SENTURUS

Design Flexible Reports in Cognos Analytics

Whitepaper

May 2018

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I. Introduction

Upgrades, migrations and audits are just a few reasons why you will periodically need to test and validate every single report being used in your organization. It is during these times that you often realize the enormity of the volume of reports that exist (many of which look identical) and wonder if there are opportunities to consolidate. And when you are working in IBM Cognos Analytics, the answer is almost always YES!

There are various reasons why you may have several Cognos reports that are very similar. The three most common are

- Date filter requirements (monthly, MTD, YTD, and rolling 12 month)
- Layout requirements by output type (HTML, PDF, Excel)
- Top-ranked and bottom-ranked filtering requirements (top 2 regions by sales, bottom 3 products by profit)

In this whitepaper, we show you advanced reporting techniques – along with the step-by-step instructions – for consolidating reports for these three common categories.

II. Date Filter Requirements

One of the huge benefits of sourcing Cognos Analytics reports from cubes is often the ability to quickly modify the date context. A report author can quickly switch from showing month-to-date, quarter-to-date, year-to-date, rolling 8 quarters or an endless number of other date range options as those are typically defined in the cube and accessible via drag and drop. Unfortunately, a cube is not always available or practical for many business cases.

Relational data sources typically require the report author to create date range variations by using detail filters, which often results in multiple instances of the exact same report with the only difference being the date filters.

Let's look at one example and find a creative solution that will accommodate several user selected date range options in a single Cognos report.

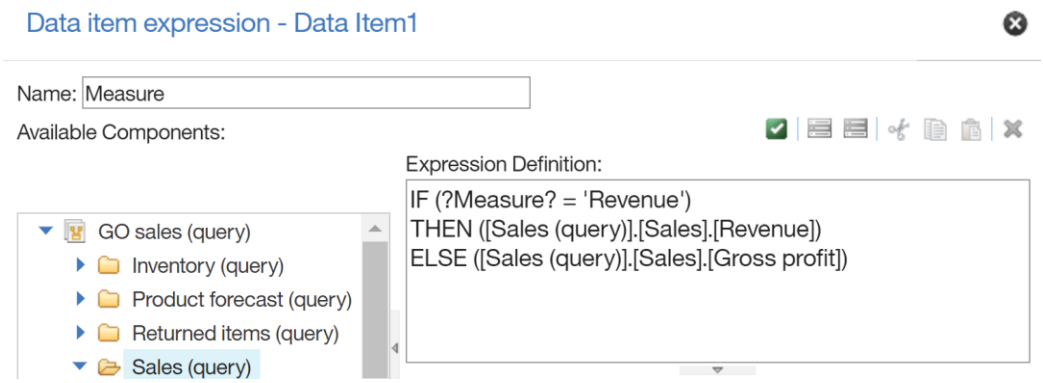
Business Requirement

Create a visualization that shows monthly revenue or gross profit with the ability to select a MTD, YTD or rolling 12 month time frame.

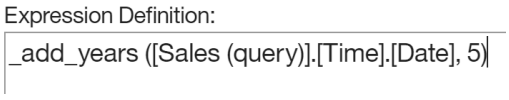
We want to give the end user the ability to select the time frame as well as the metric to evaluate performance.

Solution

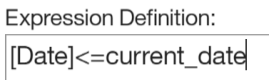
1. Create a **Column Chart** using the GO Sales (query) sample package.
2. Drag a **Query calculation** from the Toolbox into the **Default Measure** drop zone with the following expression:



3. Since our sample data is aged, we will simulate a current data set by adding five years to the data set. Navigate to the query and add the following query calculation named **Date** to the Data pane:

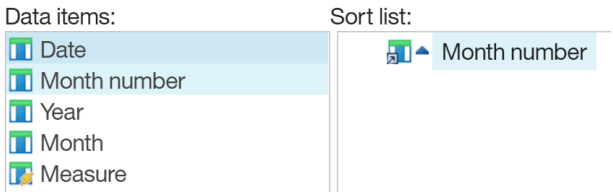


4. Eliminate future data by adding the following **detail filter**:

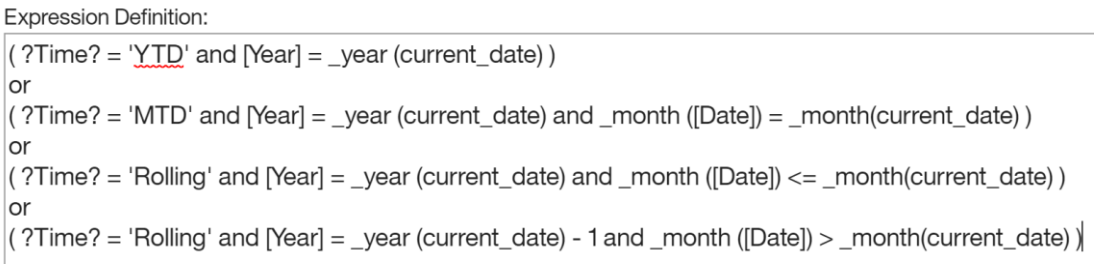


5. Select the Data tool, expand GO Sales (query) > Sales (query) > Time and drag **Month number** into the data pane.
6. Navigate back to the report page.
7. Drag a **query calculation** from the toolbox into the column chart **Series** drop zone with the following expression:

8. Select the Data tool and nest GO Sales (query) > Sales (query) Time > **Month** below Year.
9. Select the Month chart node member and **Edit Layout Sorting** using the on-demand toolbar.
10. Sort by Month number.



11. Create the following filter to accommodate our three-date range options:



12. Drag a **Table** from the Toolbox into the work area in the front of the chart.
13. Keep the default 2 columns by 1 row selections and deselect the **Maximize width** option.
14. Drag a **Value prompt** into the left cell of the table.
15. Choose **Use existing parameter** and select **Time**. Click Finish.
16. Add the following **Static choices** to populate the value prompt from the Properties pane:

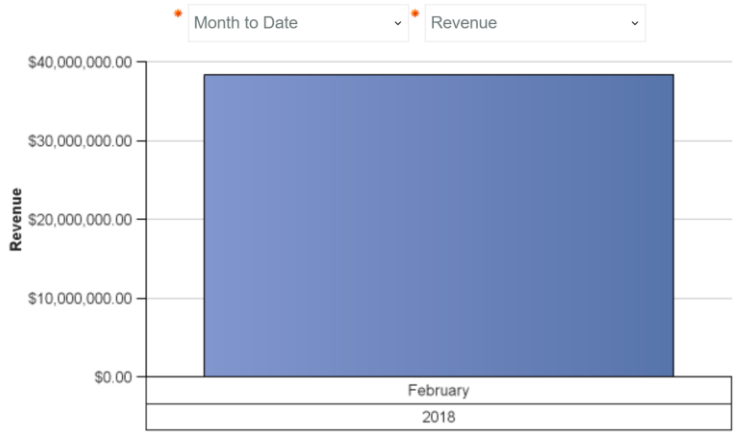
Use	Display
MTD	Month to Date
YTD	Year to Date
Rolling	Rolling 12 Months

17. Set the **Default selections** property to MTD.
18. Set the **Auto-submit** property to Yes.
19. Drag a **Value prompt** into the left cell of the table.
20. Choose **Use existing parameter** and select **Measure**. Click Finish.
21. Add the following **Static choices** to populate the value prompt from the Properties pane:

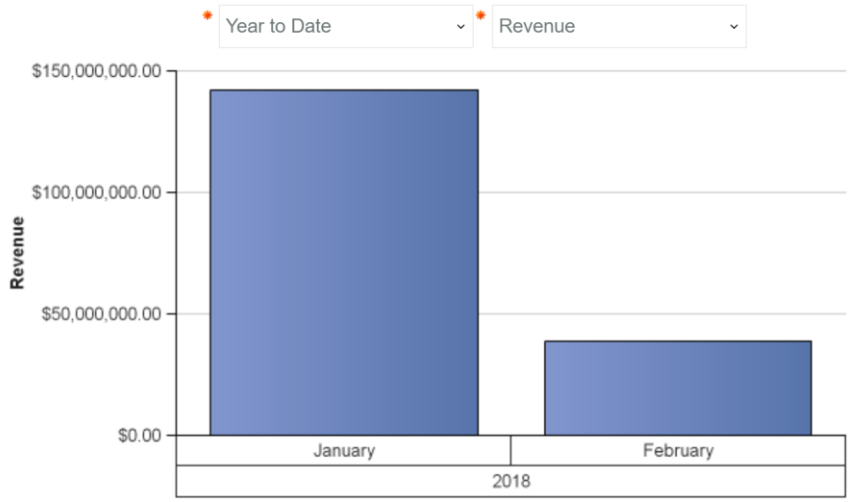
Use	Display
Revenue	Revenue
Gross Profit	Gross Profit

22. Set the **Default selections** property to Revenue.
23. Set the **Auto-submit** property to Yes.
24. Run the report and test the filters.

MTD Monthly Revenue



YTD Monthly Revenue



Rolling 12 Months Monthly Gross Profit

In Summary

Our design accommodates six report variations (3 date ranges x 2 measures) in a single report.

III. Flexible Report Layouts

There are many reasons why formatting changes need to vary by output type. Report title alignment, footnotes, formatting null values and conserving vertical or horizontal real estate are a few. Let's look at a creative solution for varying formatting by output type to eliminate the need for duplicate reports in Cognos Analytics.

Business Requirement

Create a report that provides the flexibility to analyze regional units ordered by order type for a user selected year and list of products. The year and products selected should be displayed on the report.

One of the challenges that we anticipate is the display of products selected could take up quite a bit of vertical real estate if displayed at the top of the report as we have hundreds of products. We will create a separate page with a single table to capture the parameter selections. We will reference this table on the report page within a sized block with the ability to use scrollbars if many products are chosen when the report is run HTML. We will create a separate page to display parameters when the report is run PDF.

Solution

1. Create the following **Crosstab** using the GO Sales (query) sample package:
   - Rows: GO Sales (query) > Sales staff > Sales region
   - Rows: GO Sales (query) > Sales staff > Country
   - Columns: GO Sales (query) > Order method > Order method type
   - Measures: GO Sales (query) > Sales > Quantity

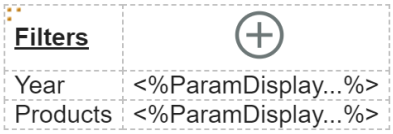
Quantity		<#Order method type#>	<#Order method type#>
<#Sales region#>	<#Country#>	<#1234#>	<#1234#>
	<#Country#>	<#1234#>	<#1234#>
<#Sales region#>	<#Country#>	<#1234#>	<#1234#>
	<#Country#>	<#1234#>	<#1234#>

2. Create a **Prompt page**.
3. Insert a 2 column 1 row **Table** (uncheck the maximize width option.
4. Drag a **Value prompt** into the first cell of the table.
5. Create a **Year** parameter. Click Next.
6. Select GO Sales (query) > Time > Year as the package item. Click Next.
7. Name the query **Year Prompt**. Click Finish.
8. Drag a **Value** prompt into the second cell of the table.
9. Create a **Product** parameter. Click Next.
10. Select GO Sales (query) > Products > Product as the package item.
11. Select the **"in"** operator. Click Next.
12. Name the query **Product Prompt**. Click Finish.

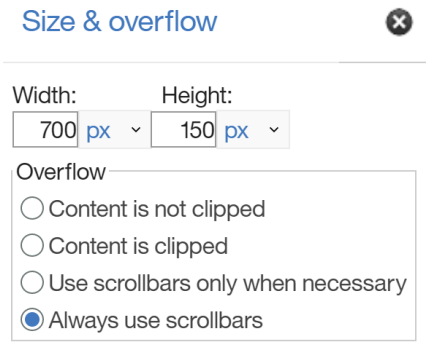
13. Set the height of the Product Prompt to 700px in the **Size and Overflow** property.
14. Run the report to test.

Quantity		E-mail	Fax	Mail	Sales visit	Special	Telephone	Web
Asia Pacific	Singapore	1,159	78,958	8,410	309,748	67,951	151,413	132,417
	Japan	293,332	77,083	36,349	21,369	12,598	558,618	218,245
	Korea	61,984		44,692	456,856			276,618
	China		17,539		2,428	42,206	113,974	952,397
Central Europe	Germany	459,953	19,796	31,229	262,042			230,063
	United Kingdom		10,270		9,349		479,835	513,158
	France	863	47,788	90,510	324,590		331,880	226,448
	Switzerland	241,929	136,822			19,978	487,587	4,563,947
	Belgium		8,161		53,433	7,907	10,998	126,950

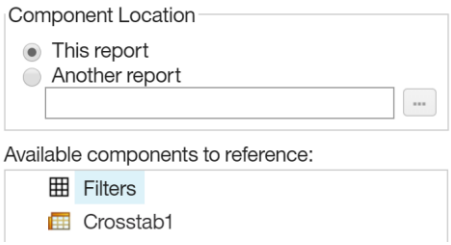
15. Create a new **Report page** and name it *Filter Selections*.
16. Add a **Table** with 2 columns and 3 rows, deselect the maximize width option.
17. Add a **Text item** in the top left cell and type ‘Filters’. Set the font to bold and underline.
18. Add a **Text item** in the middle left cell and type Year.
19. Add a **Text item** in the bottom left cell and type Products.
20. Drag a **Layout calculation** into the middle right cell. Drag in the Year parameter. Click OK.
21. Drag a **Layout calculation** into the bottom right cell. Drag in the Product parameter. Click OK.



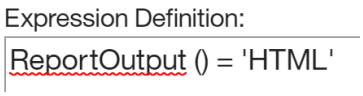
22. Select the table and name it *Filters*.
23. Navigate back to page1.
24. Drag a **Block** in front of the crosstab.
25. Set the size & overflow properties as follows:



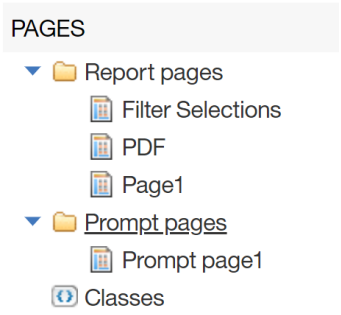
26. Drag a **Layout component reference** into the block and choose Filters.



27. Select the block and open the **Render variable** property.
28. Create a new **Boolean variable** named **HTML** with the following expression:



29. Click OK twice.
30. Create a new **Report page** and name it *PDF*:



31. Navigate to the PDF page.
32. Drag a **Layout component reference** into the work area and select Filters.
33. Navigate to the PDF page properties.

34. Open the **Render variable** property.
35. Create a new **Boolean variable** named **PDF** with the following expression:

Expression Definition:

```
ReportOutput ()='PDF'
```

36. Click OK twice.
37. Navigate to the Filter Selections page properties.
38. Open the **Render variable** property.
39. Create a new **Boolean variable** named **Hide** with the following expression:

Expression Definition:

```
1=0
```

40. Click OK twice.
41. Run the report with HTML and PDF output types.

HTML Output

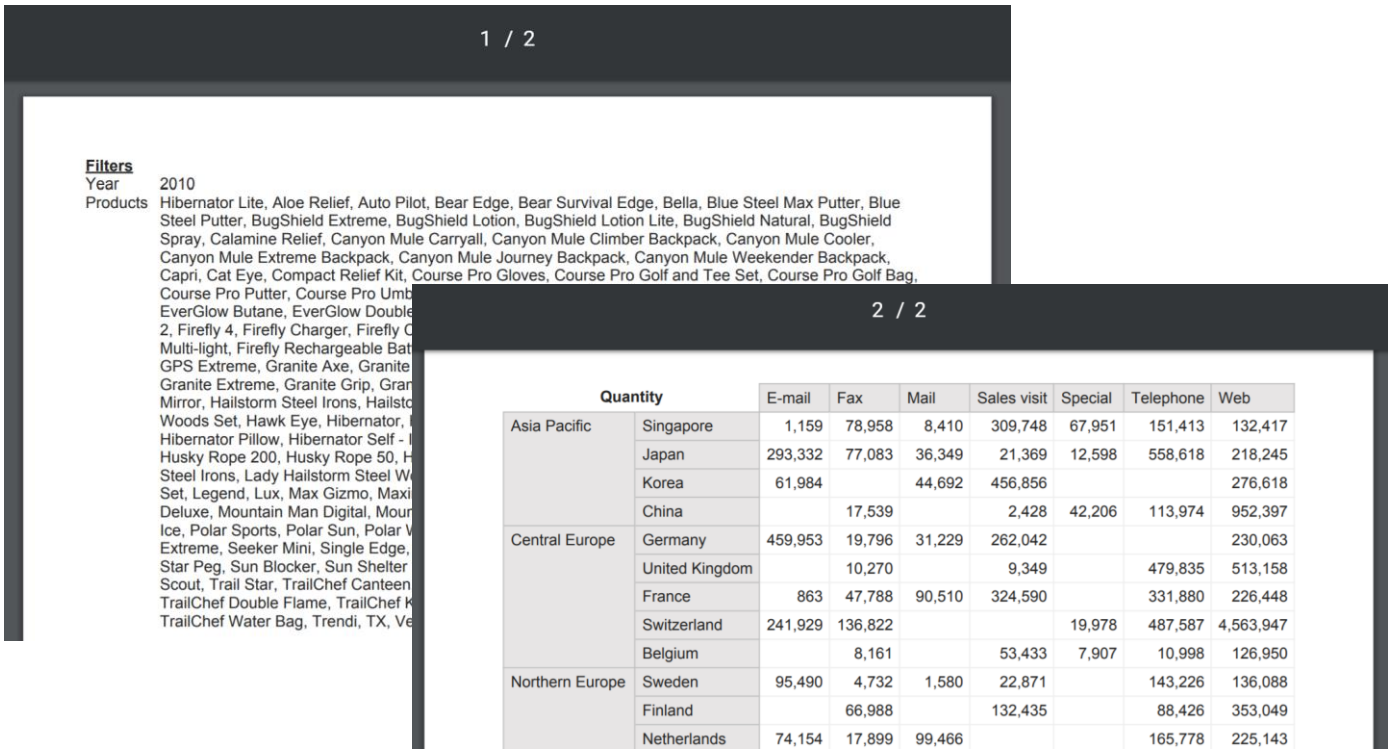
Filters

Year 2010

Products Hibernator Lite, Aloe Relief, Auto Pilot, Bear Edge, Bear Survival Edge, Bella, Blue Steel Max Putter, Blue Steel Putter, BugShield Extreme, BugShield Lotion, BugShield Lotion Lite, BugShield Natural, BugShield Spray, Calamine Relief, Canyon Mule Carryall, Canyon Mule Climber Backpack, Canyon Mule Cooler, Canyon Mule Extreme Backpack, Canyon Mule Journey Backpack, Canyon Mule Weekender Backpack, Capri, Cat Eye, Compact Relief Kit, Course Pro Gloves, Course Pro Golf and Tee Set, Course Pro Golf Bag, Course Pro Putter, Course Pro Umbrella, Dante, Deluxe Family Relief Kit, Double Edge, Edge Extreme, EverGlow Butane, EverGlow Double, EverGlow Kerosene, EverGlow Lamp, EverGlow

Quantity		E-mail	Fax	Mail	Sales visit	Special	Telephone	Web
Asia Pacific	Singapore	1,159	78,958	8,410	309,748	67,951	151,413	132,417
	Japan	293,332	77,083	36,349	21,369	12,598	558,618	218,245
	China		17,539		2,428	42,206	113,974	952,397
	Korea	61,984		44,692	456,856			276,618
Central Europe	Germany	459,953	19,796	31,229	262,042			230,063
	United Kingdom		10,270		9,349		479,835	513,158
	France	863	47,788	90,510	324,590		331,880	226,448
	Switzerland	241,929	136,822			19,978	487,587	4,563,947
	Belgium		8,161		53,433	7,907	10,998	126,950

PDF Output



In Summary

Not only have we created a single Cognos Analytics report that satisfies multiple layout requirements by output type, but by using a single filters table with layout component references, the table can be maintained in one place. If more prompts are added to the report, the display will only need to be added once and will be reflected appropriately for HTML and PDF outputs. The same techniques can be applied if additional output types (i.e. Excel) are adopted with specific layout requirements.

Tip: The “Filters Selected” page can be made into a general “Reusable Objects” page to house many objects that need to be used in different ways on various report pages.

IV. Top and Bottom Filtering

Some of the most valuable performance reports highlight top and bottom performers. Those are highly beneficial for trending, forecasting, continuing or modifying business objectives to be able to identify our top- and bottom-performing customers, products, services, locations, sales reps, seasons, etc. by metrics such as revenue, profit, cost, units sold, inventory, hours billed, etc.

While the inclination is often to design separate Cognos reports for all of these metrics, a more efficient approach may be to design a single report that can accommodate all of these different scenarios. Let's look at one example and a creative solution.

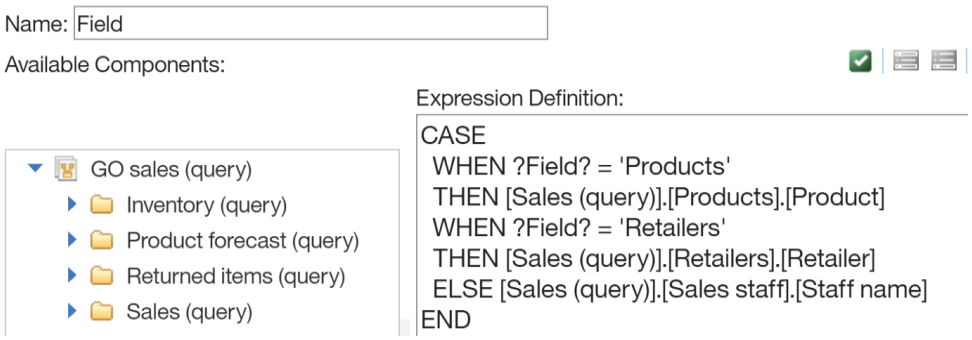
Business Requirement

Create a report that provides the flexibility to analyze top N or bottom N products, retailers or sales reps by either revenue or gross profit.

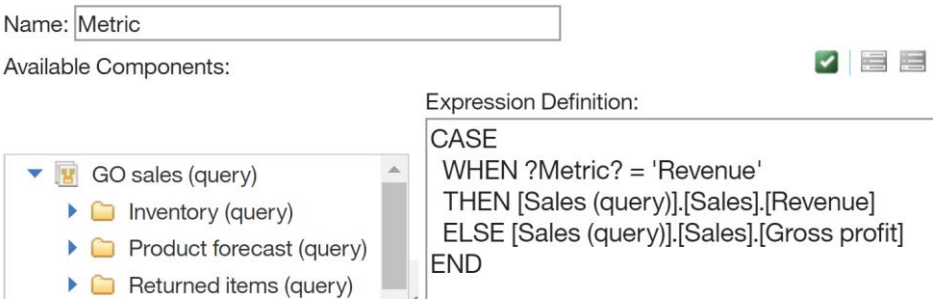
We want to give the end user the ability to select top or bottom performers, the number of performers to return, what to evaluate and which metric to use as criteria.

Solution

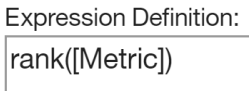
1. Create a **List** using the GO Sales (query) sample package.
2. Drag a **Query calculation** from the Toolbox into the list named **Field** with the following expression:



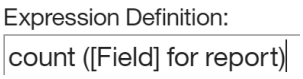
3. Drag a second **Query calculation** into the list named **Metric** with the following expression:



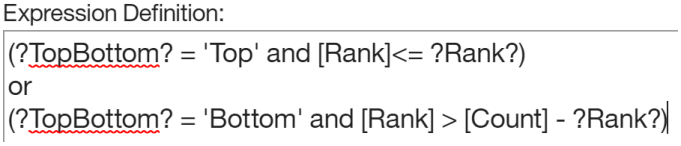
4. Drag a third **Query calculation** into the list named **Rank** with the following expression:



5. Drag a fourth **Query calculation** into the list named **Count** with the following expression:



6. Select the **Filter** button from the list on-demand toolbar and create the following detail filter:



7. Set the filter application to **After auto aggregation**.
8. **Cut** the Rank and Count columns from the list (they will remain in the query).
9. Delete any summary cells.
10. Drag a **Table** in front of the list and set the dimensions to 6 columns by 1 row, deselect the maximize width option.
11. Drag a **Value prompt** into the first cell of the table.
12. Choose **Use existing parameter** and select TopBottom. Click Finish.
13. Open the **Static choices** property and add the following to populate the prompt:

Use	Display
Top	Top
Bottom	Bottom

14. Set the **Default selections** property to Top.
15. Drag a **Text box prompt** into the second cell of the table.
16. Choose **Use existing parameter** and select Rank. Click Finish.
17. Set the **Default selections** property to 10.
18. Drag a **Value prompt** into the third cell of the table.
19. Choose **Use existing parameter** and select Field. Click Finish.
20. Open the **Static choices** property and add the following to populate the prompt:

Use	Display
Products	Products
Retailers	Retailers
Sales Reps	Sales Reps

21. Set the **Default selections** property to Products.
22. Click the **Add** tool in the fourth cell and choose Text. Type ‘by’ and click OK.
23. Drag a **Value prompt** into the fifth cell of the table.
24. Choose **Use existing parameter** and select Metric. Click Finish.
25. Open the **Static choices** property and add the following to populate the prompt:

Use	Display
Revenue	Revenue
Gross Profit	Gross Profit

26. Set the **Default selections** property to Revenue.
27. Drag a **Prompt button** into the sixth cell of the table.
28. Set the **Type** property to Reprompt.
29. Drag a **Text** item into the prompts button and type **Submit**.
30. Run the report and test the filters.

Top 5 Sales Reps by Revenue

Top 5 Sales Reps by Revenue Submit

Staff name	Revenue
Fausta Bruno	$79,955,838.92
Roderick Albiñana	$75,976,074.43
Nathalie Benoit	$72,931,106.06
Fiorenza Giordano	$72,784,594.30
Roger Bakker	$64,998,858.61

Bottom 3 Products by Gross Profit

Bottom 3 Products by Gross Profit Submit

Product	Gross profit
Insect Bite Relief	$568,594.14
Aloe Relief	$463,426.99
Calamine Relief	$371,030.12

In Summary

The end user has the ability to select top or bottom performers, the number of performers to return, what to evaluate and the which metric to use as criteria in a single report.

V. Senturus Training

The techniques outlined above are some of those covered in our expert training classes for Cognos Analytics. They reflect the types of applicable, real-life techniques taught in Senturus training classes as well as the caliber of instruction you will receive at the hands of our instructors, each of whom is a bona fide senior expert in his or her respective field. In addition to covering platform basics, we pass on practical methodologies that are you won't find in a manual…or most other training courses.

To learn more about our Cognos training and all our curriculum, visit https://www.senturus.com/training/course-schedule/

VI. About the Author

This paper was authored by one of our instructors, September Clementin. September is not only a top-notch Cognos instructor, but a hands-on report developer with over 15 years of expert level experience with the Cognos suite, and extensive experience with Tableau, Business Objects, Crystal and PeopleSoft.

VII. About Senturus

Founded in 2001, Senturus is a nationwide consulting firm focused exclusively on business analytics. We design and implement systems that provide organizations with reliable data across business units so they can quickly get strategic insights. Senturus offers a robust suite of services from system architecture to upgrades and migrations and training on Cognos, Tableau, Microsoft and TM1. A tool agnostic team of world-class business and technical experts, we bridge the gap between business and IT. Senturus has helped over 1000 clients in a wide range of industries to achieve self-service analysis, agile reporting and timely data that result from well-designed business analytics. To learn more about Senturus, visit http://www.senturus.com.