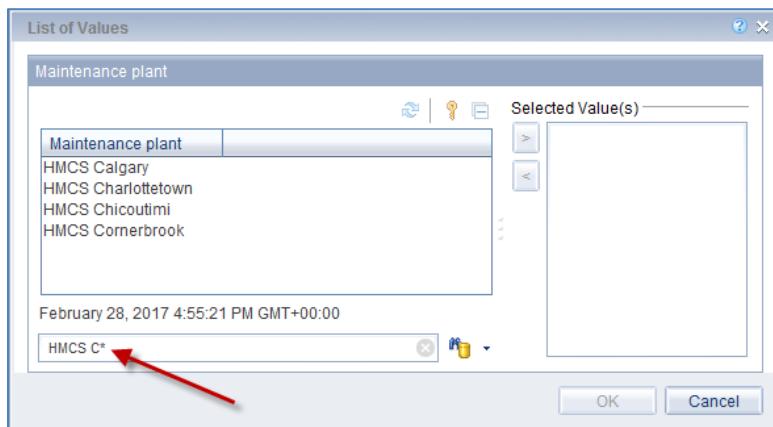
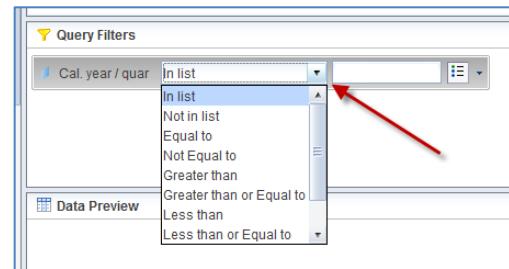
2. Next, select the second drop down option and click on “Value(s) from list.” A list of values for that object will appear.



3. Use the wildcard asterisk * in the search field and press enter to get a list of all variables. Select the variables you want by double clicking on the variable. Click “OK” to continue.



4. If you select the filter option of “In List” or “Not in list” you will be able to select multiple options. If you select “Equal to” or “Not Equal To” you can select only one option. Additionally, you can manipulate what variables are chosen by choosing the “Greater Than”, “Less Than”, and “Between.”
5. Using the asterisk wildcard “*” will display all search items that meet the criteria laid out before the asterisk. Ex: a search of “HMCS C*” within maintenance plant will bring up all plants beginning with “HMCS C.”



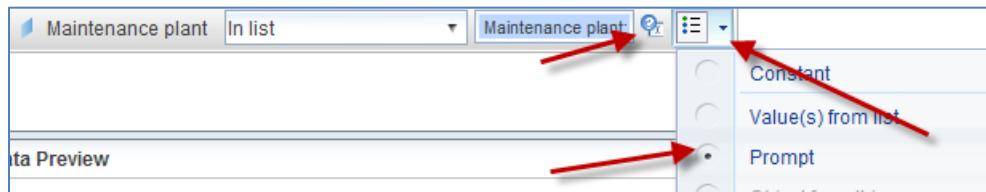
5.3.4. Exercise 4: Add Query Filters to the WebI Document

Refer to the Exercise booklet.

5.3.5. Filters with Prompts

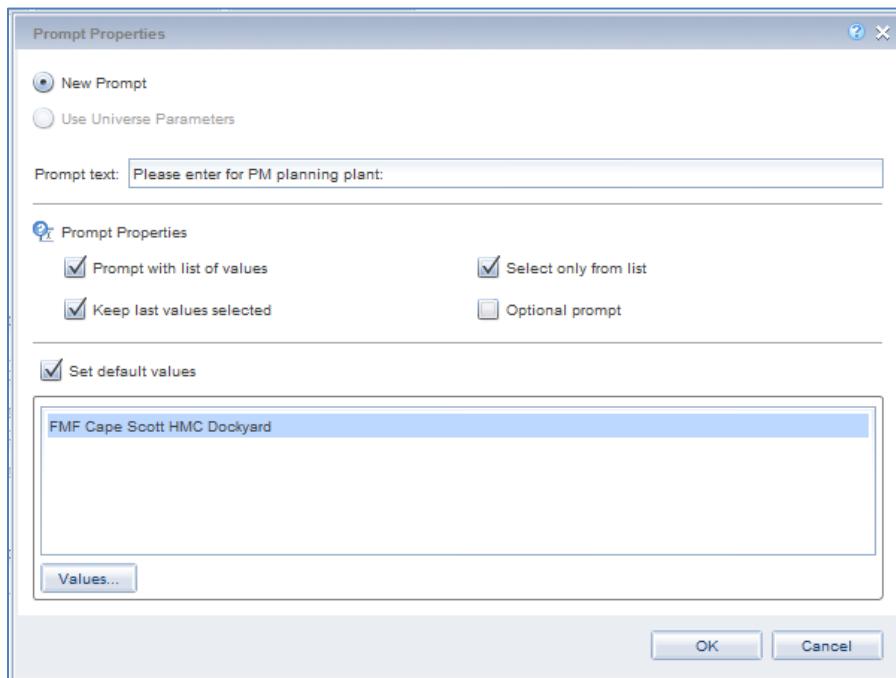
Prompts can be used to require a consumer of a report to choose what values of an object they want to display.

- Add the object you wish to make a prompt into the Query Filters box. Then select the second drop down arrow and click on “Prompt.”



To edit the prompt, click on the “Prompt Properties” button that appears beside the drop down menu.

- The prompt properties window lets you change various settings of the prompt including the prompt text.



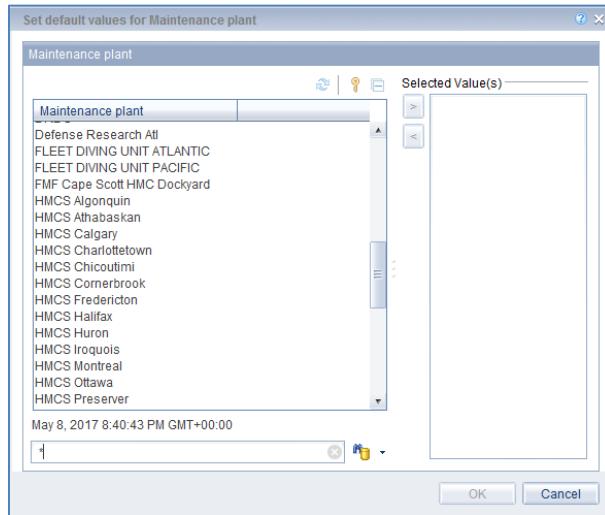
The option “Prompt with list of values” provides the viewer with the list of all available values to choose from.

The option “Keep last values selected” keeps the prompt selected if the viewer re-runs the query.

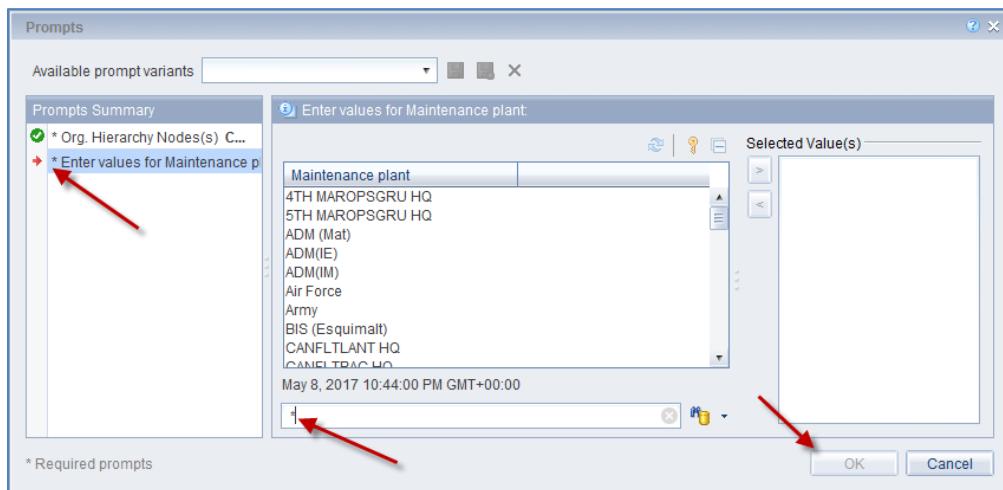
The option “Select only from list” requires the consumer to select a value only from the list of available values.

- Additionally, you can set which values are chosen as default for the consumer. Click on the “Set Default Values” option, and then click on “Values...” button at the bottom. This will

bring up a menu that will let you select which values you want set as default. The consumer can then add or remove from this default list.



4. Click "OK" to create the prompt.
5. When the viewer selects Run Query, the prompt screen will appear. The prompt that was added will be placed at the bottom of the "Prompt Summary" list. Click the refresh button to see all available options. If the refresh button is grayed out, put the wildcard "*" into the search function and press enter. Select the option(s) you want by double clicking or selecting it and clicking the over arrow.



6. Click on "OK" to run the query.

5.3.6. Exercise 5: Adding Filters with Prompts to the WebI Document

Refer to the Exercise booklet.

5.3.7. Using Complex Filters

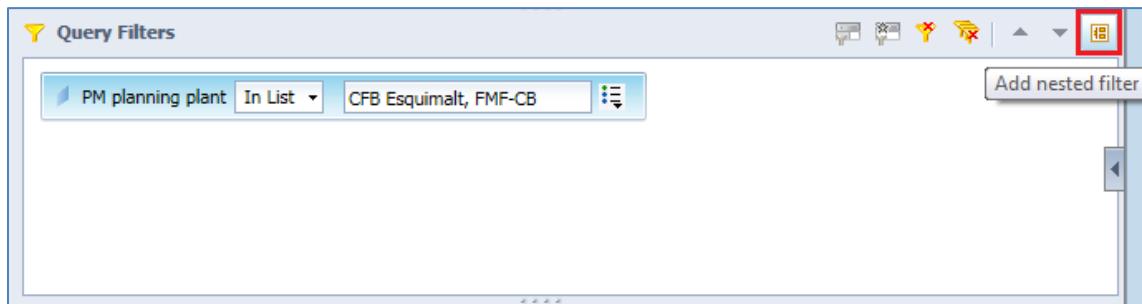
In most cases you would need to create more than one filters to get the data that you need using **AND** or **OR** operators.

Note: OR operator does not work on BEx Queries.

Sometimes these operators are used in a sequence one after another and sometimes they are grouped/nested within each other for more complicated scenarios. The positioning and grouping are based on the logic that you would like to filter your data on.

The “Add nested filter” option is only available in the HTML Design mode.

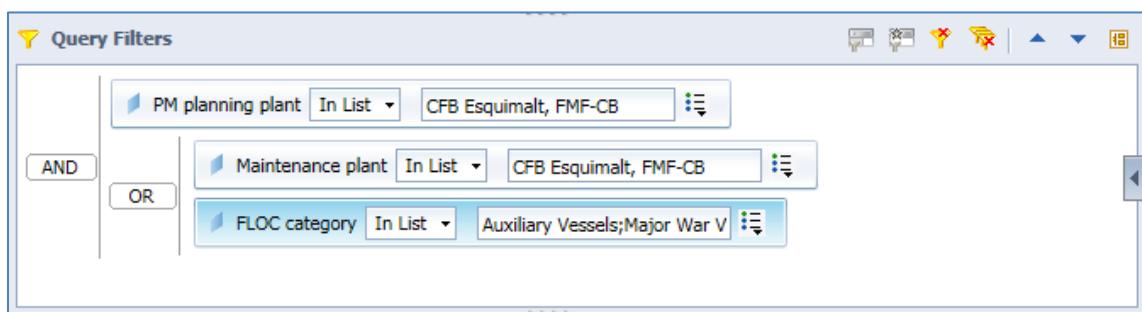
1. After adding the first filter, click on the “Add nested filter” button.



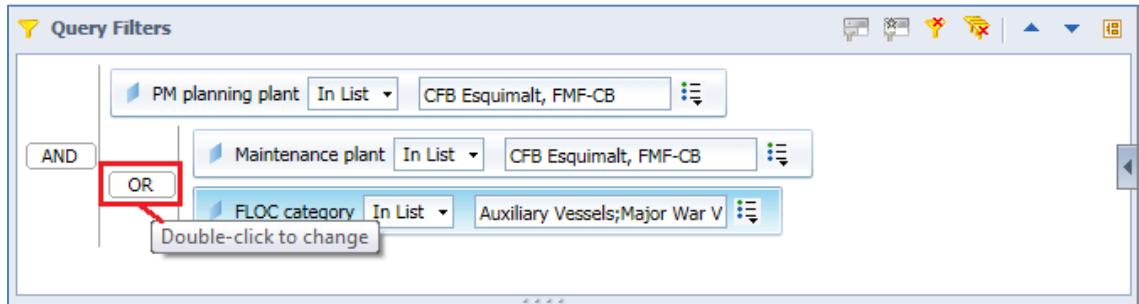
2. This add a “AND” and “OR” condition like the following screenshot:



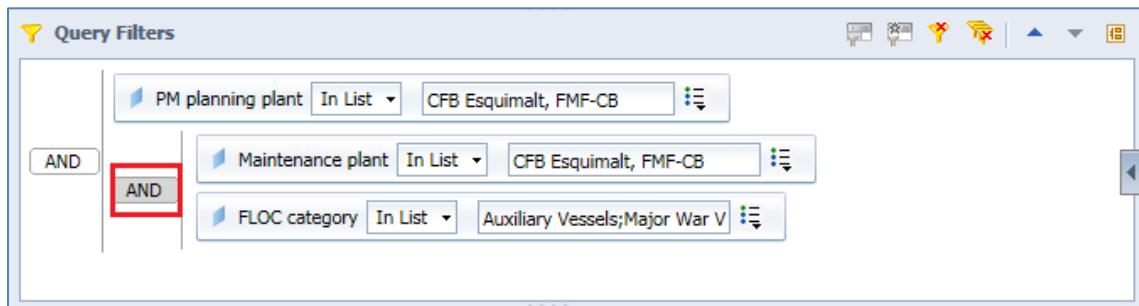
3. Now add two more filters under the “OR” condition.



4. If you require, you can at this point double-click on the “OR” condition and that will change it to “AND” condition.



“OR” changed to “AND” condition:



Note: Once a condition is changed to “AND”, it can’t be changed back to “OR.” You would need to start creating your this part of the filters again.

5.4. Data Preview

Once the Result Objects are selected and Query Filters are added, you can click on the “Refresh” button in the “Data Preview” Panel to see what set of data you will be getting from the query.

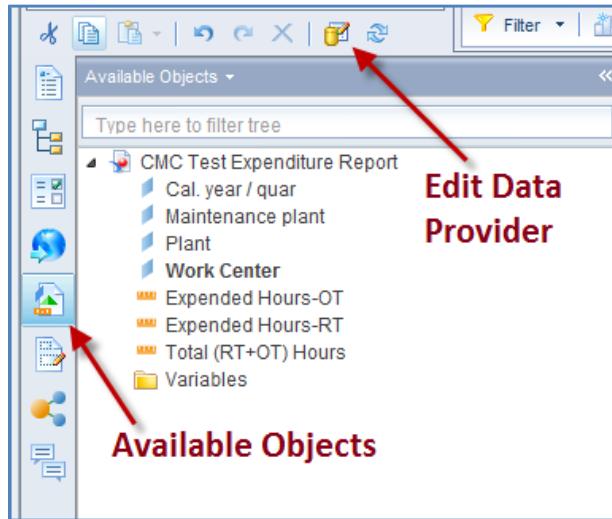
Data Preview						Refresh
Royal Canadian Navy (RCN)	Cost Ctr - Top WBS - Key	Fund - Key	Fund - Text	Fiscal year - Key (Not Compounded)	Fi	
Royal Canadian Navy (RCN) 0180RCN		0180/L115	PRIMARY RESERVE OPS	2015	A	
Royal Canadian Navy (RCN) 0180RCN		0180/L115	PRIMARY RESERVE OPS	2015	A	
Royal Canadian Navy (RCN) 0180RCN		0180/L115	PRIMARY RESERVE OPS	2015	A	
Royal Canadian Navy (RCN) 0180RCN		0180/L115	PRIMARY RESERVE OPS	2015	A	
Royal Canadian Navy (RCN) 0180RCN		0180/L115	PRIMARY RESERVE OPS	2016	A	

Type a text to filter the values

5.5. Edit Data Provider (Query)

Once a query is run, WebI will bring you to the Report Panel. All of the objects you selected will appear in the “Available Objects” tab on the left-hand menu.

To add, remove, or change an object from the query, you can click on the “Edit Data Provider” button. This will bring you back to the Query Panel screen.



6. Report Panel

Once a document has been created and a BEx query is chosen, the author can manipulate the objects from the Data Provider(s) within the Report Panel to visualize and present the data in a meaningful way.

6.1. Types of Tables

The easiest and often most powerful way of displaying data is through tables. WebI provides few types of tables:

- **Vertical Table** with header cells on the top
- **Horizontal Tables** with header cells on the row (which are particularly helpful for financial and balance sheet reports)
- **Cross Tables** that show data in a matrix of column and row headers
- **Form** which are useful to display detailed information by certain dimension (like, customer or product)

6.2. Adding a Table to the Report

1. To add objects, select an object off the “Available Objects” tab on the left-hand side. Click and drag the desired object and place it to its desired location.

2. To move objects, select the column to be moved in the title section and drag and place it where you want it to be. By clicking and dragging it to the left side of a cell, a lighter shade rectangle will appear to that side. Once you let go, it will place the object to the left of the destination.

Plant	Maintenance plant	Cal.
CFB Esquimalt, FMF-CB =NameOff([Maintenance plant])	HMCS Calgary	Q2
CFB Esquimalt, FMF-CB	HMCS Calgary	Q3
CFB Esquimalt, FMF-CB	HMCS Calgary	Q4
CFB Esquimalt, FMF-CB	HMCS Calgary	Q1
CFB Esquimalt, FMF-CB	HMCS Ottawa	Q2

3. By clicking and dragging it to the right side of a cell, a lighter shade rectangle will appear to that side. Once again, letting go will place that object to the right of the destination.

Maintenance plant	Plant	Cal.
HMCS Calgary	CFB Esquimalt, FMF-CB	Q2
HMCS Calgary	CFB Esquimalt, FMF-CB	Q3

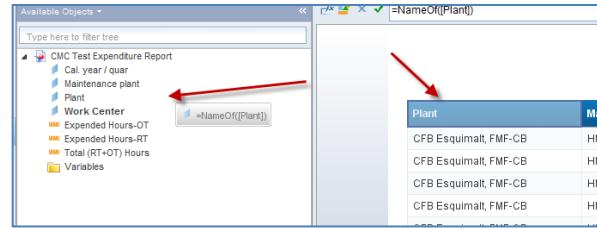
4. If you click and drag to the center of a cell, a lighter shade rectangle will appear in the center of the cell. Letting go will switch the position of the object with the object being moved.

Plant	Maintenance plant	Cal.
CFB Esquimalt, FMF-CB	=NameOff([Maintenance plant])	Q2
CFB Esquimalt, FMF-CB	HMCS Calgary	Q3
CFB Esquimalt, FMF-CB	HMCS Calgary	Q4

5. If you place an object from the “Available Objects” tab in the center of an existing cell, it will replace and remove the existing object.

Plant	Maintenance plant	Cal.
CFB Esquimalt, FMF-CB	=NameOff([Maintenance plant])	Q2
CFB Esquimalt, FMF-CB	HMCS Calgary	Q3
CFB Esquimalt, FMF-CB	HMCS Calgary	Q4

6. To remove columns, you can simply select the column you wish to remove and drag and drop it into the available objects tab.

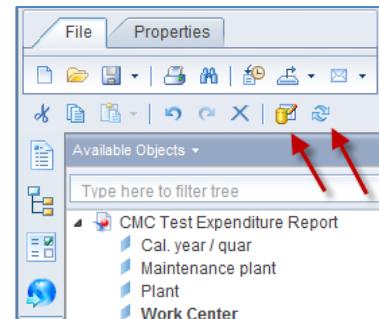


7. You will then be prompted to remove column or row. Most often you will be removing columns in order to remove an object and its data completely from the table.
8. You can also manipulate a table by using elements of the “Report Element” tab in the top menu.



Many of the functions used in the Report Panel can also be found in one or more tabs in the top menu.

9. Further options are also available in the File and Properties menu located in the top left corner. These include the “Edit Data Provider” button and the “Refresh” button.



10. You can add more “Reports” to a document. They function like tabs in a web browser. Right click on Report 1 and click on “Add Report.” Additionally, you can create a new report by duplicating an existing one and can rename reports.



6.2.1. Exercise 6: Create a WebI Document with a table

Refer to the Exercise booklet.

6.3. Types of Charts

WebI offers various different types of charts to graphically display your business information.

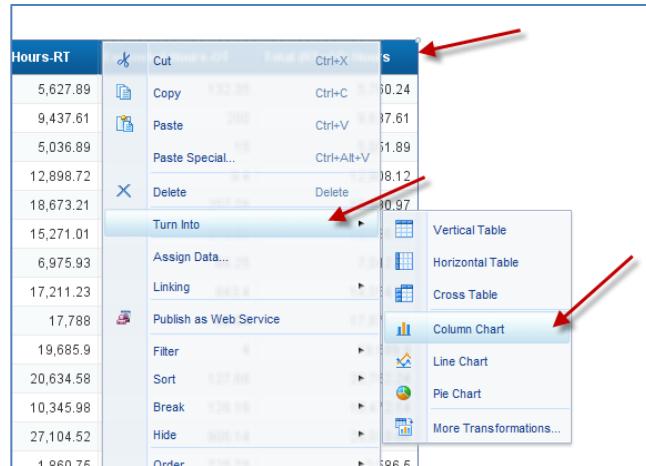
- Bar Charts
 - Bar chart
 - Stacked bar chart
 - 100% stacked bar chart

- Column Charts
 - Column chart
 - Column chart with 2 Y-Axes
 - Combined Column Line Chart
 - Combined Column Line Chart with 2 Y-Axes
- Gauge
 - Speedometer
 - Linear Gauge
 - Angular Gauge
- Geographic
 - Geo Choropleth Chart
 - Geo Bubble Chart
 - Geo Pie Chart
- Line Charts
 - Line chart
 - Area chart
 - Line with 2 Y-Axes chart
- Map
 - Tree Map
 - Heat Map
- Pie Charts
 - Pie Chart
 - Donut chart
 - Pie Chart with variable slice depth
- Point Charts
 - Scatter chart
 - Bubble chart
 - Polar scatter chart
 - Polar bubble chart
- Tile
 - Tile
 - Tile with Deviation
- Waterfall Chart
- Tag Cloud Chart
- Radar Chart
- Box Plot Chart

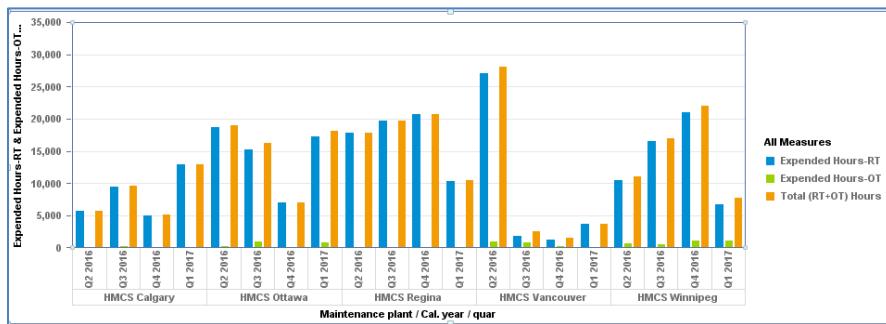
6.4. Adding a Chart to the Report

There are two different processes to create a chart.

Process 1: Create a table. Select the entire table by selecting the outside edge of the table. Right click on that spot and click on “Turn Into.” Then select the type of chart you wish to create. This demonstration uses a Column Chart.



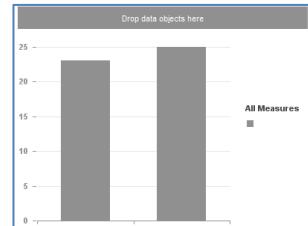
A simple chart will be automatically created based on the data inputted into the table.



Process 2: Under the “Report Element” tab on the top menu there is a “Chart” tab that allows you to insert charts. Select the chart options by selecting the drop down menu beside each chart type. After selecting your chart type, place the chart to its desired location within the report.



A generic chart will be created. Click on objects from the “Available Objects” tab and drag and drop them into the chart.

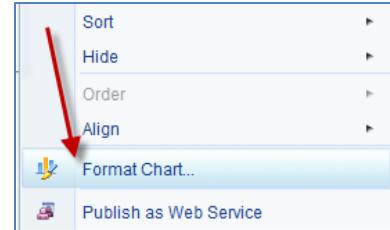


The chart will automatically format your data based on the object type and the order that you insert them into the chart.

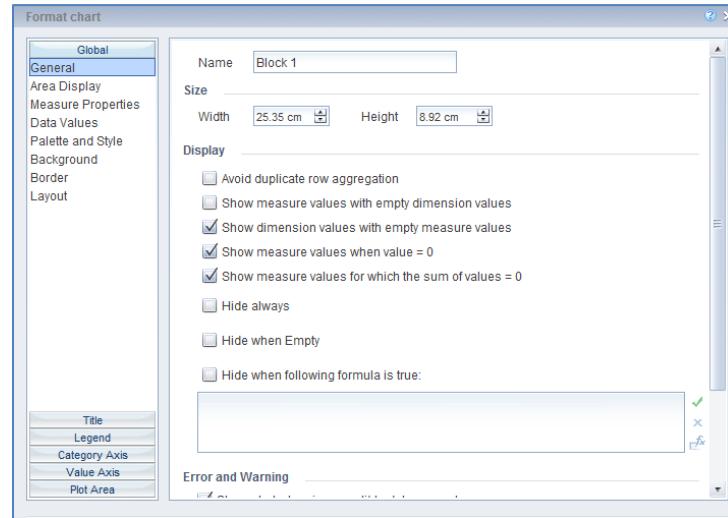
6.5. Formatting the Chart

Regardless of how you create a chart, you can manipulate it further.

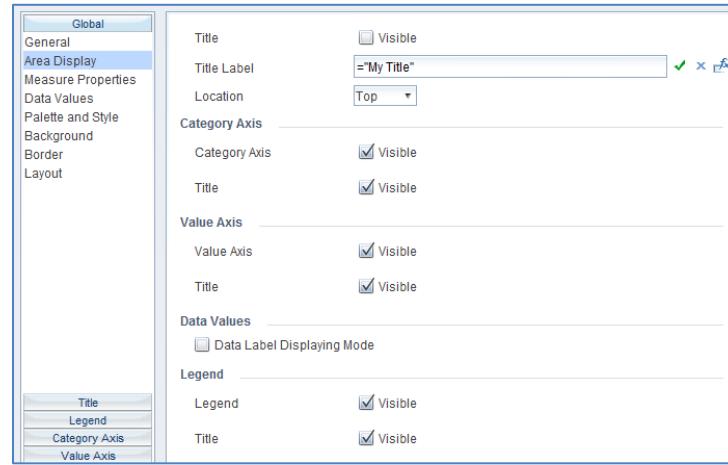
1. Right click and click on “Format Chart” near the bottom.



Options include formatting the title, the legend, switching axis, and general border and layout properties.

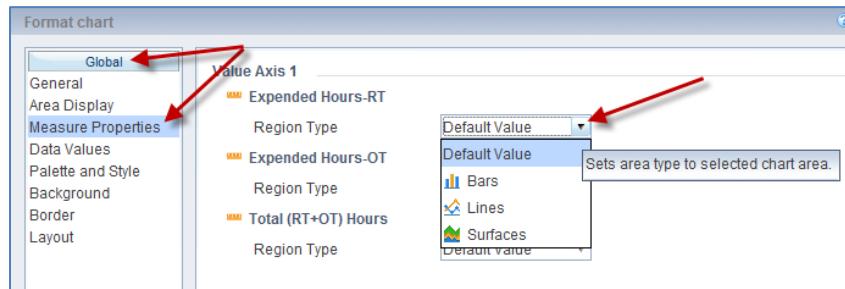


2. Click on “Global.” The “Area Display” section will allow you to add/remove axis titles and the chart title and legend.

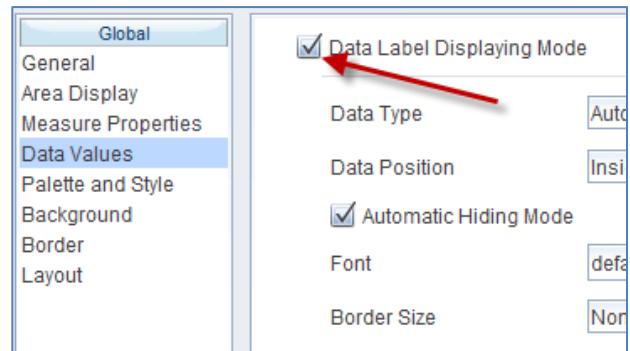


3. By selecting “Measure Properties”, you will be able to change the display of a single value.

The options include the “Default Value” which will display the value in accordance with the type of chart you selected, Bar chart display, Line chart display, and Surface display.

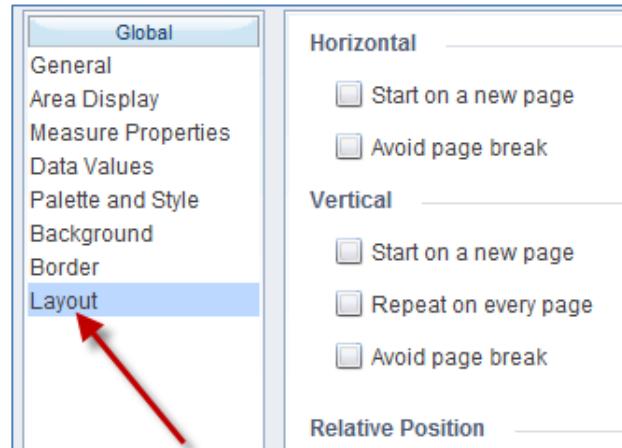


4. The “Data Values” tab will allow you to display actual data points. First, you will need to click on the “Data Label Displaying Mode.”



5. The “Palette and Style”, “Background”, and “Border” sections will allow you to make stylistic and color edits to the chart.

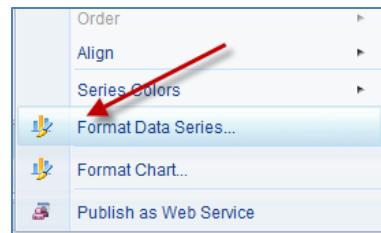
The “Layout” section will allow you to format the spacing of your chart in relation to other objects within the report, or the report edges.



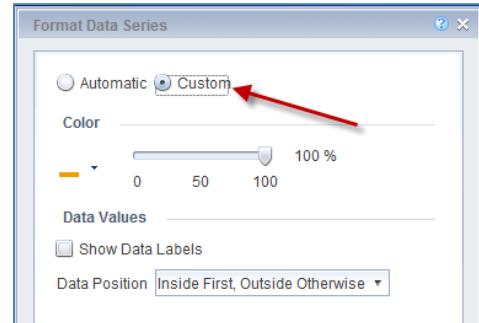
6. The “Title”, “Legend”, “Category Axis”, “Value Axis”, and “Plot Area” tabs will allow you to make in-depth changes to the respective elements of your chart. Changes include edits to the background, text, font, orientation, border, and positioning of each element within your chart.



- You can format each part of a pie or column chart by selecting the column or piece, right clicking, and selecting "Format Data Series..."



- By selecting custom, you will be able to make formatting changes to that data series.



6.5.1. Exercise 7: Create a Web Intelligence Document with Chart

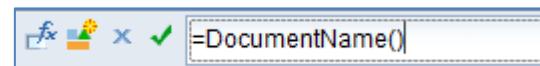
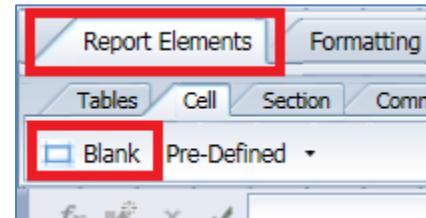
Refer to the Exercise booklet.

6.6. Adding a Free-standing Cell to the Report

Free standing cells are used in the report to display various information to the report, like, Title, Image, Refresh Date, certain calculation/formula, Page Number, Drill Filter functions, etc.

6.6.1. Adding a Text content

- Click on the Report Elements tab.
- Click on the Blank button to get a blank cell.
- Place your cell to a desired location within the report. A blank box with thin black underline will appear.
- Now go to the Formula bar and add your desired text, formula or calculation.
- You can see the name of the WebI Document in this new Blank Cell.



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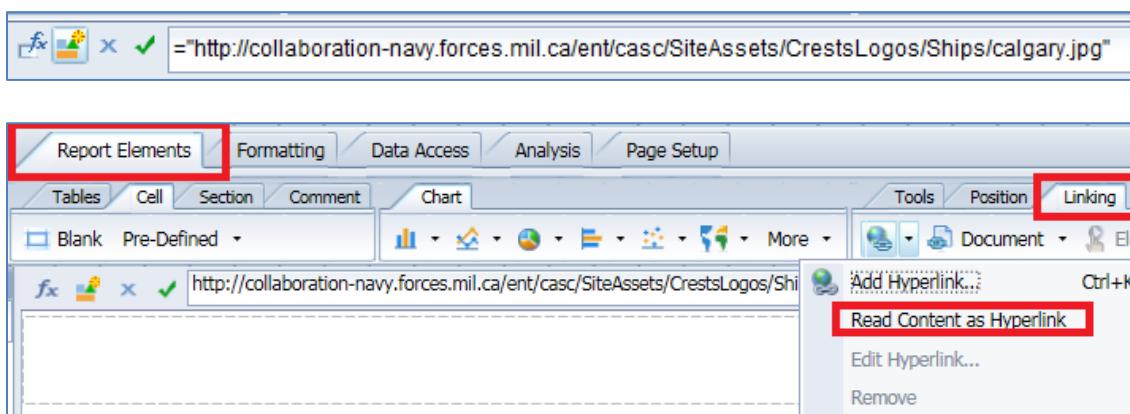
6.6.2. Adding an image content

- Click on the Report Elements tab.
- Click on the Blank button to get a blank cell.
- Place your cell to a desired location within the report. A blank box with thin black underline will appear.

4. Now right click on this cell and go to “Format Cell.”
5. In the Format Cell, go to Appearance section and you can either choose “Image from Address” or “Image from file.”
6. For “Image from Address”, you would need to provide a valid URL to the image file. For example:
<http://collaboration-navy.forces.mil.ca/ent/casc/SiteAssets/CrestsLogos/Ships/calgary.jpg>
7. For “Image from File”, you can browse to any image file from your computer’s folders and upload it to the BI Launch Pad.
8. Set the appropriate “Display” option, like, Stretch, Tile, Normal, etc.
9. You can see the image in the new Blank Cell.

6.6.3. Adding a Hyperlink

1. Click on the Report Elements tab.
2. Click on the Blank button to get a blank cell.
3. Place your cell to a desired location within the report. A blank box with thin black underline will appear.
4. Now go to the Formula bar and add the following URL:
<http://collaboration-navy.forces.mil.ca/ent/casc/SiteAssets/CrestsLogos/Ships/calgary.jpg>



5. Now go to Report Elements → Linking → Read Content as Hyperlink.
6. You can see the Hyperlink in the new Blank Cell.

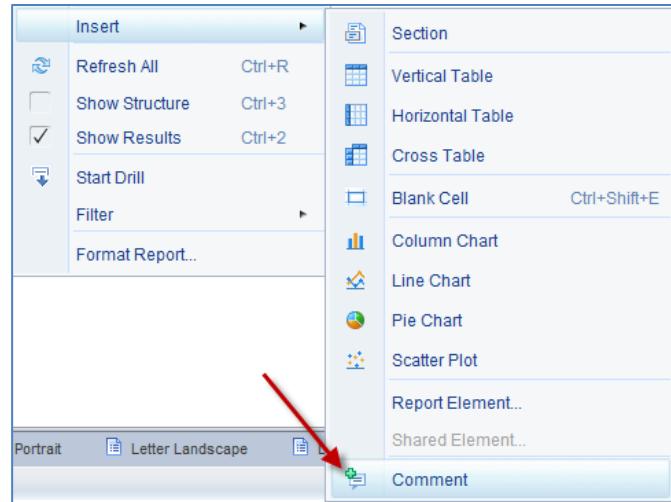
<http://collaboration-navy.forces.mil.ca/ent/casc/SiteAssets/CrestsLogos/Ships/calgary.jpg>

6.7. Adding a Comment to the Report

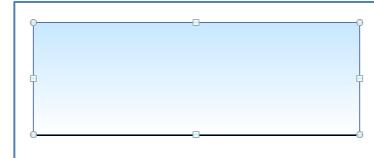
A Comment Section can be added to a report to allow Consumers and the Author to make comments on a report.

1. Right click on a blank area within a report to get the context menu and click on “Insert.”

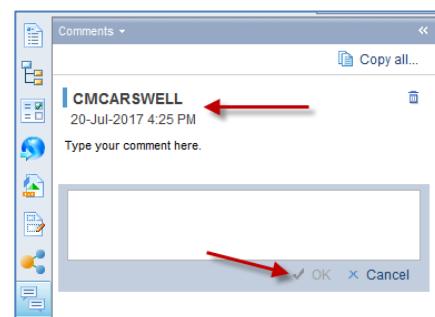
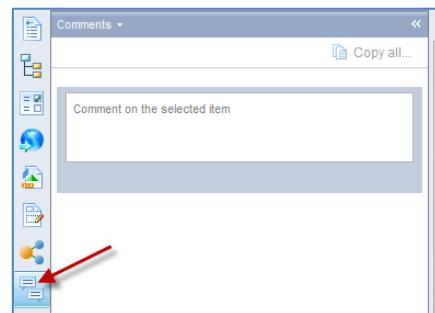
2. Then click on “Comment.”



3. Place your comment to a desired location within the report.
A blank box will appear. You can format this box to be the size you want.



4. Double clicking on the comment box will allow you to add a comment. It will take you to the Comment tab on the left-hand side menu.
5. You can type your comment in the comment box in the left-hand menu. **Do not** type it in the formula within the comment box within the report, as this will alter the comment formula.
6. When you complete your comment, click on “OK” and a time stamp of your comment will be created.
7. The last made comment will show in the comment box within the report.



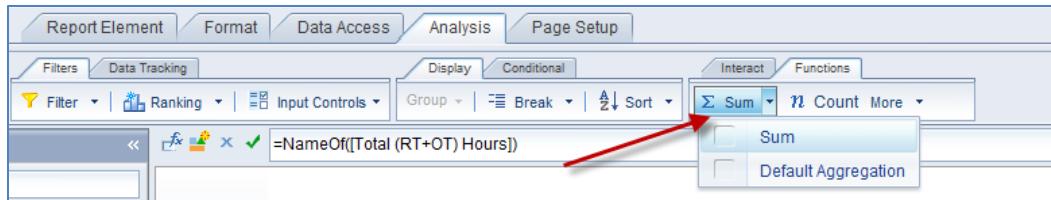
7. Web Intelligence Data Calculation

7.1. Calculations

Calculations can be added to sum up or count a group of cells. Calculations are best added in conjunction with breaks to appropriately sum or count data. Select the column that you wish to add a calculation to and then click on the desired function from the “Functions” tab.

7.1.1. Sum

Under the “Analysis” tab within the “Functions” sub-tab, click on “Sum.”

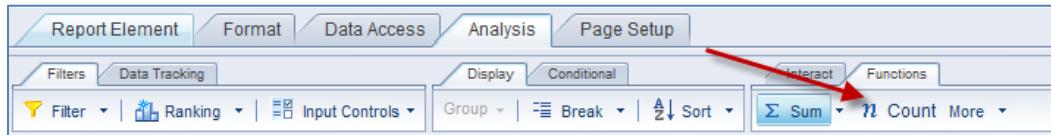


A sum of the selected column will be created for each Break. See example below.

Plant	Maintenance plant	Cal.year / quar	Expend Hours-RT	Expend Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Calgary	Q2 2016	5,627.89	132.35	5,760.24
CFB Esquimalt, FMF-CB		Q3 2016	9,437.61	200	9,637.61
CFB Esquimalt, FMF-CB		Q4 2016	5,036.89	15	5,051.89
CFB Esquimalt, FMF-CB		Q1 2017	12,898.72	9.4	12,908.12
	HMCS Calgary			Sum:	33,357.86
Plant	Maintenance plant	Cal.year / quar	Expend Hours-RT	Expend Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Ottawa	Q2 2016	18,673.21	257.76	18,930.97
CFB Esquimalt, FMF-CB		Q3 2016	15,271.01	915.85	16,186.86
CFB Esquimalt, FMF-CB		Q4 2016	6,975.93	66.25	7,042.18
CFB Esquimalt, FMF-CB		Q1 2017	17,211.23	843.4	18,054.63
	HMCS Ottawa			Sum:	60,214.64

7.1.2. Count

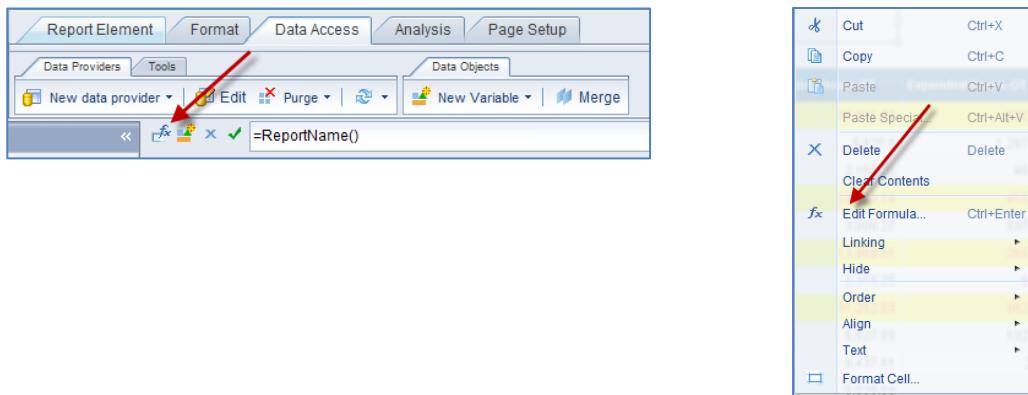
Additionally, the “Count” calculation will tally up the number of cells within each break.



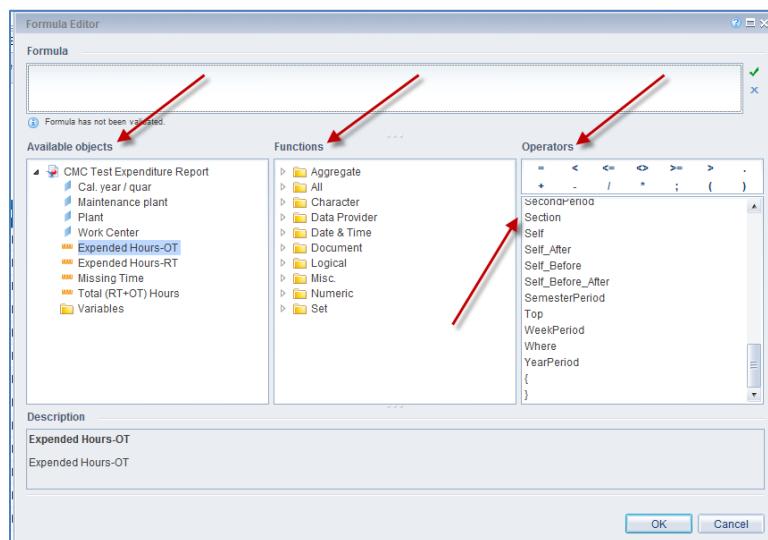
7.2. Formula Editor

Formula Editor is used to create formulas to manipulate data in a report.

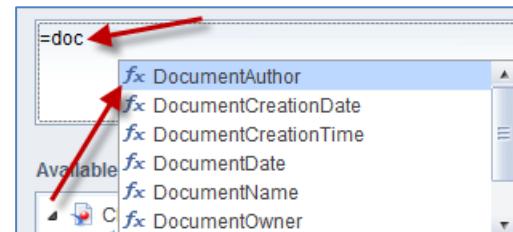
1. Select the cell that you wish to insert a formula. Then click on the “Formula editor” button just below the top menu. You can also right-click on the cell and click on “Edit Formula.”



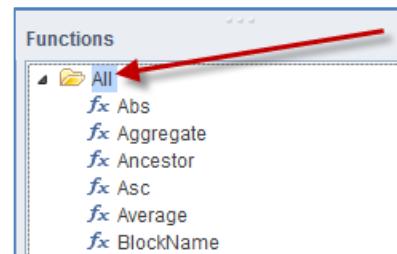
2. The Formula Editor box provides all available objects, functions, operators and values to create individualized formulas. Many of the formulas follow a similar pattern to Excel formulas, with some differences in functionality and syntax.



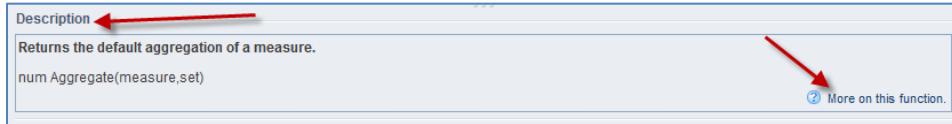
3. To start a formula, click on the = option from the operator list. Typing in letters in the Formula field will display a search of the functions that start with that letter(s).



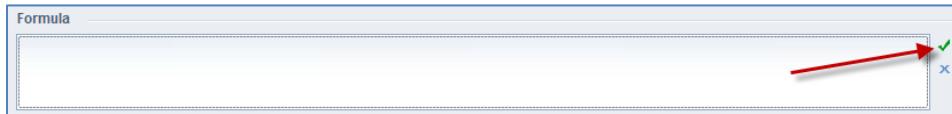
Alternatively, you can search for the function you want under the Functions box. If you know the function by name, you can click on the "All" folder and begin typing to search for a specific function.



- If you click on a function, it will give you a short description of that function at the bottom of the Formula Editor. You can add functions to your formula by double clicking on them.



- To add multiple functions within a formula, use the + operator between the functions. You can always check that your script is valid by clicking the validate button on the right of the Formula field.



Note: You must be very careful to enter your formula correctly and ensure there is no erroneous punctuation, as this will cause an error in the formula. It is recommended to choose items from within the Operators, Functions, and Available Objects boxes to accurately create formulas.

- You can click on the “More on this function” option to see the SAP help page on that function. This page will give explanations on how to use that function.

It will open another web browser tab and display the SAP help page for the function you selected.

Example Substring function.

Substr

Description
Returns part of a string

Function Group
Character

Syntax
`string SubStr(string:start:length)`

Input

Parameter	Description	Type	Required
string	Any string	String	Yes
start	The start position of the extracted string	Number	Yes
length	The length of the extracted string	Number	Yes

Examples

7.2.1. Example: Creating a Last Refresh Date Formula

The “=LastExecutionDate()” formula can be very useful for consumers to see when the last update of the report’s data was. It is commonly placed at the top of reports or within the header.

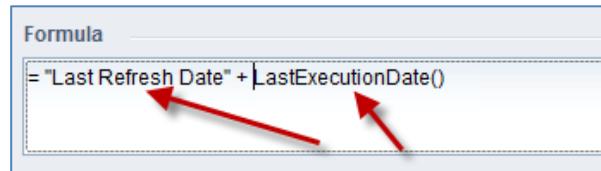
- To display when the last refresh date was for a report, a cell was inserted and a formula was created. The function “=LastExecutionDate()” was used.

Formula
`=LastExecutionDate()`

Formula has not been validated.

2. Text was added to the formula to explain what the date being displayed is. To add text within a cell that includes a function, put quotation marks around the text and insert it after the = but before the function.

Add a + operator between the text and the function.



Note: when creating functions with multiple functions and/or text, it is recommended to put each individual function on its own separate line to avoid mistakes.

3. Example of Header from Navy Template containing formula with “LastExecutionDate()” function.



7.2.2. Exercise 8: Creating Calculations and Formulas

Refer to the Exercise booklet.

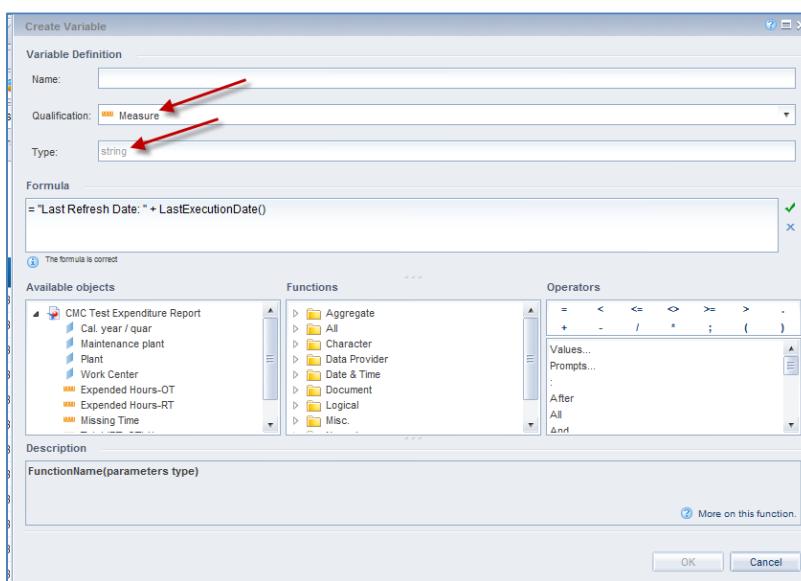
7.3. Variable Editor

Variable Editor is used to create Variables. Variables are similar to formulas, but these objects can be used in multiple tables/charts in a document. You can create a variable by converting a pre-existing formula into a variable or creating a variable from scratch.

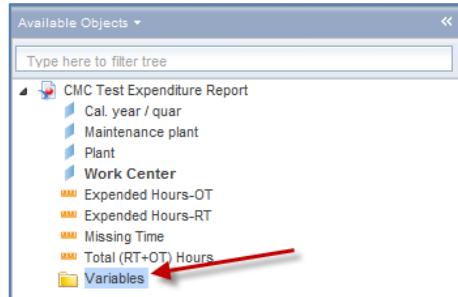
1. To convert a formula to a variable, select the formula and click on the “Create Variable” button below the top menu.



This will open the “Create Variable” box and input the formula that was selected.



2. Alternatively, you can create a new, blank variable by selecting the New Variable button below the top menu without having a formula selected, or by right clicking on the “Variables” folder button in the left-hand side Available Objects menu and selecting “New Variable.”

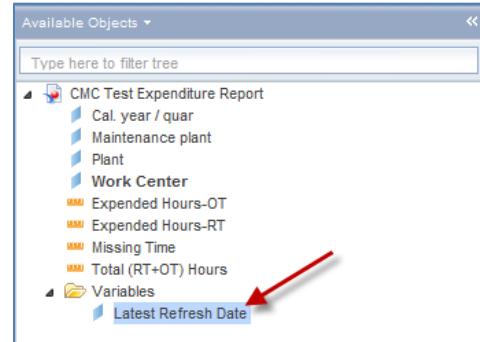


3. The Create Variable box has a few extra fields compared to the Formula box. This includes the “Qualification” and the “Type” fields. The Qualification field drop down has three choices: Dimension, Measure, and Detail. These Qualifications operate the same as their counterparts from the Available Objects menu. The Type field does not require an entry.



4. Below the Type field, the Create Variable menu is exactly as the Formula Editor menu, and will let you create or manipulate functions to create your desired Variable. Click on “OK” to finish your variable.

Once the variable is complete, it will appear under the Variables folder on the left-hand side Available Objects menu.



5. You can insert the Variable within new or existing cells, tables, or charts, the same as an Object brought in through the Query Panel.

Note: The advantage of a Variable over a Formula is that a Variable can be easily inserted repeatedly within the report, while a Formula only exists within a single cell or column. It is recommended to always create Variables over Formulas due to their reusability.

7.3.1. Exercise 9: Creating Variables

Refer to the Exercise booklet.

8. WebI Functions

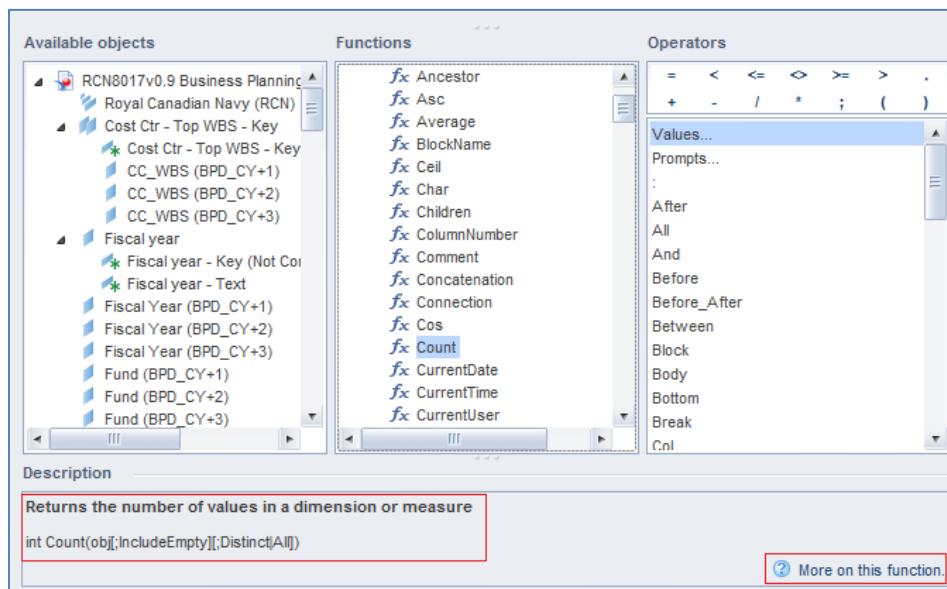
In WebI formulas and variables various functions and logics can be used to achieve greater manipulation and presentation of data.

These functions can be applied to a dimension or a measure either directly or inside a variable to achieve certain formatting or logical outcome.

You can access these functions either in the “Formula Editor” or the “Create Variable” window.

8.1. Functions

Either you are in “Formula Editor” or in the “Create Variable” window you will see all the functions listed in the “Functions” section. These functions are grouped by category, like, Character, Data Provider, Date & Time, Numeric, etc. Or, you may check all the functions at once under the group called “All.”



Once you click on a Function, you would see a one line description and the syntax of that function in the Description box. You may also click on the “More on this function” in the right bottom corner that will open SAP’s Documentation on that function in a separate browser window.

8.2. Character Functions

Some of the most popular character functions that are used to manipulate a string object:

- Length() – return the length of string.
- Pos() – returns the position of a character within a string.
- Right() – returns specified number of character from the right.
- Left() – returns specified number of character from the left.
- Replace() – replaces a specific string with another one.
- SubStr() – returns specified string from a string using length and position.

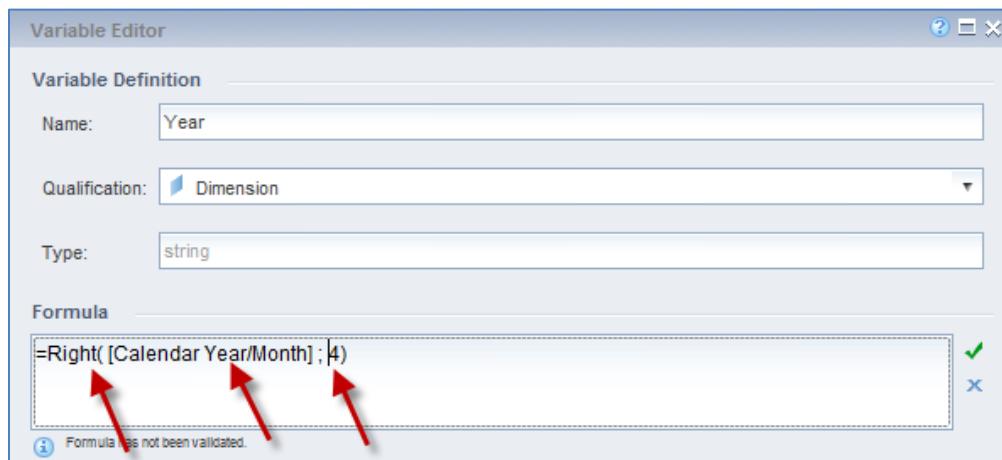
8.2.1. The Right() and Left() Functions

The Right() and Left() functions can be used to show a limited number of text within a dimension cell. It will only show a number of characters from the left or right as designated in the formula.

1. Within a function or variable enter “=Right()” or “=Left()” from the Functions box within the formula field. The =Right() and =Left() functions follow this logic:

=Right([dimension] ; #)

2. Enter the dimension you want from the available objects box within the parenthesis of the function. Enter the number of characters you want removed in a numerical value (ex: 4) after the semicolon (;).



Note: ensure that the dimension that is to be edited is entered within the parenthesis of the =Right or =Left function.

Example: A report was created that showed calendar year and month.

Maintenance plant	Year	Total (RT+OT) Hours
FMF Cape Scott HMC Dockyard	APR 2010	5,472.4
FMF Cape Scott HMC Dockyard	APR 2011	5,083.47
FMF Cape Scott HMC Dockyard	APR 2012	6,576.22
FMF Cape Scott HMC Dockyard	APR 2013	9,419.56
FMF Cape Scott HMC Dockyard	APR 2014	7,176.32

It was desired to simplify the report and only show the year and to remove the month. The following formula was inserted “=Right([Calendar Year/Month] ; 4).” WebI automatically collated all fields that had the same name, condensing the report and summing up the “Total (RT+OT) Hours” dimension.

Maintenance plant	Year	Total (RT+OT) Hours
FMF Cape Scott HMC Dockyard	2010	74,005.18
FMF Cape Scott HMC Dockyard	2011	72,175.63
FMF Cape Scott HMC Dockyard	2012	81,915.96
FMF Cape Scott HMC Dockyard	2013	94,148.67
FMF Cape Scott HMC Dockyard	2014	80,648.91

8.2.2. Exercise 10: Creating a Right() or Left() Variable

Refer to the Exercise booklet.

8.2.3. Replace() Function

Replace() function replaces a part of a string with another string.

1. Create a variable or formula and enter “=Replace().” The =Replace() function follows this pattern:

=Replace ([dimension] ; “text” OR [dimension] ; “text” OR [dimension])

2. Within the parenthesis, add the dimension you want to edit. Add a semicolon (;) and enter the value you want replaced. If it is text, surround it in quotation marks. If it is the whole dimension text itself, then insert it within square brackets [].

3. Enter another semicolon (;) followed by the text or other dimension you want the replaced text to be:

=Replace([Maintenance plant] ; [Maintenance plant] ; [Functional Location])

Qualification: Dimension

Type: string

Formula

```
=Replace([Maintenance plant] ; [Maintenance plant] ; [Functional Location])
```

The formula is correct

Or: =Replace([Maintenance plant] ; "HMCS" ; "Her Majesty's Canadian Ship")

Qualification: Dimension

Type: string

Formula

```
=Replace([Maintenance plant] ; "HMCS" ; "Her Majesty's Canadian Ship")
```

8.2.4. Exercise 11: Creating a Replace() Variable

Refer to the Exercise booklet.

8.2.5. The SubStr() Function

The SubStr() function can be used to extract a character string from within a field.

1. Within a variable or formula, enter =SubStr(). The =SubStr follows this pattern:
 $=Substr([dimension] ; # ; Length([dimension] OR #))$

Note: this formula also uses the =Length() function within the =Substr() function.

2. Add the dimension you want to edit followed by a semicolon (;). Then, enter the number of characters where you want the new string to start followed by another semicolon (;).
3. Enter the function Length() and add the dimension or the number of characters you want the length to go for. By using a dimension, it will always continue until the end of the unmodified dimension.

Example: Create a formula that will start displaying text starting with the 6th character, and will continue for the longest data point of the “Maintenance Plant” field.

Qualification: Dimension

Type: string

Formula

```
=Substr([Maintenance plant] ; 6 ; length([Maintenance plant]))
```

The formula is correct ✓ ✗

= Substr([Maintenance plant]; 6; length([Maintenance plant]))

Maintenance plant	SubString Formula
HMCS Calgary	Calgary
HMCS Ottawa	Ottawa
HMCS Vancouver	Vancouver
HMCS Winnipeg	Winnipeg
HMCS Regina	Regina

8.2.6. The Pos() Function

The Pos() function can be used to show the position of a character within text in a field.

1. Within a variable or formula, enter =Pos(). It follows this pattern:

=Pos([dimension] ; “text”)

- Within the parenthesis, enter the dimension you wish to know a character location of followed by a semicolon (;). Then, enter the text you wish to locate within quotation marks. This can be used in conjunction with =Substr() to locate and change fields of varying lengths.
- If you want to shorten the name of each maintenance plant, the =Pos() function could be used.

Example: The following formula was created: =Pos([Maintenance plant] ; " ")

The screenshot shows a software interface for creating formulas. The 'Qualification' dropdown is set to 'Measure'. The 'Type' dropdown is set to 'string'. The 'Formula' field contains the expression '=Pos([Maintenance plant] ; " ")'. Three red arrows point from the text above to the first space character within the string ' " ')', indicating its position.

This showed where the first space was within the dimension.

8.2.7. Handling Date field as String

By converting a character string (ex: June 2012) into a date value, it is easy to create chronological tables and charts. This will require the Substr() and Pos() functions.

In the below example, the Calendar Year/Month dimension confuses the chronology and does not let the author create sections and breaks. It will be desirable to create two columns to better display the data.

- Create a variable to identify the space in each field using the =Pos() function. Name the variable "Space Year."

Maintenance plant	Calendar Year/Month	Total (RT+OT) Hours
HMCS Calgary	APR 2005	5,504.48
HMCS Calgary	MAY 2005	1,804
HMCS Calgary	MAY 2007	3,682.11
HMCS Calgary	MAR 2005	2,897.25
HMCS Calgary	OCT 2005	1,666.08
HMCS Calgary	AUG 2005	2,183.2
HMCS Calgary	SEP 2005	4,000.27
HMCS Calgary	OCT 2006	13,717.68
HMCS Calgary	NOV 2006	15,064.22
HMCS Calgary	NOV 2004	8,639.6
HMCS Calgary	DEC 2004	4,401.05

Qualification: Dimension

Formula

```
=Pos([Calendar Year/Month] ; " ")
```

2. Then, create a =Substr() function with the following formula:

=Substr([Calendar Year/Month] ; [Space Year] + 1 ; Length([Calendar Year/Month]))

Qualification: Dimension

Formula

```
=Substr([Calendar Year/Month] ; [Space Year] + 1 ; Length([Calendar Year/Month]))
```

This will create a variable that displays only the year. Name the variable “Calendar Year.”

3. Create a third variable to display the month using a similar formula:

=Substr([Calendar Year/Month] ; 1 ; [Space Year])

Qualification: Dimension

Formula

```
=Substr([Calendar Year/Month] ; 1 ; [Space Year])
```

This will create a formula that will only display the month, but will be connected to the calendar year. Name the variable “Calendar Month.”

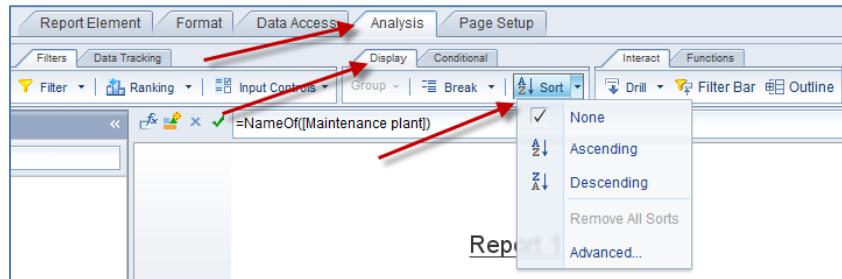
4. Webl is then able to pair the two variables together to be able to display both dimensions and allow the author to add sections, breaks, and sort accordingly.

HMCS Calgary

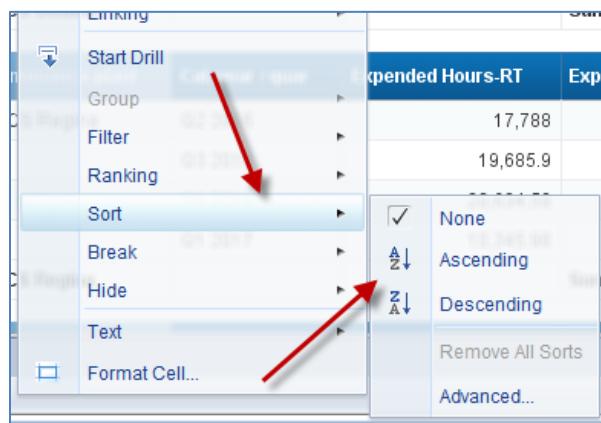
Calendar Year	Calendar Month	Total (RT+OT) Hours
2003	DEC	25.5
2003		
2004	JAN	39.5
	FEB	1,147.5
	MAR	379.67
	APR	1,711
	MAY	2,028
	JUN	517
	JUL	1,223.5
	AUG	804.75
	SEP	649.65
	OCT	4,406.92
	NOV	8,639.6
	DEC	4,401.05
2004		

8.2.8. Sort

1. The “Sort” function can be selected by right clicking a column and selecting “Sort” or by going to the “Analysis” tab and the “Display” sub-tab and selecting Sort.



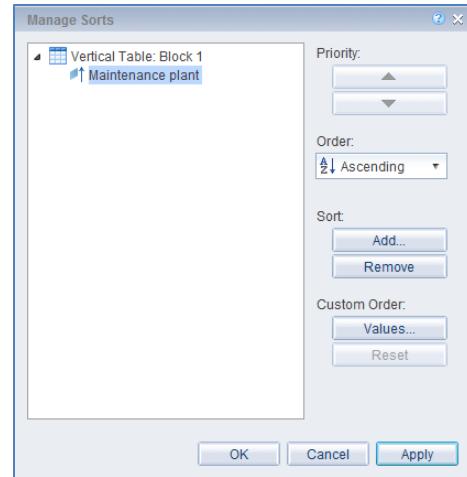
2. You have the options of Ascending, Descending, or more options under “Advanced....”



3. Under Advanced, you can sort the values in a custom order.

For example, to sort items chronologically by month or by priority levels you can use the custom order option.

4. Sorting functions are very important when displaying data, or giving a ranking system to a field that either numerically or alphabetically would not work.



8.2.9. Exercise 12: Handling Date Object with Character functions

Refer to the Exercise booklet.

8.3. Date Functions

Some of the most popular Date Functions that are used to manipulate a date object:

- `ToDate()` – converts a string to date type.
- `DaysBetween()` – returns the number of days between two dates.
- `CurrentDate()` – returns the current date formatted according to the regional settings.
- `CurrentTime()` - returns the current time formatted according to the regional settings.
- `RelativeDate()` – returns a date relative to another date

8.4. Logical Functions

Some of the most popular logical functions that are used:

- `IsNull()` – determines whether a value is null.
- `IsError()` - determines whether an object returns an error.
- `IsNumber()` - determines whether a value is a number.
- `IsString()` - determines whether a value is a string.
- `IsDate()` - determines whether a value is a date.

8.5. If Logic

The If logic function allows you to create dynamic variables and are the basis of Boolean logic. This allows authors to use Boolean logic to display patterns within data or show trends. The other functions within this section can all be used in conjunction with If, Then, and Else function.

1. The If and Then function follows this logic:

=If [dimension] =value Then "criterion."

Equal to, greater than, or less than signs can all be used with the value. These can be gotten from the Available Operators box in the Create Variable tab.

Available Operators						
=	<	<=	<>	>	>=	
.	+	-	/	*	()	

2. Elseif function(s) can be used to continue the formula, following this logic:

=If [dimension] =value Then "criterion" Elseif [dimension] =value Then "criterion."

3. The Else function can be used to close off a formula and encompass all other data points, following this logic:

=If [dimension] =value Then "criterion" Elseif [dimension] =value Then "criterion" Else "criterion."

For example: the formula below was created to see if an operation was a small, medium, or large operation within a work order.

=If[Total (RT+OT) Hours] >=100 Then "Large Operation" Elseif [Total (RT+OT) Hours]>=50 Then "Medium Operation" Else "Small Operation."

The screenshot shows the 'Create Variable' dialog box. At the top, there are two input fields: 'Production' and 'Text'. Below them is a dropdown menu labeled 'Qualification:' with 'Dimension' selected. The main area is titled 'Formula' and contains the following code:
`=If[Total (RT+OT) Hours] >=100 Then "Large Operation" ElseIf [Total (RT+OT) Hours]>=50
 Then "Medium Operation" Else "Small Operation"`

This variable can be used to create simple charts to show the amount of user defined small, medium, and large operations, either by work center or maintenance plant.

8.5.1. Exercise 13: Creating an If, Then, and Else Function

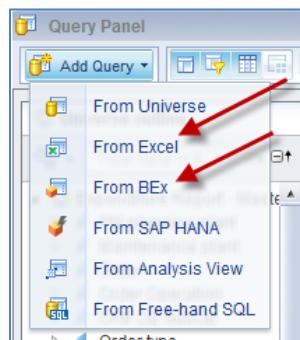
Refer to the Exercise booklet.

9. Multiple Data Sources

WebI can pull from many different Data Sources to create reports. This needs to be done to augment a report or to add important elements of data. The source of these Data Providers can be combination of Universes, BEx Queries and/or Excel SpreadSheets.

9.1. WebI Report with Multiple Queries

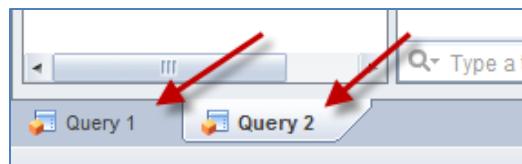
1. Within the Query Panel, click on the “Add Query” button in the top left corner of the menu. There you will be able to select either another BEx Query or an Excel document.



2. Select the BEx Query or Excel SpreadSheet you want using the same process outlined in section “Data Provider and Query.”

Name	Type	Techname
PM validation data Staging 1_10	Query	Z_ZPM_M100_7045_Q07
PM validation data Staging 2_20	Query	Z_ZPM_M100_7045_Q06
PM validation data Staging 3_30	Query	Z_ZPM_M100_7045_Q05
Percent Completed vs. Outstanding CM	Query	Z_ZPM_M100_7045_Q04
Percent Completed vs. Outstanding PM	Query	Z_ZPM_M100_7045_Q03
RCN Aggregate Trends CM orders	Query	Z_ZPM_M100_7045_Q02
RCN Aggregate Trends PM orders	Query	Z_ZPM_M100_7045_Q01
RCN usage statistics KPI report	Query	Z_ZPM_M100_7045_Q08
test Percent Completed vs. Outstanding PM	Query	Y1_LW_Z_ZPM_M100_7045_Q03

3. Once the first query is selected, you can click on “Add Query” again to add a second query. You can continue this process as many times as needed. You will be able to toggle between the two queries using the tabs at the bottom of the Query Panel.



9.1.1. Exercise 14: Creating Reports with two BEx Queries

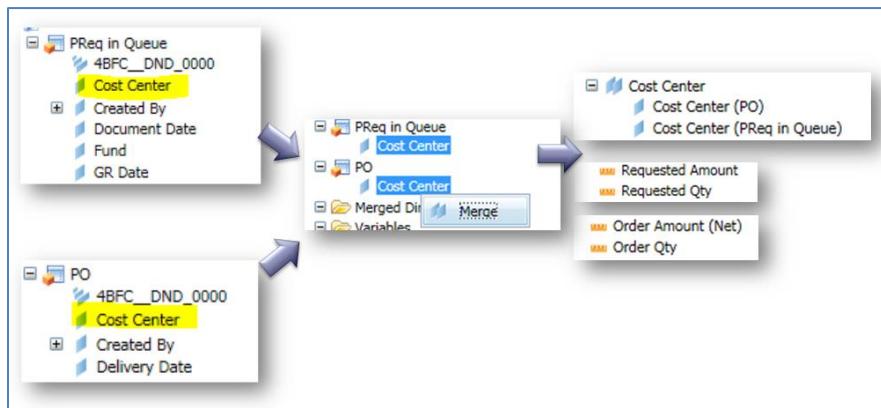
Refer to the Exercise booklet.

9.2. Merge Data from multiple Data Provider

You can merge data from two or more Data Providers to be able to analyze them as one object.

9.2.1. Merging Rules

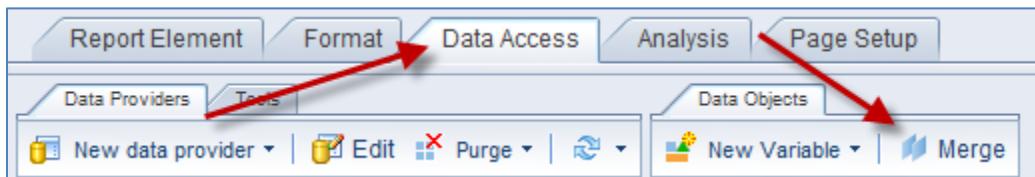
- Only dimensions and attributes can be merged.
- Same Data Type:
Objects must have the same data type. You cannot merge a number with a string, even if the values match.
- As many queries and dimensions as you need:
Any number of queries and dimensions can be merged. There is no limit. But they report will be harder to maintain.
- Pay attention to values:
Values are case-sensitive. So, if the values are the same, but of different case, they will not match. They will be shown as different values. Watch out for trailing blanks. Even if the values look exactly the same, they won't match if one has a trailing blank, and the other one doesn't.
- BEx Query and Excel SpreadSheet data can be merged together as long as object type and data type are same.



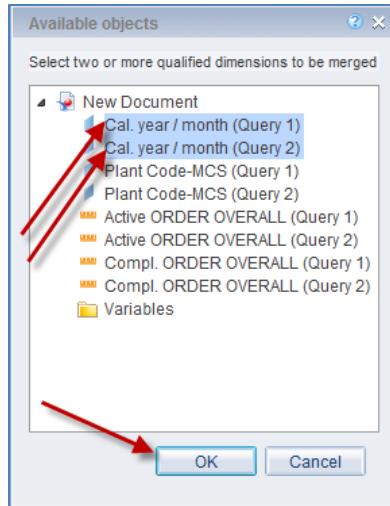
9.2.2. Merging Dimension Objects

The following process allows you to merge Dimensions.

1. To do so, click on the “Data Access” tab and the “Merge” button under “Data Objects.” This will display all Available Objects.

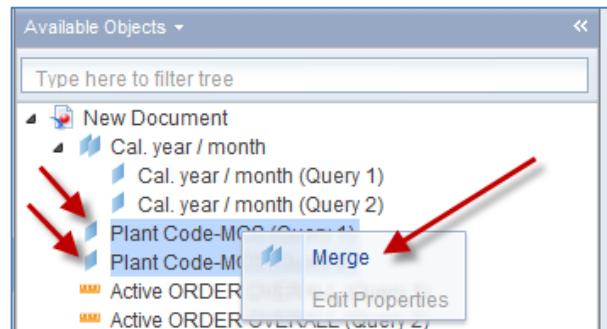


2. You can merge two or more dimensions by selecting one dimension, holding the Ctrl key, and selecting a second dimension. Click on “OK.”



3. This will merge all data associated with those two dimensions. The merged object will appear under “Merged Dimensions” folder in the “Available Objects” tab.
4. Alternatively, you can select two Dimensions in the “Available Objects” tab on the left-hand side menu, right click, and click on “Merge”.

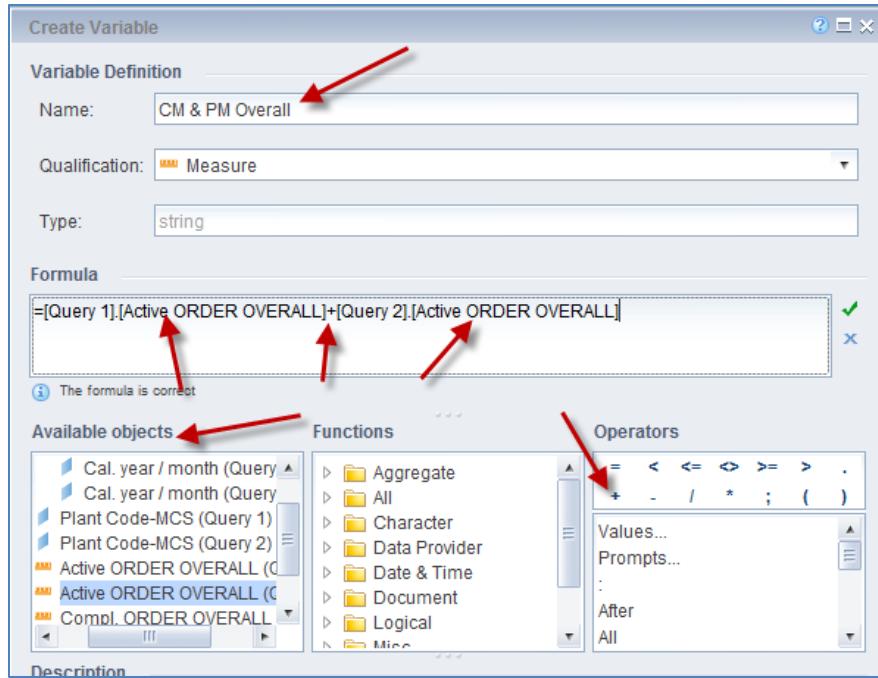
Note: You will only be able to merge Dimensions  and Attributes  using this process. Remember that Dimensions are descriptor objects, such as names and dates.



9.2.3. Merging Measure Objects

To merge Measures , you will need to create a variable for each measure. To do so, create a variable under the Data Access tab and click on “New Variable.”

1. Give your variable a name. It is suggested that you name the variable in a logical format that references the Objects being merged and add what queries it contains in brackets.
2. Next, change the Qualification to “Measure.”
3. Choose the Objects you wish to combine by selecting them in the “Available Objects” tab. Click on the “+” Operator to add the two queries together.



This will create a new variable.

9.2.4. Exercise 15: Merging Dimension and Measure Objects in a Report

Refer to the Exercise booklet. Please also perform **Exercise 16** as well.

9.2.5. Exercise 16: Adding Dimension Objects to existing Merged Objects in a Report

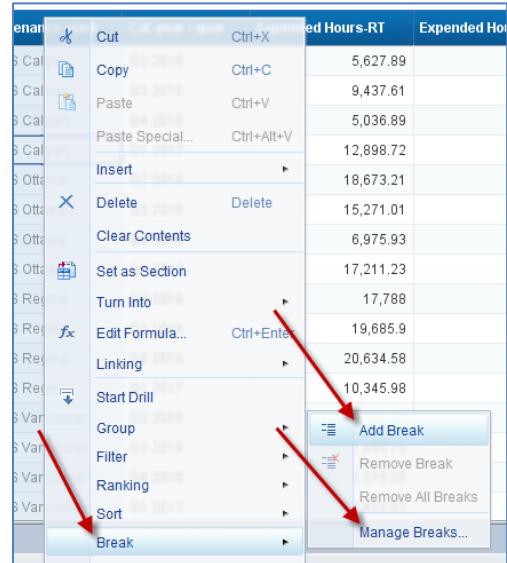
Refer to the Exercise booklet.

10. WebI Data Presentation

10.1. Break

Break can be created within a table to add divisions within the data for calculation and presentation purposes. A break separates the table based on the column that you choose. All similar data is placed within the same Break.

1. Right click on the column that you wish to have data broken apart by and click on “Break.” Then click on “Add Break.”

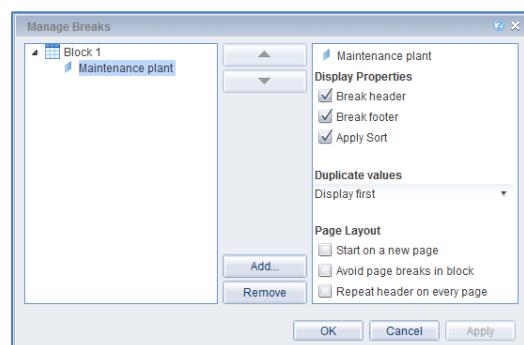


2. Each Break will group data together and the column that includes the break will be in bold.

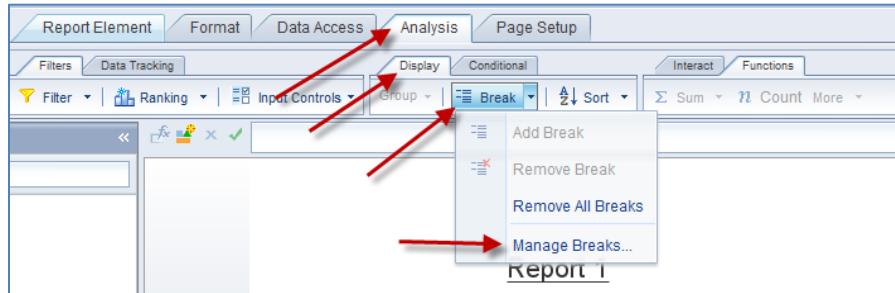
A screenshot of a WebI table. The first section shows data for 'HMCS Calgary' across four quarters: Q2 2016, Q3 2016, Q4 2016, and Q1 2017. The second section shows data for 'HMCS Ottawa' across the same four quarters. The column 'Maintenance plant' is bolded where it appears as a header for each group. Red arrows point from the text descriptions above to the 'HMCS Calgary' and 'HMCS Ottawa' sections of the table.

Plant	Maintenance plant	Cal.year / quar	Expendied Hours-RT	Expendied Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Calgary	Q2 2016	5,627.89	132.35	5,760.24
CFB Esquimalt, FMF-CB		Q3 2016	9,437.61	200	9,637.61
CFB Esquimalt, FMF-CB		Q4 2016	5,036.89	15	5,051.89
CFB Esquimalt, FMF-CB		Q1 2017	12,898.72	9.4	12,908.12
HMCS Calgary					
Plant	Maintenance plant	Cal.year / quar	Expendied Hours-RT	Expendied Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Ottawa	Q2 2016	18,673.21	257.76	18,930.97
CFB Esquimalt, FMF-CB		Q3 2016	15,271.01	915.85	16,186.86
CFB Esquimalt, FMF-CB		Q4 2016	6,975.93	66.25	7,042.18
CFB Esquimalt, FMF-CB		Q1 2017	17,211.23	843.4	18,054.63
HMCS Ottawa					

3. By selecting “Manage Breaks...” you will be able to further manipulate the breaks within your table. You can add Break headers, Break footers, and manipulate the page layout.



4. Breaks can be added to any column to help group and present data appropriately. Breaks can also be created by selecting the “Analysis” tab in the top menu and “Break” under the “Display” sub-tab.



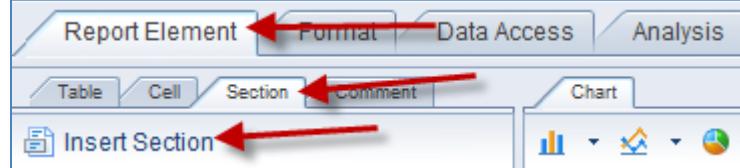
10.1.1.Exercise 17: Creating Breaks and Using Sort

Refer to the Exercise booklet.

10.2.Section

Similar to Breaks, Sections can be created to visualize a division between different points of data. You can use Sections to create pseudo hierarchy using different objects either from an Excel SpreadSheet based query or even a BEx query. You would use the “Report Map” tab from the left-hand menu to navigate thru the pseudo hierarchy(s).

1. Click on the Report Element tab and click on “Insert Section” under the Section sub-tab.



Alternatively, you can right click on the part of the table that you wish to add a section to.

Ensure that you have right-clicked within the table, and not in the header title. Click on “Set as Section.”

2. Similar to Breaks, this will create a division of data in the report for the object that you right clicked on.
3. Sections format the object into a header and display the data below. Similar to Breaks, you can add Calculations to sections.

Maintenance plant	Cal.year / quar	Expended Hours-RT	Expended Hours-OT	Total
HMCS Calgary	Q2 2016	5,627.89		132.35
HMCS Calgary	Q3 2016		9,437.61	200
HMCS Calgary	Q4 2016			15
HMCS Calgary	Q1 2017			9.4
HMCS Ottawa	Q2 2016			257.76
HMCS Ottawa	Q3 2016			915.85
HMCS Ottawa	Q4 2016			66.25
HMCS Ottawa	Q1 2017			843.4
HMCS Regina	Q2 2016			90.04
HMCS Regina	Q3 2016			4
HMCS Regina	Q4 2016			127.66
HMCS Regina	Q1 2017			126.16
HMCS Vancouver	Q2 2016			906.14

Q2 2016				
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Calgary	5,627.89	132.35	5,760.24
CFB Esquimalt, FMF-CB	HMCS Ottawa	18,673.21	257.76	18,930.97
CFB Esquimalt, FMF-CB	HMCS Regina	17,788	90.04	17,878.04
CFB Esquimalt, FMF-CB	HMCS Vancouver	27,104.52	906.14	28,010.66
FMF Cape Scott HMC Dockyard	HMCS Vancouver	8		8
CFB Esquimalt, FMF-CB	HMCS Winnipeg	10,454.15	624.49	11,078.64
Sum:				81,666.55

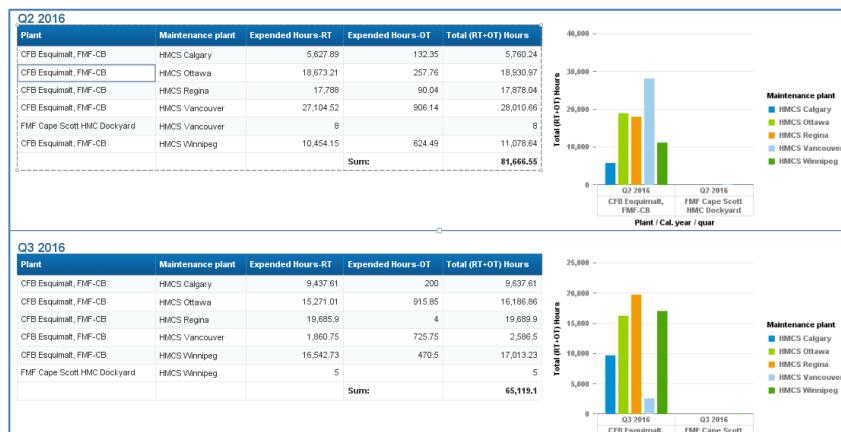
Q3 2016				
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Calgary	9,437.81	200	9,637.81
CFB Esquimalt, FMF-CB	HMCS Ottawa	15,271.01	915.85	16,186.86
CFB Esquimalt, FMF-CB	HMCS Regina	19,685.9	4	19,689.9
CFB Esquimalt, FMF-CB	HMCS Vancouver	1,860.75	725.75	2,586.5
CFB Esquimalt, FMF-CB	HMCS Winnipeg	16,542.73	470.5	17,013.23
FMF Cape Scott HMC Dockyard	HMCS Winnipeg	5		5
Sum:				65,119.1

4. You can also add Breaks within Sections. Follow the process outlined earlier to insert breaks within the Section.

Note: Any change you make in one Section will automatically be applied to all Sections so that all data and formatting changes will be applied to each data set.

Q2 2016				
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Calgary	5,627.89	132.35	5,760.24
	HMCS Calgary			
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Ottawa	18,673.21	257.76	18,930.97
	HMCS Ottawa			
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Regina	17,788	90.04	17,878.04
	HMCS Regina			
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Vancouver	27,104.52	906.14	28,010.66
FMF Cape Scott HMC Dockyard	HMCS Vancouver	8		8
	HMCS Vancouver			
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Winnipeg	10,454.15	624.49	11,078.64
	HMCS Winnipeg			
Sum:				81,666.55

5. Charts can be added within a Section. Do so by following the process for Charts outlined above and placing it to your desired location within the Section. Then, add the data elements that you want from the Available Objects tab. It is most useful if the chart supports how the data is displayed.



The Chart will only display data in accordance with the data selected in that Section.

6. Within a Section, you can “Fold” sections of a report to minimize the display of data. You will be able to fold any breaks within a section as well. To do so, click on the “Analysis” tab and the “Interact” sub-tab and click on “Outline.”



From here you will see a series of arrows along the side or top of your report screen, depending on the orientation of your table.

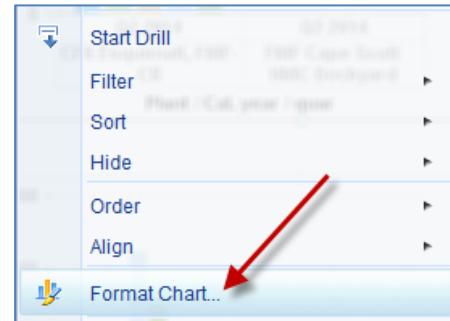
Q2 2016				
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Calgary	5,627.89	132.35	5,760.24
CFB Esquimalt, FMF-CB	HMCS Ottawa	18,673.21	257.76	18,930.97
CFB Esquimalt, FMF-CB	HMCS Regina	17,788	90.04	17,878.04
CFB Esquimalt, FMF-CB	HMCS Vancouver	27,104.52	906.14	28,010.66
FMF Cape Scott HMCS Dockyard	HMCS Vancouver		8	8
CFB Esquimalt, FMF-CB	HMCS Winnipeg	10,454.15	624.49	11,078.64
Sum:				81,666.55

Q3 2016				
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	HMCS Calgary	9,437.61	200	9,637.61
CFB Esquimalt, FMF-CB	HMCS Ottawa	15,271.01	915.85	16,186.86
CFB Esquimalt, FMF-CB	HMCS Regina	19,685.9	4	19,689.9
CFB Esquimalt, FMF-CB	HMCS Vancouver	1,860.75	725.75	2,586.5
CFB Esquimalt, FMF-CB	HMCS Winnipeg	16,542.73	470.5	17,013.23
FMF Cape Scott HMCS Dockyard	HMCS Winnipeg		5	5
Sum:				65,119.1

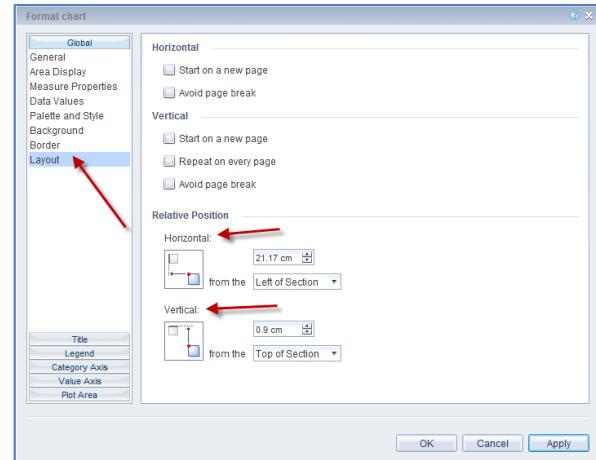
By clicking an arrow, it will hide the data set, as shown below.

Q2 2016				
Q3 2016				
Plant	Maintenance plant	Expendited Hours-RT	Expendited Hours-OT	Total (RT+OT) Hours
				Sum: 65,119.1

7. You can format by right clicking on the edge of a Section, Break, Cell, or Chart and selecting “Format.”



8. You can format items in relation to others by selecting the “Layout” tab within the formatting menu. Then, you can select the horizontal or vertical position of the item in relation to the edge of the page or the section.



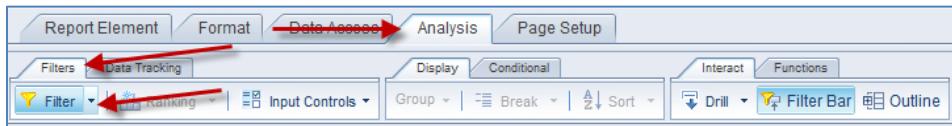
10.2.1.Exercise 18: Creating Sections

Refer to the Exercise booklet.

10.3.Filter

Filter can be added to a table, chart, report and/or section to limit data that are being displayed in the report. Filters can only be added or removed in the design mode, not in viewing mode.

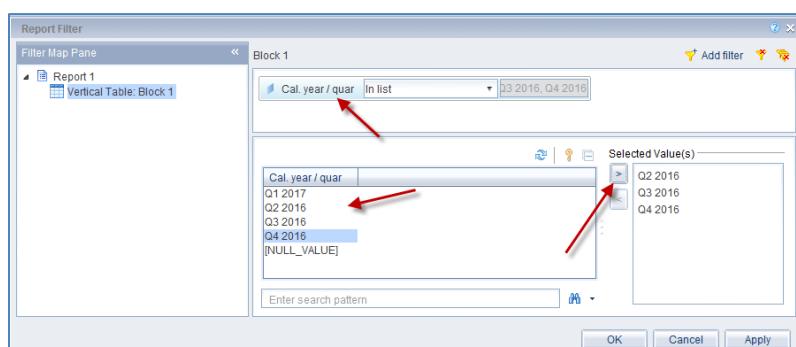
- Under the “Analysis” tab and “Filters” Sub-tab, click on “Filter.”



- The Report Filter box will appear. Select your table. The default name of every table will be Block 1, Block 2, etc., according to the order of their creation. Then click on “Add Filter” and select which object you wish to filter.



- A list of all the values for that filter will appear. Select the values that you wish to filter out of your report. Then click on “OK.”



10.3.1.Exercise 19: Using Filters

Refer to the Exercise booklet.

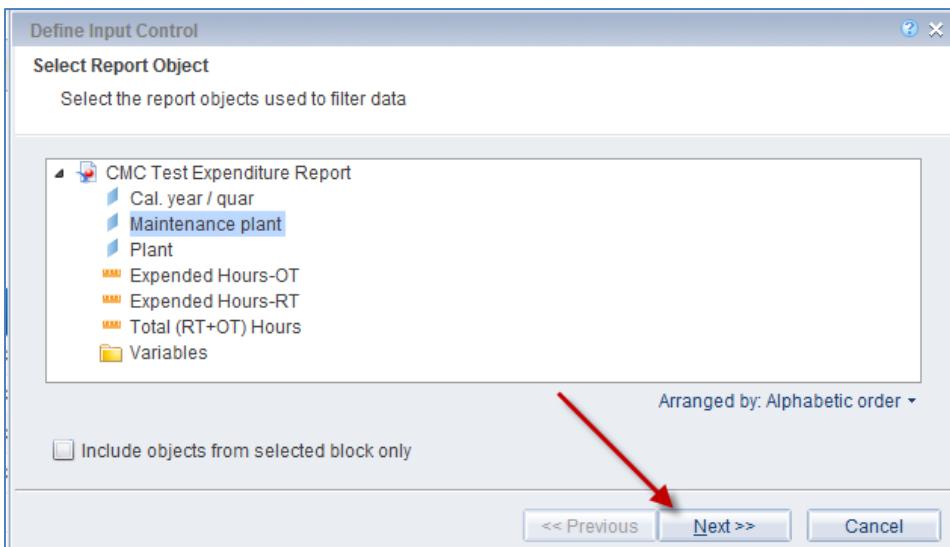
10.4. Input Control

Input Control can provide an additional way to limit the data that is displayed in reports. Input Control can be changed by a Consumer of a report, and allows them to select the data that they wish to view.

1. Under the “Analysis” tab and “Filters” sub-tab, click on “Input Controls.”



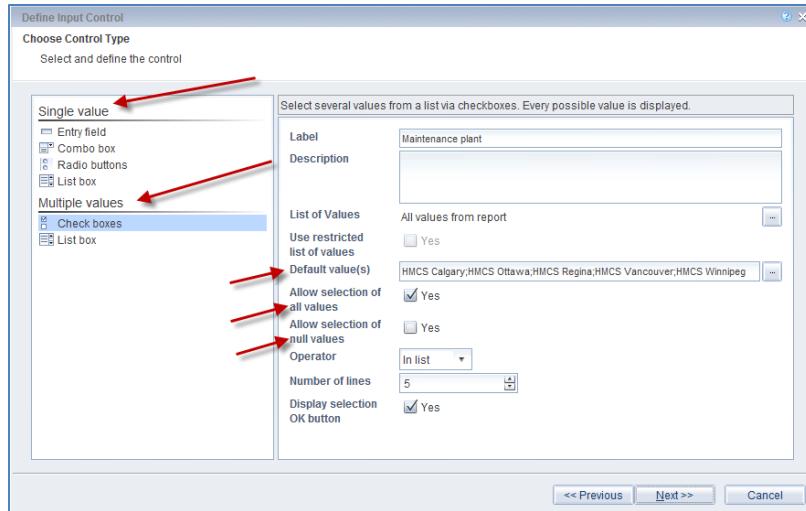
2. Within the “Define Input Controls” page, select which object you wish to filter the report by. Click on “Next.”



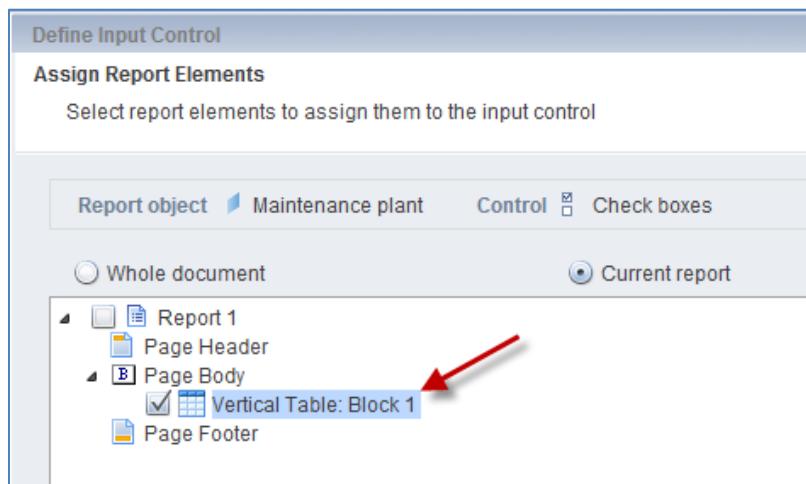
3. The “Choose Control Type” page allows you to select the input control you wish to enter. You can select an entry choice under “Single Value” or “Multiple Value.”

Then, you can select which value(s) you wish to have as options for the Consumer under the “Default Value(s)” field.

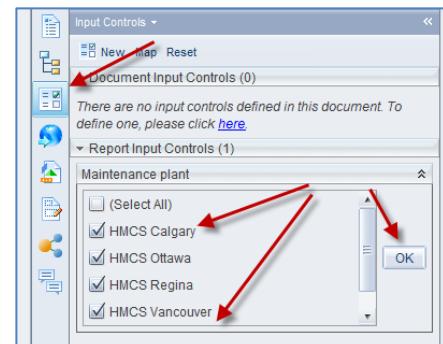
If you wish, you can click on the “Allow selection of all values” or the “Allow selection of null values” option. Click on “Next.”



4. Select which parts of the document you want the input control to apply to. You can select either the whole document or the table. Click on “Finish.”



5. Your Input Control tab will appear on the left-hand menu. There you will find and be able to choose the values you wish to display.



10.4.1.Exercise 20: Creating Input Controls

Refer to the Exercise booklet.

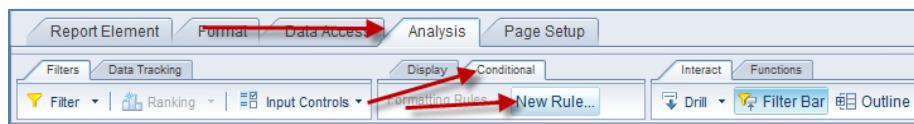
10.5. Conditional Formatting Rule

Conditional Formatting rules can assist reports in highlighting crucial data. They can be applied to tables, individual cells, and within sections and breaks.

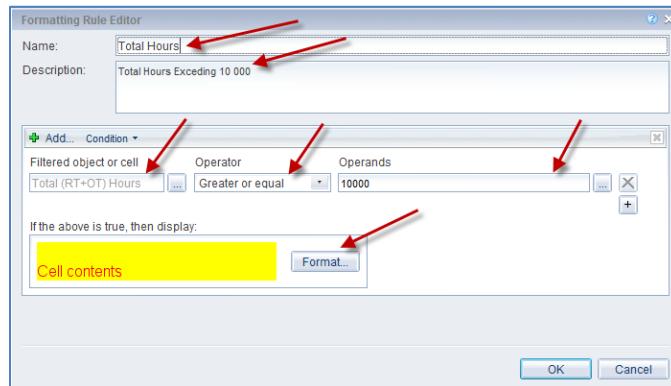
Note: In order for Rules to be applied, WebI preferences for Modify must be set to Applet. If the Modify is set to HTML, there will be no “New Rule” button.

Note: When using Conditional Formatting, the rule can apply to a different cell than the cell that the calculation is on. For example, you can set the text to Red, if a number is larger than 100, but that conditional format could be applied anywhere on the row, not just on the cell that has the larger than 100 value.

1. Click on the “Analysis” tab in the top menu and then the “Conditional” sub-tab and “New Rule....”



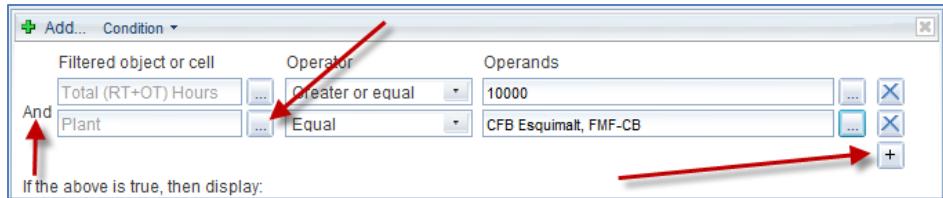
2. This will open the Formatting Rule Editor. Enter the name of the rule you wish to create and give it a description. Next, enter the object that you wish to create a rule against. Give it an operator such as “Greater than” or “Less than” and a value. Lastly, format how you want the rule to highlight the displayed data by selecting “Format.”



3. You can create rules that have multiple conditions. To create more than one condition, click on the “Add” button at the top of the condition box of the Formatting Rule Editor box. This will create a second condition and effect within the existing rule.

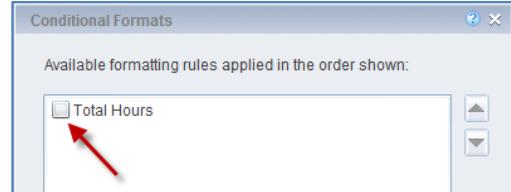
Alternatively, you can create a New Rule if you want the condition to be applied separately. A cell or column, etc. can have multiple rules attached to it.

4. To create a complex condition, click on the “+” button on the right hand side below the first condition rule. This will allow you to add a second requirement to the condition.



Note: Doing this will mean that all of the rules of the condition will have to be met before it will apply the formatting change.

5. Select the cells that you wish to apply the rule too. Then, click on “Formatting Rules” under the “Conditional” Sub-tab. Check the rule you want to apply by checking the box beside its name. Click on “OK.”



This will apply your rule to any cells that meet the criteria within the selected column.

Total (RT+OT) Hours	Total (RT+OT) Hours
5,760.24	18,930.97
9,637.61	16,186.86
5,051.89	7,042.18
12,908.12	18,054.63
33,357.86	60,214.64

6. To edit a rule, click on “Formatting Rules” under the “Conditional Formats” Sub-tab, and select the rule you created. Click on “Edit.”

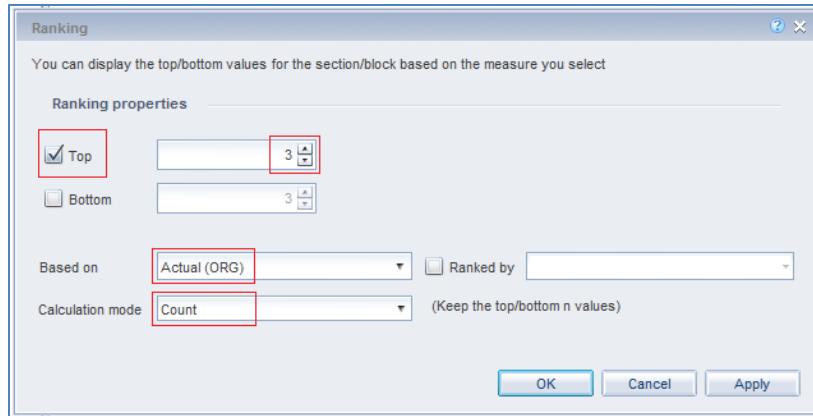
10.5.1.Exercise 21: Creating Formatting Rules

Refer to the Exercise booklet.

10.6.Ranking

For a particular measure, you can show top and/or bottom values only. You can apply the ranking at the database level (in Query Panel) or at the report level in the report tab page.

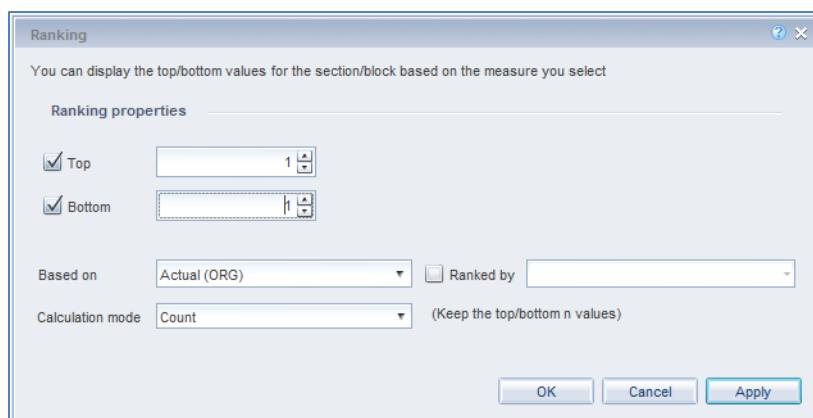
1. In the Report, highlight the measure that you would like to create ranking on.
2. Go to the “Analysis” tab and “Filters” sub-tab, click on “Ranking.”
3. In the Ranking window, you can choose either or both Top or/and Bottom, set the number of such items, set the dimension that the ranking would be based on and also the calculation mode. Click on OK when done.



Example:

1. Create a table with Fiscal Year, Struct. and Actual:
2. Highlight the Actual column and click on the Ranking button.
3. Set the Ranking options as follows:

Fiscal year	Struct.	Actual
V32015	DRMIS Data	662,606.46
V32016	DRMIS Data	520,359.82
V32017	DRMIS Data	544,686.66
V32018	DRMIS Data	504,392.34



4. Here's the result of the Ranking:

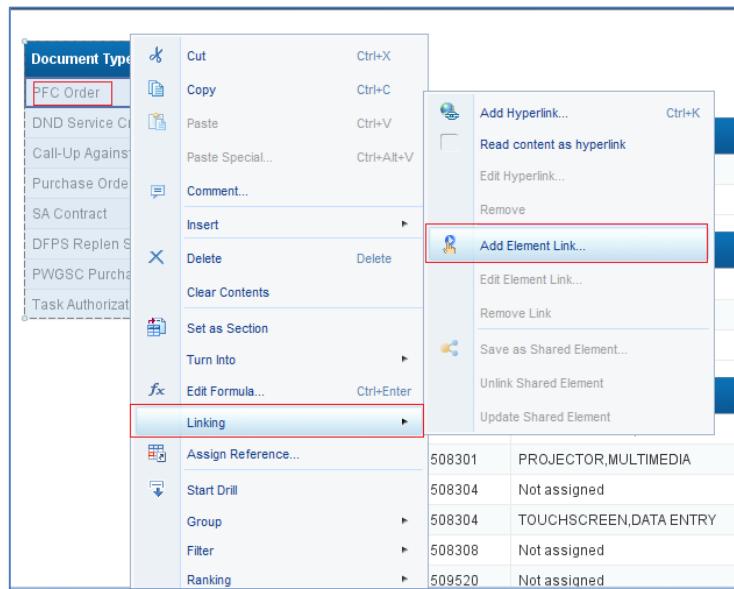
Fiscal year	Struct.	Actual
V32015	DRMIS Data	662,606.46
V32018	DRMIS Data	504,392.34

10.7. Element Linking

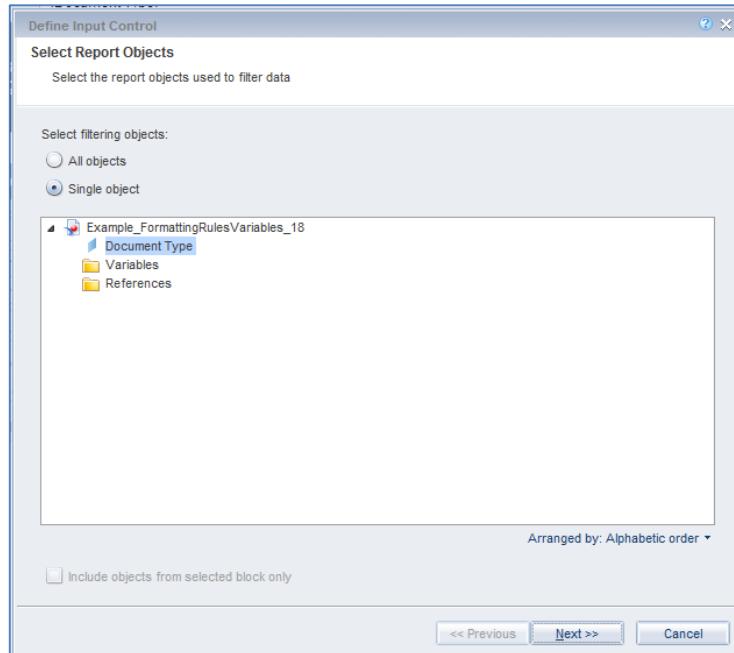
If you would like to control the content of one or more tables and charts based on the selected value of a particular table/chart, you can do so by using Element Linking.

1. Create the controlling table.
2. Create the other tables and charts that would be linked to this table.

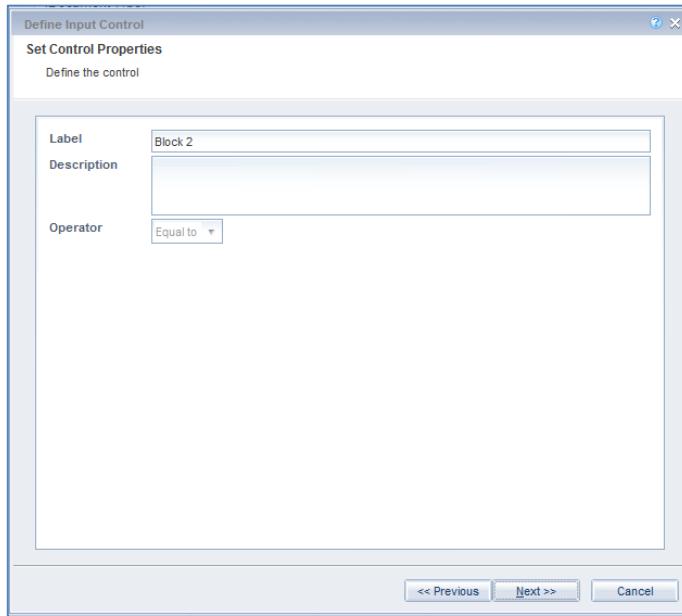
3. Now right click on the column of the controlling table and then click on “Linking” -> “Add Element Link” from the context menu.



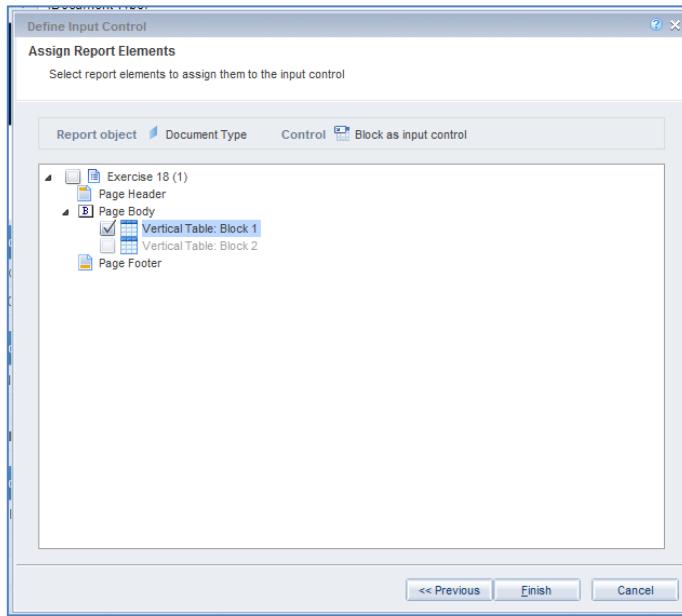
4. Select the controlling object from the controlling table and click on “Next.”



5. Click on Next on the next screen, or, if you like you can enter a description for this link and then click on next.



6. Now you can select one or more target objects that would be controlled by this controlling object.



7. Once done, click on Finish.
8. Now you can see on the corner of the controlling table a new button has appeared which provides you with some features on linking.

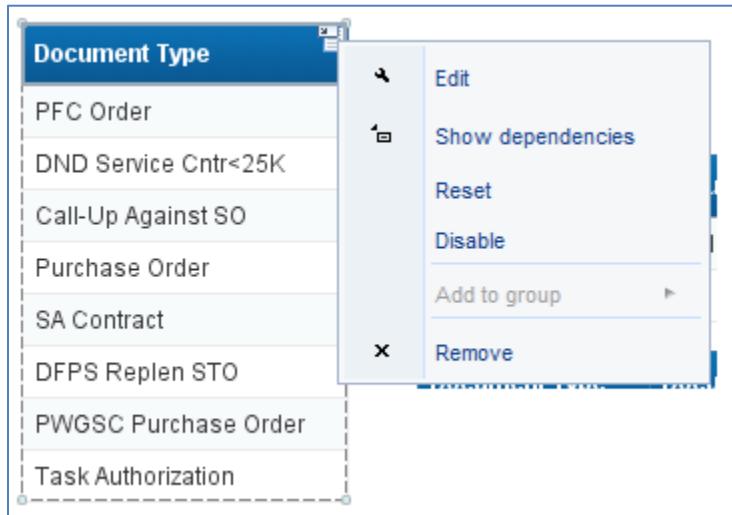
Document Type	
PFC Order	
DND Service Cntr<25K	
Call-Up Against SO	
Purchase Order	
SA Contract	
DFPS Replen STO	
PWGSC Purchase Order	
Task Authorization	

Document Type	Document No	Material	Material Group	Vendor
PFC Order	4501538125	Not assigned	Lumber and Related	HOME LUMB
PFC Order				

Document Type	Document No	Material	Material Group	Vendor
DND Service Cntr<2	4501537758	Not assigned	NES Educational Ser	ORCA HEAL
	4501538147	Not assigned	NES Educational Ser	ISLAND ESC
DND Service Cntr<2				

Document Type	Document No	Material	Material Group	Vendor
Call-Up Against SO	4501508183	CAMERA SYSTEM,DIGITAL	Cameras, Still Pictu	NIKON CANA
	4501508301	PROJECTOR,MULTIMEDIA	Microfilm Duplicator	SHARPS AUI
	4501508304	Not assigned	miscellaneous items	Sharps Audio
	4501508304	TOUCHSCREEN,DATA ENTRY	ADP Input/Output anc	Sharps Audio
	4501508308	Not assigned	miscellaneous items	ERGOCENTR
	4501508320	Not assigned	Electrical Hardware	Sharps Audio

9. If you right click on that button, you would get the following menu to edit the link, show dependencies, disable the link, reset the link and also remove the link as well.



10.7.1.Exercise 22: Creating Element Linking.

Refer to the Exercise booklet.

11. WeBI Document Formatting

WeBI document formatting options would need to be used to create reports that match with your organizations standard. The templates are being provided to take care of many of these formatting options, however you would still need to use many of these formatting techniques while designing a WeBI report.

Generally from the context menu of any object (like, report body, header, footer, table, document structure, etc.) you can get to the Format window for that particular object. Context menu is the menu that you get by right-clicking on a certain object.

Following tab pages holds formatting options for the corresponding Report Elements:

- Page Setup Tab Page: Report, Report Page, Header, Footer, Margins, Display, etc.
- Format Tab Page: Font, Border, Cell, Style, Numbers, Alignment, Size, Padding, Format Painter, etc.

11.1.Formatting Report

You can get various report related formatting options by right clicking on any blank area on the report body. Following are the most useful ones:

- Layout: Page Size, Orientation, Page Scaling, Margins, Header and Footer size, etc.
- Appearance: Color, Patter, Hyperlink Color, etc.
- Border

11.2.Formatting Table

Following are the most used formatting options for a table:

- General:
 - Name: it's a good idea to give unique name to your table if you are dealing with multiple tables
 - Show Table Headers
 - Show Table Footers
 - Hide always: when you need a table but don't want to show it
 - Hide when Empty
 - Hide when following formula is true
- Border
- Appearance: Color, Pattern, Spacing and Padding, Alternate Color
- Layout:
 - Horizontal - Start on a new page
 - Horizontal - Avoid page break
 - Vertical - Repeat header on every page
 - Vertical - Repeat footer on every page
 - Vertical – Avoid page break
 - Relative Position - Horizontal and Vertical

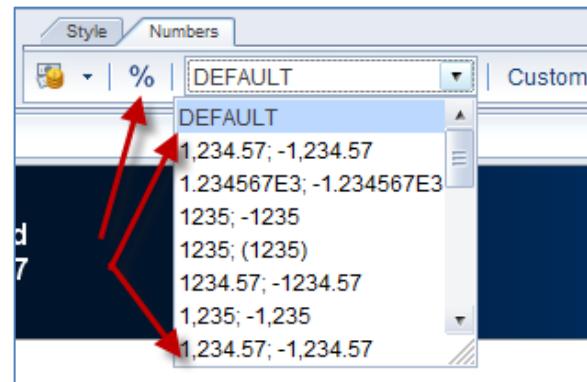
11.3.Formatting Cell

Following are the most used formatting options for a cell:

- General:
 - Auto fit width
 - Auto fit height
 - Read contents as
- Alignment:
 - Horizontal alignment
 - Vertical alignment
 - Display – Wrap text
 - Display – Merge Cells
- Font
- Border
- Appearance:
 - Color
 - Pattern
 - Image from address
 - Image from file

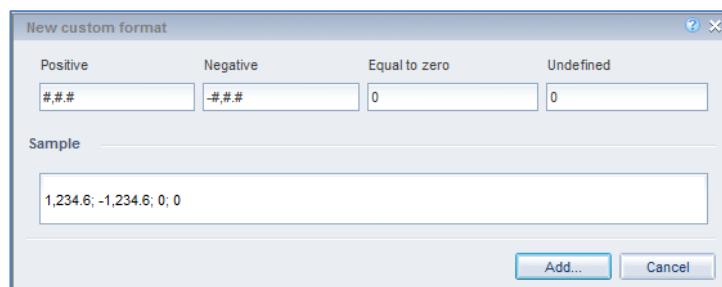
11.4.Formatting Numbers

To change how numbers appear within a table, click on the “Format” tab and the “Numbers” sub-tab. You will be able to select how you want the data to be presented by using the drop down menu to select the desired format. You can also select the Percentage sign to change the number into a percentile.



11.4.1.Custom Formatting Numbers

While in a numeric field, go to “Format -> Numbers” tab, click on “Custom” button and then go to the “Custom” section in the “Format Number” window, and again click on the “custom” button to get the “New Custom Format” window:



Now, type in “#,#.#” and “-#,#.#” in the Positive and Negative input boxes, respectively. This will give one decimal point rounded up to the nearest 10s. This will show “1.29” as “1.3” and “1.98” as “2”

For two decimal points use two number sign after the decimal, like, “#,#.##.” This will show “1.70” as “1.7.”

Use zero instead of number sign, like, “#,#.#0” to always show 2 decimal places. This will show “1.70” as “1.70.”

If needed, type “0” in the “Equal to zero” and “Undefined” input boxes.

11.5.Formatting Header and Footer

Following are the most used formatting options for header and/or footer:

- Appearance
 - Color
 - Pattern
 - Image from address
 - Image from file
- Layout
 - Show header/footer
 - Height

11.6.Formatting Section

Following are the most used formatting options for header and/or footer:

- General
 - Display – Minimum height
 - Hide when Empty
 - Hide when following formula is true
- Appearance
 - Color
 - Pattern
 - Image from address
 - Image from file
- Layout
 - Start on a new page
 - Repeat on every page
 - Avoid page break
 - Minimum top offset
 - Top Margin

11.7.Formatting Chart

Following are the most used formatting options for a chart:

- Global

- General:
 - Name: it's a good idea to give unique name to your chart
 - Width, Height
 - Hide always, Hide when Empty
 - Hide when following formula is true
 - Orientation – Horizontal Orientation
 - Area Display
 - Title, Axis, Data Values and Legend visibility settings
 - Data Values
 - Data Label Displaying Mode
 - Data Position
 - Automatic Hiding Mode
 - Font size
 - Spacing
 - Orientation
 - Palette and Style
 - Layout
 - Relative Position – Horizontal and Vertical
- Title:
 - Design
 - Title visible or not
 - Title Label
 - Text Font and alignment
- Legend
 - Design
 - Legend visible or not
 - Location
 - Text Font and alignment
 - Title
 - Title visible or not
 - Text Font and alignment
- Category Axis
 - Design
 - Category Axis visible or not
 - Display Axis
 - Reverse order on the Category Axis
 - Continuous axis layout
 - Show labels
 - Adjust layout
 - Display staggered Axis Labels
 - Tick Length
 - Tick Margin
 - Axis color
 - Text Font and alignment

- Title
 - Title visible or not
 - Text Font and alignment
- Value Axis
 - Design
 - Value Axis visible or not
 - Stacking
 - Spacing
 - Axis Scaling
 - Axis Minimum Value
 - Axis Maximum Value
 - Display Axis
 - Show Labels or not
 - Adjust layout
 - Display staggered Axis Labels
 - Tick Length
 - Tick Margin
 - Axis color
 - Text Font and alignment
 - Number format
 - Title
 - Title visible or not
 - Text Font and alignment
- Plot Area
 - Design
 - Spacing within Groups
 - Spacing between Groups
 - Background
 - Background Color
 - Category Axis Grid Color
 - Value Axis Grid Color

12. WebI Calculation Context

The value/amount returned by a measure (in a calculation) depends on the dimensions it is associated with in the immediate block and this combination of dimensions is called Calculation Context.

Calculation Context, either default or user defined, is the way to control the behavior of any calculation on a measure.

12.1. Default Calculation Context

Depending on the placement of a measure in a report or in a table or in a chart, a measure or a calculation on a measure would return a certain result. This is known as Default Calculation Context.

Example: in the following table we have a dimension called Cost Centre and have a measure called Actual. Here the Actual measure is aggregated up to the cost center and shown as a single value.

Royal Canadian Navy (RCN)	Actual
Royal Canadian Navy (RCN)	2,231,439.92

However, if we introduce Fiscal Year in the table, the Actual amount would be broken out by both Cost Center and Fiscal Year dimensions.

Royal Canadian Navy (RCN)	Fiscal year	Actual
Royal Canadian Navy (RCN)	2015	662,604.5
	2016	520,301.66
	2017	544,311.7
	2018	504,222.06

12.2. User Defined Calculation Context

Calculation context of any calculation or formula in WebI can be reclassified by defining either or both of its input and output contexts.

Input Context is used to determine what values are taken into the calculation. For example, “User is required to take into the calculation, one number for every Fiscal Year.”

Output Context is used determine the level or dimension, by which the calculation is output. For example, “User is required to use a formula to display (/output) one number for every Fiscal Year.”

12.2.1. Input Context

Input context is the set of dimensions that are used to make the calculation. These dimensions in the input context appear inside the parentheses of the function whose input context is being specified.

Example: You need a report showing fiscal year, posting period, actuals per year/period, and the actual percentage within that year.

In order to compute the yearly actual percentage, you would need to get the yearly actual total by using the following Input Context formula:

= Sum([Revenue] IN ([Year]))

Fiscal year	Posting period	Actual	Input Context	Percentage
2017	1	26,949.95	104,793.18	25.72%
2017	2	36,742.41	104,793.18	35.06%
2017	3	41,100.81	104,793.18	39.22%
2018	1	25,970.19	114,539.12	22.67%
2018	2	49,650.1	114,539.12	43.35%
2018	3	38,918.83	114,539.12	33.98%

12.2.2. Output Context

The output context consists of set of dimensions that determine where the calculation would be placed in the report, i.e., the level where the calculation is to be performed. The output context appears after the parentheses of the function.

It causes the formula to output a value as if it is placed in the footer of a block containing a break.

Example: You need a report showing fiscal year, posting period, actuals per year/period, the maximum actual within that year, and then the difference between that period's actual to the maximum for that year actual.

The maximum actual within that year can be calculated by using an Output Context formula:

= Max([Actual]) IN ([Year])

Output Context:						
Fiscal year	Posting period	Actual	Fiscal year	Posting period	Actual	Output Context
2017	1	26,949.95	2017	1	26,949.95	41,100.81
	2	36,742.41		2	36,742.41	41,100.81
	3	41,100.81		3	41,100.81	41,100.81
2017	Max @ Break =	41,100.81				14,150.86
Fiscal year	Posting period	Actual	Fiscal year	Posting period	Actual	Diff from Max
2018	1	25,970.19	2018	1	25,970.19	49,650.1
	2	49,650.1		2	49,650.1	49,650.1
	3	38,918.83		3	38,918.83	49,650.1
2018	Max @ Break =	49,650.1				10,731.27

12.3. Contexts Operators

12.3.1. IN Context Operator

IN context operator is used **to specify exactly** which dimensions to be included in the calculation. Other dimensions in the block are ignored.

Adding/removing other dimensions from the block does not affect the calculation because certain dimensions are already specified as part of the context.

Example: You need a report showing fiscal year, total yearly actual and the maximum actual within that year in a posting period.

Solution: Create a table with Fiscal Year and Actual. But if you add a column to show the Max([Actual]), the result would be same as yearly Actual value.

You can use the IN context operator as input context on Fiscal Year and Posting Period dimensions to achieve the maximum actual within that year in a posting period:

= Max([Actual] IN ([Fiscal year] ; [Posting period]))

In Context Operator:			Max Actual w/ IN Context Operator			
Fiscal year	Posting period	Actual	Fiscal year -	Actual	Max([Actual])	Max Actual w/ IN Context Operator
2017	1	26,949.95				
2017	2	36,742.41				
2017	3	41,100.81				
2018	1	25,970.19				
2018	2	49,650.1				
2018	3	38,918.83				

12.3.2. ForEach Context Operator

ForEach context operator is used **to add more dimension(s)** in a context that affects the calculation along with all other dimensions in the block.

Example: You need a report showing fiscal year, total yearly actual and the maximum actual within that year in a posting period.

Solution: Create a table with Fiscal Year and Actual. But if you add a column to show the Max([Actual]), the result would be same as yearly Actual value.

You can use the ForEach context operator as input context on Posting Period dimension and it will augment the Fiscal Year dimension that is already there in the table/block:

= Max([Actual] ForEach ([Posting period]))

ForEach Context Operator:		
Fiscal year	Posting period	Actual
2017	1	26,949.95
2017	2	36,742.41
2017	3	41,100.81
2018	1	25,970.19
2018	2	49,650.1
2018	3	38,918.83

Fiscal year	Actual	Max Actual
2017	104,793.18	104,793.18
2018	114,539.12	114,539.12

Fiscal year	Actual	Max Period w/ For Each Context Operator
2017	104,793.18	41,100.81
2018	114,539.12	49,650.1

12.3.3. ForAll Context Operator

ForAll context operator is used to exclude a dimension from context. Other dimensions of the block will still be considered.

Adding or removing dimensions from the block will change the value, but it will always ignore the ForAll dimension(s).

Example: You need a report showing fiscal year, posting period, actuals per period and total yearly actual.

Solution: Create a table with Fiscal Year, Posting Period and Actual. You can then use the ForAll context operator to exclude the Posting Period from your summing function and thus you can get the total of the actual per year:

= Sum([Actual]) ForAll ([Posting period])

ForAll Context Operator:			
Fiscal year	Posting period	Actual	ForAll Periods
2017	1	26,949.95	104,793.18
2017	2	36,742.41	104,793.18
2017	3	41,100.81	104,793.18
2018	1	25,970.19	114,539.12
2018	2	49,650.1	114,539.12
2018	3	38,918.83	114,539.12

You can achieve the same result by using IN context operator on the Fiscal Year ignoring the posting period altogether:

= Sum([Actual]) IN ([Fiscal year].[Fiscal year - Key (Not Compounded)])

12.3.4. Report Structures – In Report, In Block, In Section, In Body, In Break

There are set of report structure keywords that can be specified with the calculation contexts as well.

- **In Report:** sets the context at the overall report level. Any formula with this keyword will return overall total. Total may still be affected by report filters.
- **In Block:** sets the context at each block. In a report with sections, the “In Block” would yield different value than the “In Report.”

= Max([Actual]) In Block

In Block Operator:			
Fiscal year	Posting period	Actual	Max @ Block
2017	1	26,949.95	49,650.1
2017	2	36,742.41	49,650.1
2017	3	41,100.81	49,650.1
2018	1	25,970.19	49,650.1
2018	2	49,650.1	49,650.1
2018	3	38,918.83	49,650.1

- **In Section:** sets the context at a section only.
- **In Body:** it is a standard context for each row of data.
- **In Break:** sets the context at the break level.

12.3.5. Where Operator

The Where operator restricts the data to be used in a calculation.

Example: You need a report showing fiscal year, posting period, actuals per period and sum of all actuals for periods greater than one.

Solution: Create a table with Fiscal Year, Posting Period and Actual. You can then use Sum function on Actual along with the WHERE operator to sum all periods that are greater than one:

= Sum([Actual]) Where (ToNumber([Posting period]) > 1)

Where Context Operator:			
Fiscal year -	Posting period	Actual	Actuals for Period > 1
2017	001	26,949.95	77,833.62
2017	002	36,739.34	77,833.62
2017	003	41,094.28	77,833.62
2018	001	25,970.19	88,565.81
2018	002	49,647.1	88,565.81
2018	003	38,918.7	88,565.81

12.3.6. Exercise 23: Creating Calculation Contexts

Refer to the Exercise booklet.

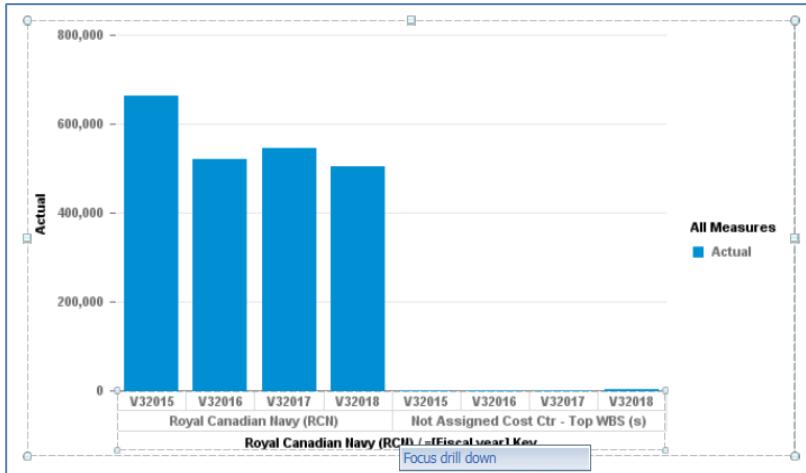
13. WebI Drilling Functionality using Hierarchy

As a WebI Report Author you can create a report that your consumer can drill in into a chart or table to get further details. You can provide this drilling capabilities using hierarchy objects from BEx queries.

13.1. Drilling in a Chart

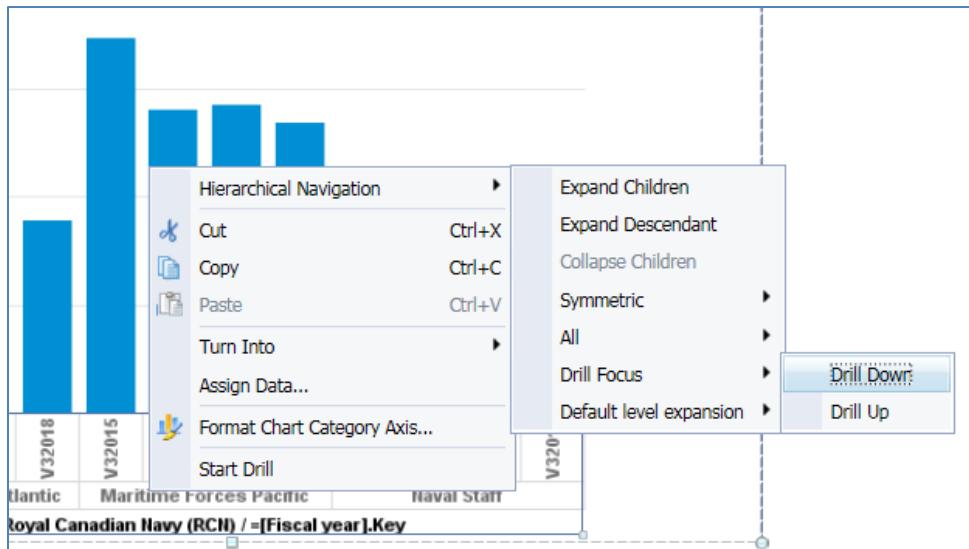
You can create a chart with a hierarchy object, like, Cost Centre hierarchy, in the category axis and one or two measures, like, Actual, Allocation, etc., in the value axis.

Once the chart is created, you would see the “Focus drill down” message if you hover your mouse on top of the hierarchy object in the chart. Now you can click on the hierarchy object in the chart and the chart would drill down to the next lower level. The shape of the chart would change automatically as per the level of the hierarchy.



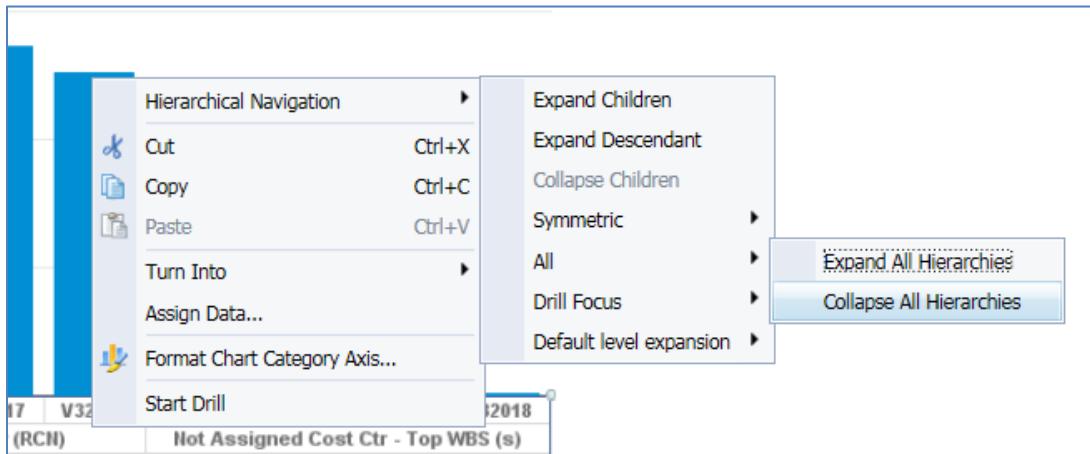
13.1.1. Drill up and down

You can right-click on the hierarchy object within the chart and from the context menu go to “Hierarchical Navigation -> Drill Focus”, and then click on either Drill Down or Drill up.



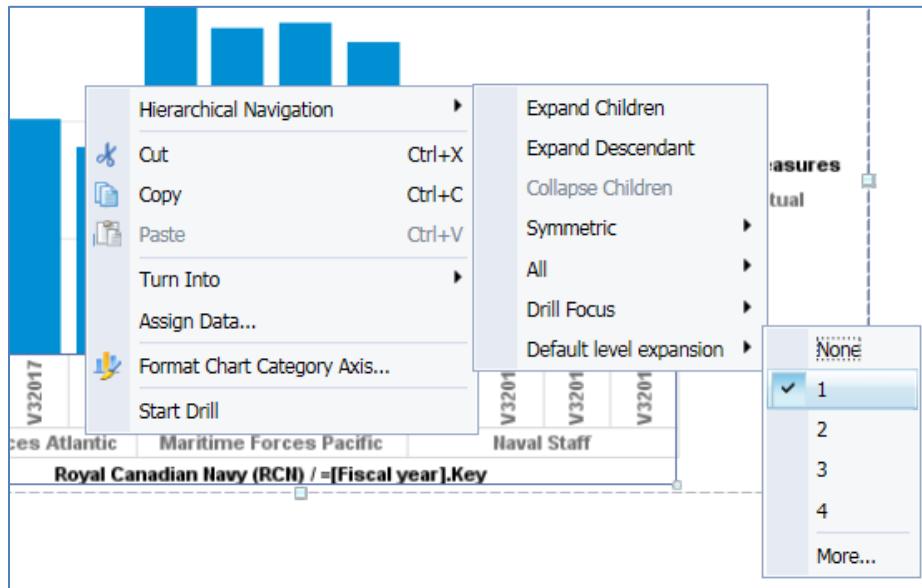
13.1.2. Navigate to the top level of the hierarchy

From the context menu of the hierarchy object within the chart go to “Hierarchical Navigation -> All -> Collapse All Hierarchies” to go back to the top level of the hierarchy.



13.1.3. Setting the Default Expansion Level

It is also important to set the Default Level of Expansion so that whenever the report is being refreshed the charts are at the appropriate level to show the content. Navigate to the context menu of the hierarchy object in the chart and then go to “Hierarchical Navigation -> Default level expansion”, and choose the desired level.



13.1.4. Exercise 24: Creating Chart with Hierarchy Object

Refer to the Exercise booklet.

13.2. Drill in a Table

Similarly you can create a vertical table with a hierarchy object, like, Cost Centre hierarchy, along with Fiscal Year and one or two measures, like, Actual, Allocation, etc.

Royal Canadian Navy (RCN)	Fiscal Year	Actual
+ Royal Canadian Navy (RCN)	2015	662,604.5
	2016	520,301.66
	2017	544,311.7
	2018	504,222.06
+ Not Assigned Cost Ctr - Top WBS (s)	2015	1.96
	2016	58.16
	2017	374.96
	2018	1,808.65

Once the table is created, you would be able to click plus sign (“+”) beside the hierarchy object to drill down in to the hierarchy. The values of the measures would change automatically as per the level of the hierarchy.

13.2.1.Exercise 25: Creating Table with Hierarchy Object

Refer to the Exercise booklet.

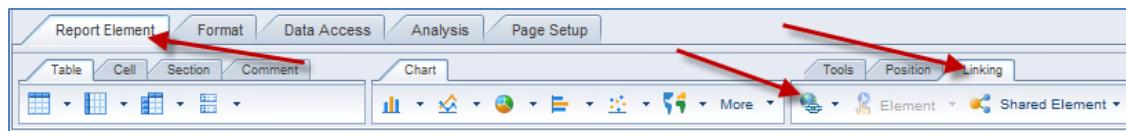
14. Additional Features

14.1. Hyperlinking

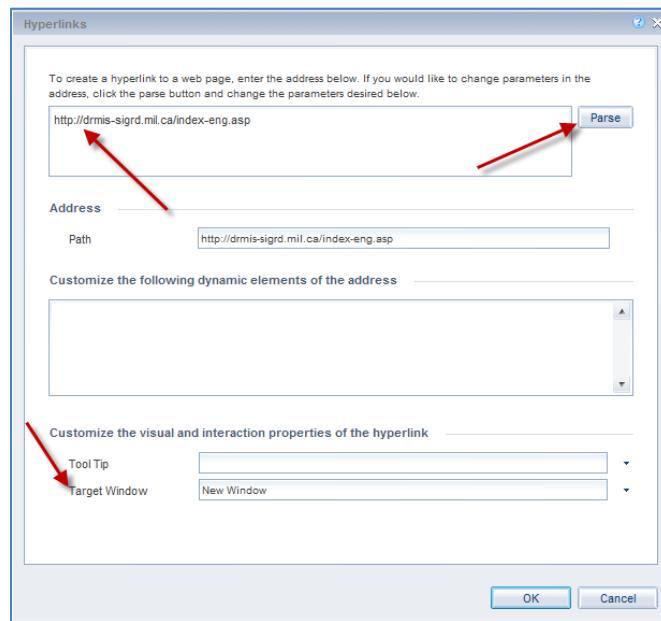
14.1.1. Creating a HyperLink to an external site from WebI

Reports can have links added to them to access other web pages or WebI documents.

1. To insert a hyperlink, select a cell or text box. Within the Report Elements tab and the Linking sub-tab, click on the “Add Hyperlink” button.



2. Within the Create Hyperlink box, enter the address of the link that you want to hyperlink and click on “OK.”



This will create a hyperlink within the cell that was created.

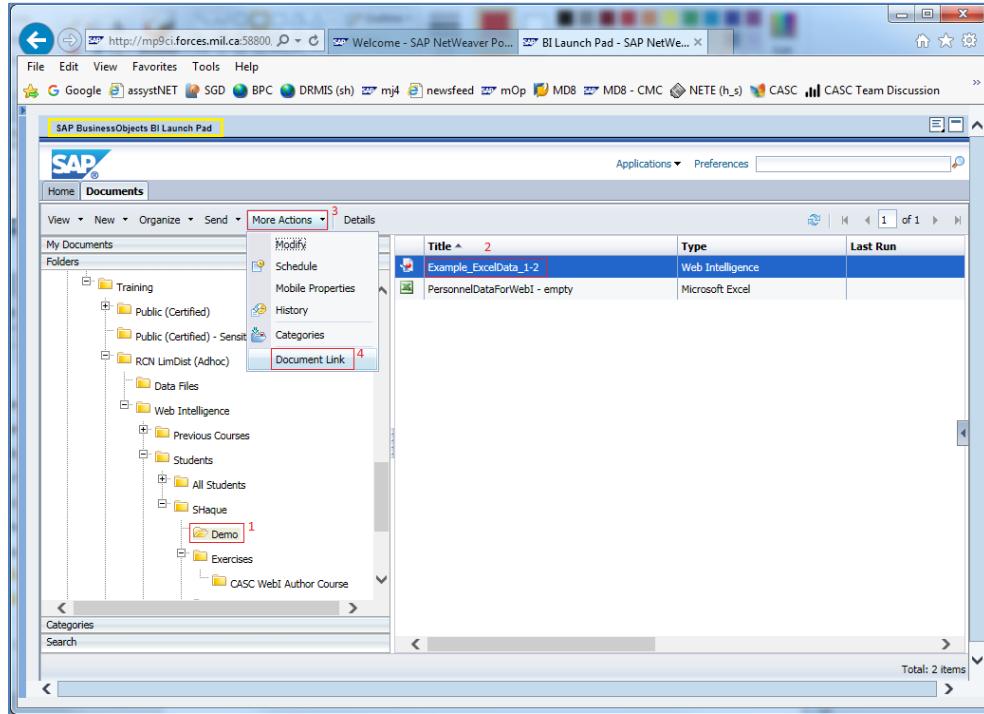


14.1.2. Creating a HyperLink to a WebI document

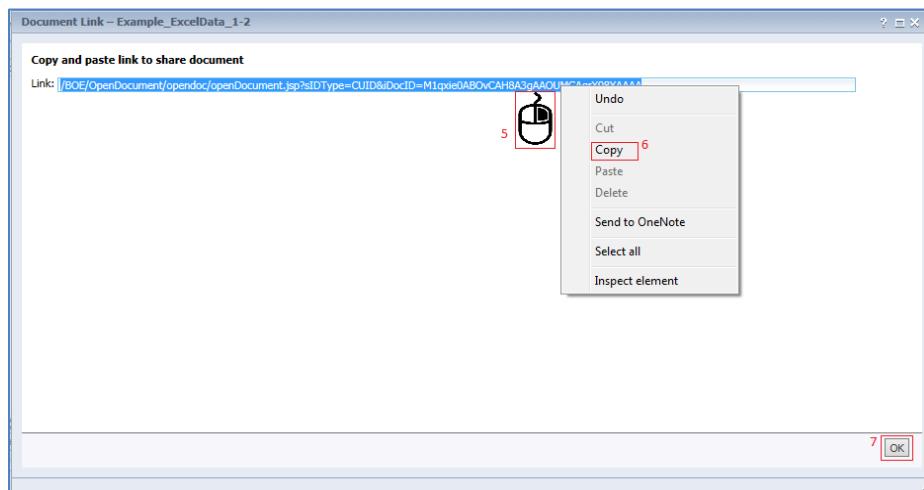
You can create a hyperlink to a WebI document to be used from other document(s), such as a Microsoft PowerPoint, Word, or Excel file.

Follow below steps:

1. Navigate to the folder where your WebI Document is located.
2. Select the WebI Document.
3. Click on “More Actions.”
4. Click on “Document Link.”

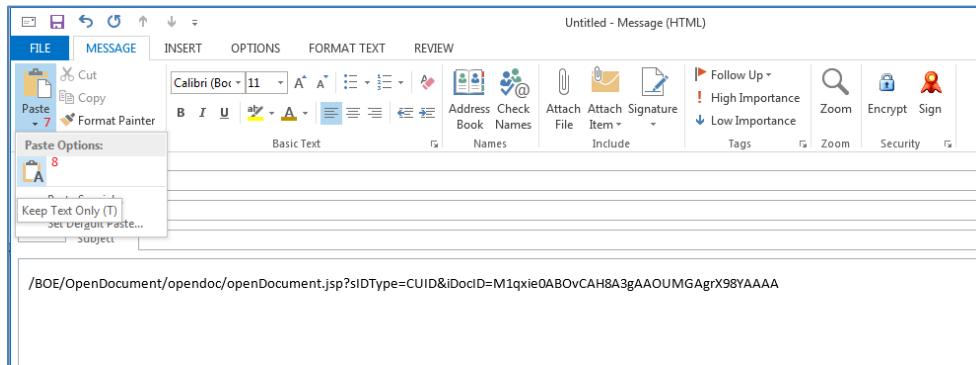


5. Click on the link and go to the context menu.
6. Click on “Copy.”

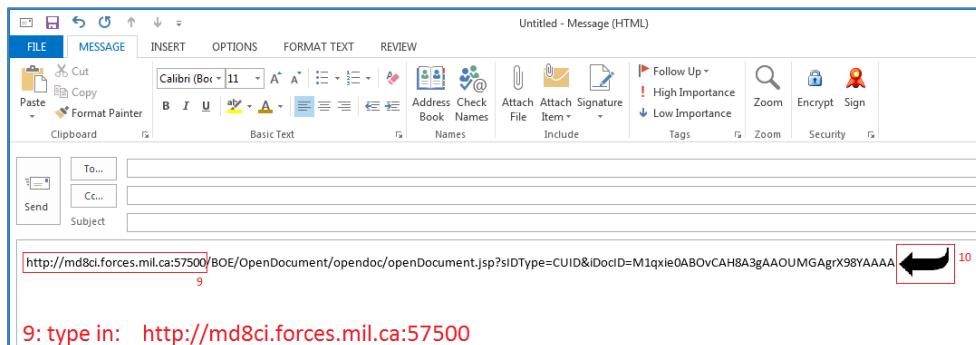


7. In your target application, for example in Outlook email, go to “Paste.”

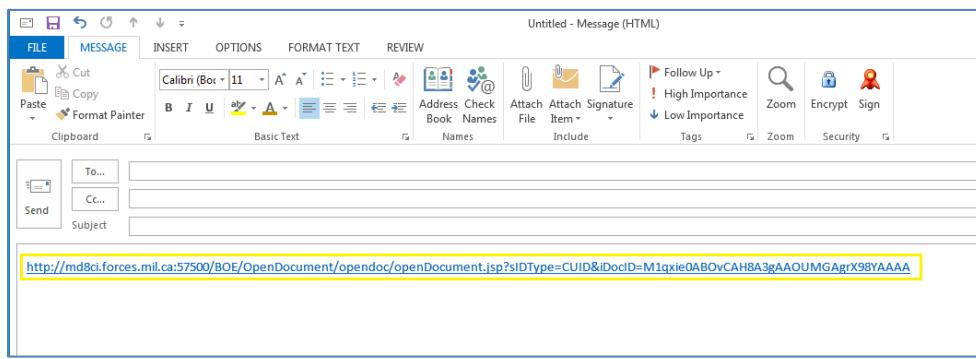
8. Click on “Keep Text Only.”



9. Type in “<http://md8ci.forces.mil.ca:57500>” in front of the link pasted in step above.



10. Press the “Enter” key at the end of the above text to make it a hyperlink.



Note:

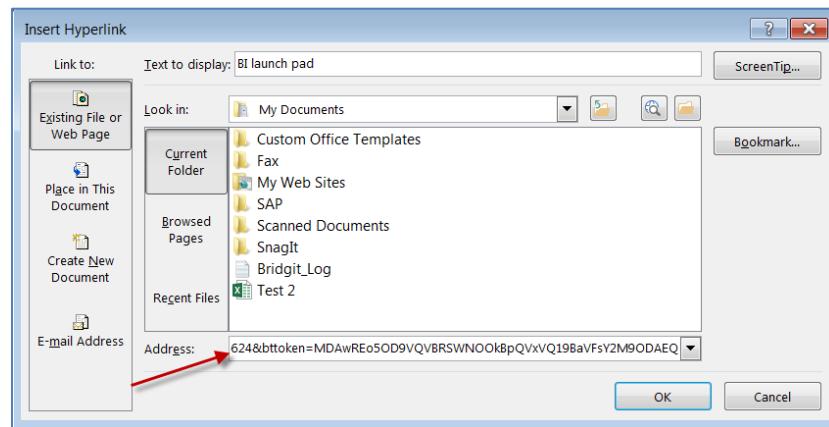
- If you make changes to the WebI document and save it as a new document, the document link (/CUID) changes, and the above link would no longer work.
The below highlighted text is the unique identification number of any document created and/or uploaded in BI Launch Pad known as CUID:

<http://md8ci.forces.mil.ca:57500/BOE/OpenDocument/opendoc/openDocument.jsp?siDType=CUID&iDocID=M1faso8ADbisAlwAlgAALzkBAGrX98YAAAA>

- Whichever tab you save the WebI document on, is the tab that is displayed when you open the link.
 - You can have WebI document refresh on a schedule so that the link is always up to date.
11. Alternatively, open the Microsoft Word, PowerPoint, or Excel file. Click on the “Hyperlink” button, generally within the “Insert” tab of the Microsoft program. This will open the Insert Hyperlink window.



12. Paste the link that you created above.

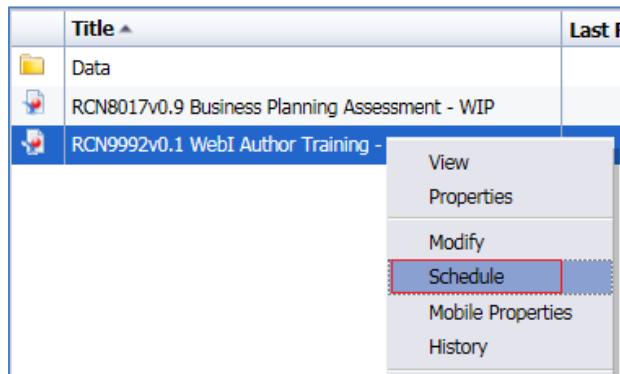


13. Change the “Text to display” to an appropriate title. Click on “OK.” Test your hyperlink to ensure that it works.
14. To open the hyperlink in the future, you must be signed into the BI Launch Pad first.

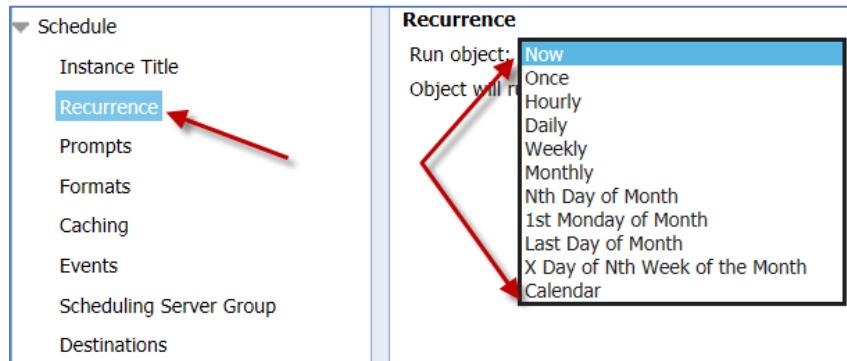
14.2. Scheduling and Instances

Reports can be run routinely through scheduling.

1. Each edition of a report created through scheduling is called an “Instance.” To schedule a report, find it in the BI Launchpad Document Structure. Right click on the report and click on “Schedule.”



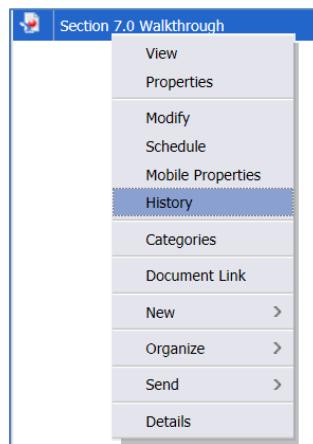
- Within the scheduling menu, you will be able to name the Instance Title and select the Recurrence rate.



- Once you have chosen how often you want the report scheduled, it will create report Instances following that timeframe. You also have the option to choose a destination for that Instance and the format for it to take.
- Click on "Schedule." WebI will then show you the Instance history page of that Document.

Instance Time	Title	Status	Created By	Type
21-Aug-2017 3:59 PM	Section 7.0 Walkthrough	Running	CMCARSWELL	Web Intelligence
21-Aug-2017 3:59 PM	Section 7.0 Walkthrough	Recurring	CMCARSWELL	Web Intelligence

- To view previous instances of a report, right click on the report. Click on "History."



This will bring up the Instance history page again. You can view an individual instance by selecting the title. This will open the document with the data populated when that Instance was scheduled.

History – Section 7.0 Walkthrough				
View Organize Send More Actions				
	Instance Time	Title	Status	Created By
	21-Aug-2017 4:00 PM	Section 7.0 Walkthrough	Success	CMCARSWELL
	21-Aug-2017 3:59 PM	Section 7.0 Walkthrough	Recurring	CMCARSWELL

14.3. Exporting Data

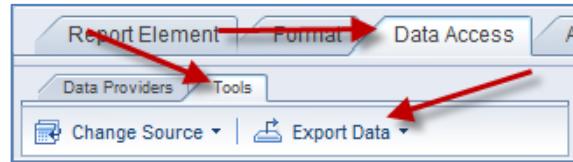
WeBI allows you to export data into Excel SpreadSheets. This can be useful to print or distribute reports to individuals who do not have access to WeBI.

There are two different processes for exporting your document depending on your WeBI View preferences: Applet, HTML, or PDF. The View preference can be changed following the process in section “Setting WeBI preferences.”

14.3.1. Applet or HTML Process

If your WeBI preferences are set to Applet or HTML, you will only be able to export your document as a .CSV (Comma Separated Values) file type. These can be opened by Excel or another SpreadSheet based program. The report will appear as a plainly formatted SpreadSheet.

1. Ensure you are on the Report tab that you wish to export. Select the “Data Access” tab and the Tools sub-tab. Click on “Export Data.”
2. Save the report to the desired location.

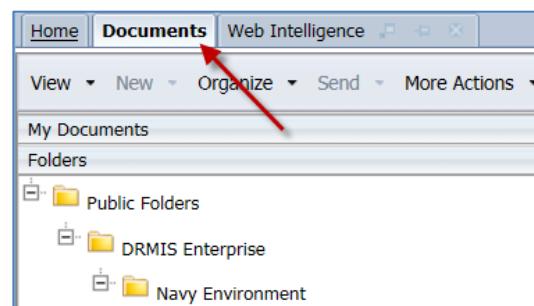


Note: It will only be able to save the first report tab of a document into the excel sheet.

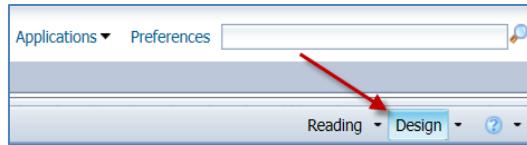
14.3.2. PDF Process

If your WeBI View preferences are set to PDF, you will have more options for exporting your document. Follow the process set in section “Setting WeBI preferences” to change your View preferences to PDF.

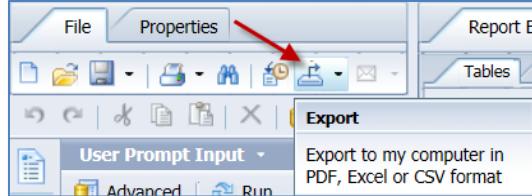
1. Select your document through the “Documents” tab filing system.



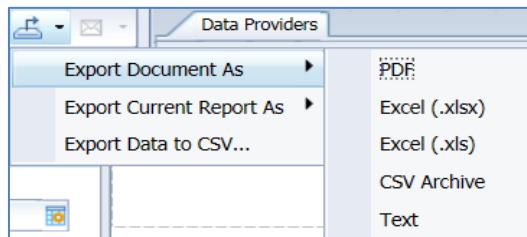
- Click on “Design.”



- Click on the “Export” button.



- You will be able to export the whole document or a single report tab as a PDF, Excel, text, or CSV archive file. Additionally, you can export the data (not the report) as a CSV file.



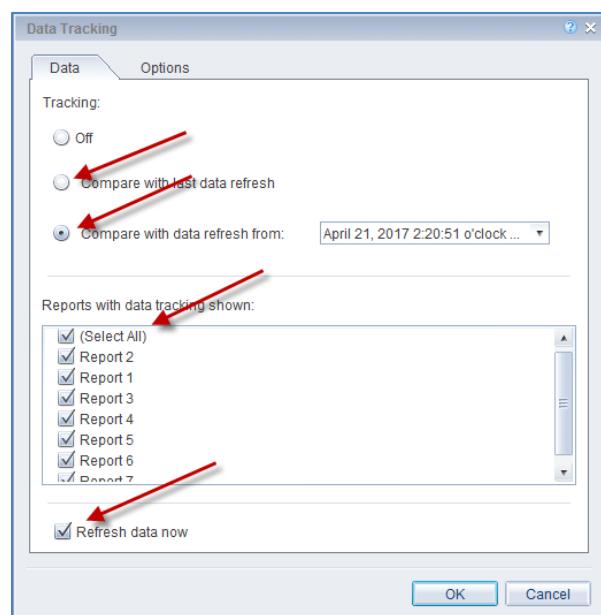
14.4. Data Tracking

When a report is updated, the difference in data points can be tracked to see progressions and differences. WeBI displays differences in data from a preset refresh and the latest refresh. You are able to choose from a selection of refreshes that you have done in that report previously.

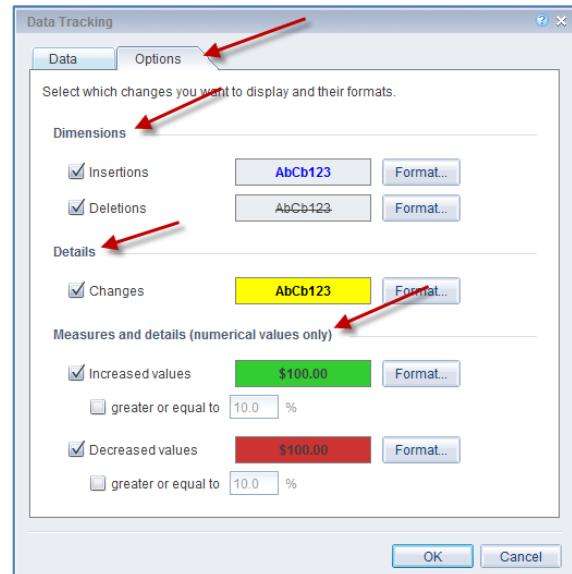
- Click on the “Track Changes” button in the bottom center of the report panel.



- You can either select “Compare with last data refresh” or “Compare with data refresh from:” and select the last refresh that you want to compare data against. Select which report you wish to track changes for. Select “Refresh data now” to refresh the report.



3. Under the options tab, you will be able to edit how changes in data are displayed. You will be able to edit how insertions, deletions, and changes in data are displayed.



Example: This small report displays changes in the latest update of total hours worked within a maintenance plant.

HMCS Calgary		HMCS Ottawa	
Calendar Year/Month	Total (RT+OT) Hours	Calendar Year/Month	Total (RT+OT) Hours
JAN 2017	6,362.36	JAN 2017	11,295.4
FEB 2017	7,202.44	FEB 2017	7,320.63
MAR 2017	3,726.13	MAR 2017	2,668.28
APR 2017	2,016.39	APR 2017	112

14.5. Reference Functions

Variables with Reference Functions can be created to show the previous data for a dimension and the difference between the current and previous data sets.

1. Create a variable. Use the function =RefValue() and enter the dimension that you want to reference.
2. Ensure that the variable Qualification is set to Measure. If it is set to dimension, it may only display the current value of the object, depending on the object type.

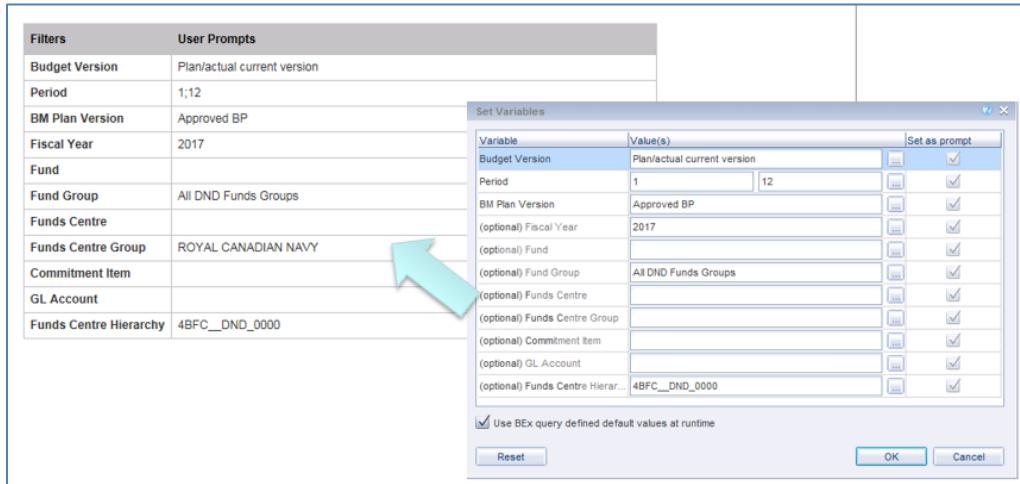
This will display the data set from the selected last refresh date.

Example: the below table displays work orders for FMF CB for April 2017 and shows the difference between the current data and the last update. Any changes with increased values will appear in a green cell.

Maintenance plant	Calendar Year/Month	Order	System Status Reference	Cur.System Status	Total Hours Reference	Total (RT+OT) Hours
CFB Esquimalt, FMF-CB	APR 2017	Safety Program	TECO	TECO	10.5	10.5
CFB Esquimalt, FMF-CB	APR 2017	Submarine Welding Certification Program	REL	REL	83	83
CFB Esquimalt, FMF-CB	APR 2017	Brazing & Welding Certification Program	REL	REL	204.5	211
CFB Esquimalt, FMF-CB	APR 2017	C4360-SHOP CONSOLIDATION PROJECT	REL	REL	508.58	514.58
CFB Esquimalt, FMF-CB	APR 2017	C4360-SHOP CONSOLIDATION PROJECT FY17/18	REL	REL	2	2
CFB Esquimalt, FMF-CB	APR 2017	WIP11 Plating Shop & Waste Trmt Fy17/18	REL	REL	69.5	77.5
CFB Esquimalt, FMF-CB	APR 2017	Static Dynamic TF	REL	REL	56	64
CFB Esquimalt, FMF-CB	APR 2017	Administration Overhead 16/17	REL	REL	2,610.92	2,708.66
CFB Esquimalt, FMF-CB	APR 2017	Administration Overhead 17/18	REL	REL	5,770.81	6,081.01
CFB Esquimalt, FMF-CB	APR 2017	Apprentice Training 16/17	REL	REL	386	402
CFB Esquimalt, FMF-CB	APR 2017	Apprentice Training 17/18	REL	REL	2,054.1	2,188.1
CFB Esquimalt, FMF-CB	APR 2017	Cause External Overhead 16/17	REL	REL	293.5	307
CFB Esquimalt, FMF-CB	APR 2017	Cause External Overhead 17/18	REL	REL	3,496.62	3,716.62
CFB Esquimalt, FMF-CB	APR 2017	Cause Internal Overhead 16/17	REL	REL	232.5	256.5
CFB Esquimalt, FMF-CB	APR 2017	Cause Internal Overhead 17/18	REL	REL	728.5	811.5

14.6. User Prompts

It is a good practice to populate the User Prompts quick reference (featured by template). This is useful for Consumers who cannot edit/verify Data Source filters/prompts. Use the UserResponse() function to verify/capture Data Source prompts.

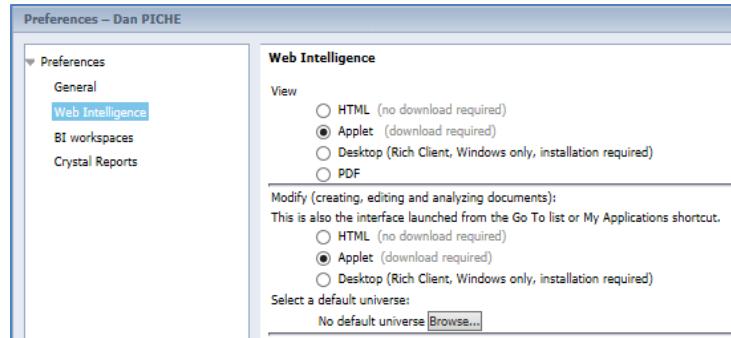


14.7. Moving Content between Web Intelligence Documents

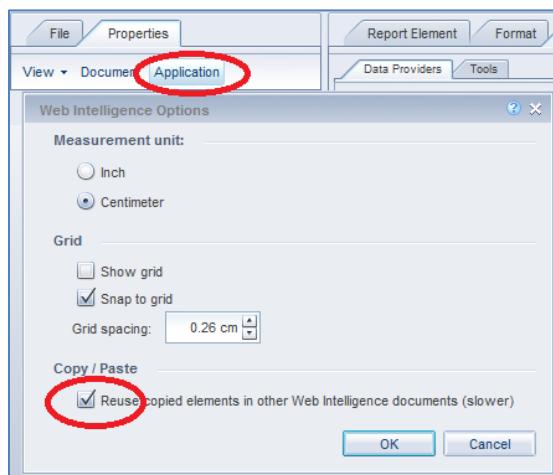
When moving content from inside a single Web Intelligence Document, you can right click on the object, select copy and paste it to another report tab.

To move objects from one Web Intelligence Document to another Web Intelligence Document follow the steps:

1. Ensure that your Preferences are set to Applet for View and Modify.
 - a. Click on Preferences.
 - b. Click on Web Intelligence.
 - c. Set the View to Applet.
 - d. Set the Modify to Applet.



2. Open the WebI document.
3. Enter into Design Mode.
4. Click on the “Properties” tab.
5. Click on the Application button.
6. Ensure that the check box “Reuse copied elements in other Web Intelligence documents (slower)” is selected.



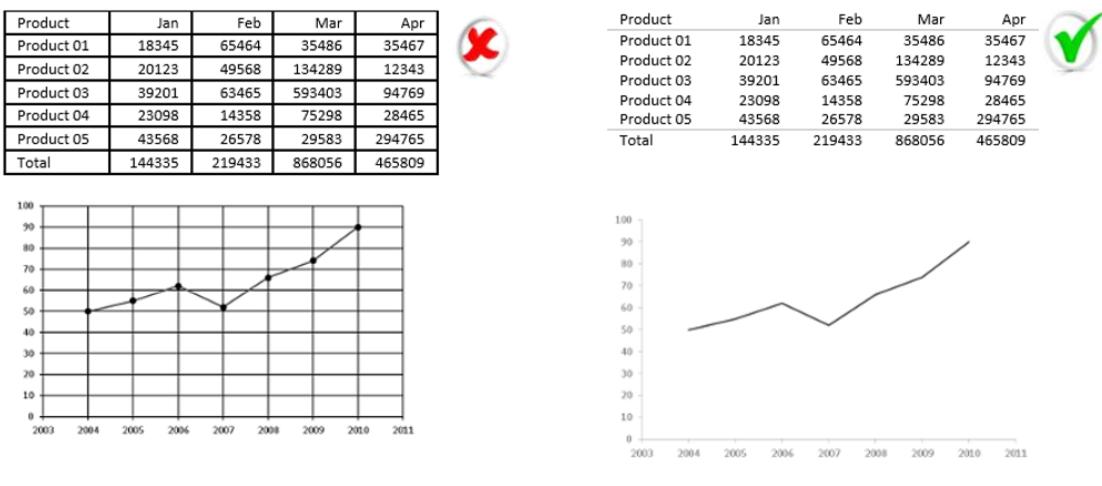
7. Right click on the object you want to copy, and click on “Copy.”
8. Go to the other WID and right click, and click on “Paste.”

14.8. Visualization Techniques

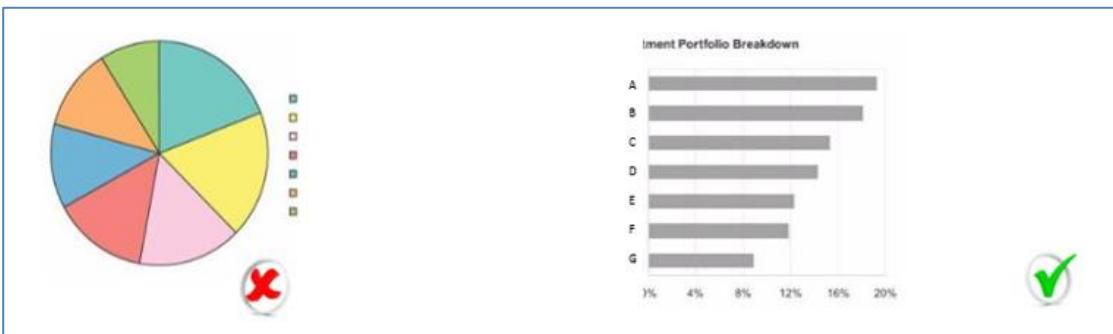
There is a separate course available for Visualization Techniques, however few key factors of better visualization are:

- Less is more
- No excessive whitespace
- Stay within canvas boundaries
- Easy interpretation
- Do not overload the user with unnecessary information

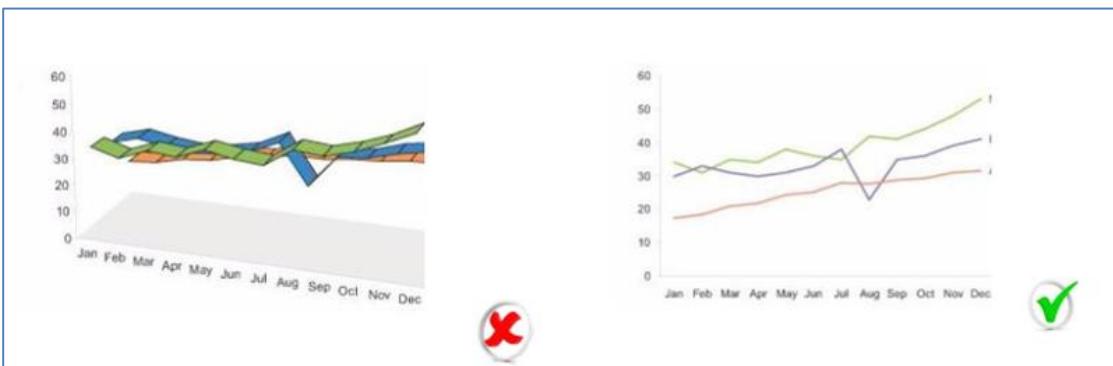
Too much information on a single report or too much prettying up of the charts/graphs only make it harder to interpret the data. The trick is to highlight the data by removing or deemphasizing non-data ink as much as possible.



Never use pie charts with more than 2 comparable values. They communicate data poorly because it is difficult to visually compare sizes when they have similar values. It is also difficult to match pie slices to the correct category by using the legend. Use bar charts instead.



Avoid useless embellishments such as 3D effects and shadows. These tend to clutter the graphs and make them more difficult to interpret.



15. Summary

In this course, you have learned how to use SAP BusinessObjects Web Intelligence to create analytical and ad-hoc reports for yourself and your department.

You can now create reports consuming data from DRMIS and from external sources using Excel files. Your reports can not only contain charts, tables and graphs but you can also incorporate filters, input controls, breaks, sections and sorting to make them more robust and user friendly.

You have also received exposure as to how to navigate in and around the BI Launch Pad and its new folder structure for your reports and for other departments' reports as well.

We hope you have enjoyed this training and we look forward to your feedback!

15.1. Exercise 26: Create your own Web Intelligence Document

Refer to the Exercise booklet.

