

5 Process Analytics

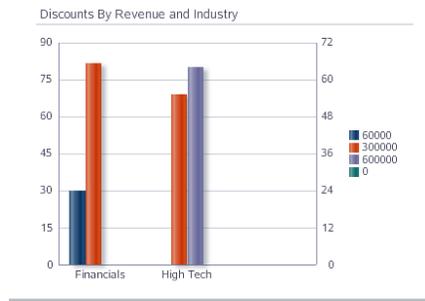
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5.1. Adding Process Analytics Specification to BPMN Process

Note: The solution for this chapter can be found in `c:\bpm\solutions\05-analytics.zip`

In this lab, you add process analytics information to the Sales Quote process.

For the purposes of this lab, you analyze discounts offered to understand its distribution across deal sizes (total net revenue) and industries. At the end of this lab, you will have created the following dashboard:



5.1. Adding Business Indicators

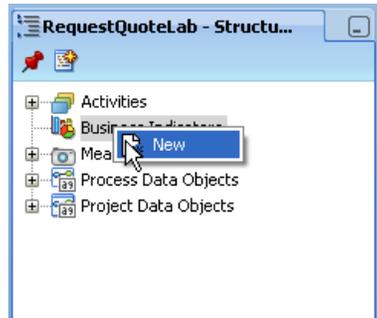
Process Analytics capture standard data such as workload and cycle time and process specific data. Business Indicators are used to specify what process specific data should be captured. There are 3 types of Business Indicators supported:

- **Measures** – These are numerical data that typically signify a value that is interesting in process analytics. In this scenario, you create a measure for **discount**.
- **Dimensions** – These specify how process analytic data may be sliced. A dimension has to have a finite set of values. In cases where it is not, such as for numbers and date/time, a set of ranges must be specified for the data. In this scenario, you create dimensions for **industry** and **revenue**, where revenue is a numerical dimension, and needs ranges to be specified.
- **Counters** – As the name indicates, these are useful for counting iterations. In this scenario, you add a counter to count the number of times the quote needs to be

revised. The number of iterations is clearly an interesting data point for analytics and can be used for creating dashboards as a challenge exercise.

Now add the measures, dimensions, and counters for analyzing the process.

1. Add a **dimension** business indicator for revenue, **revenueDimension** as follows
 - a. In BPM Studio, open the **RequestQuoteLab** BPMN process and select it by clicking on an empty spot on the canvas. This opens the **Structure** panel with the BPM process context.
 - b. Navigate to the **Structure** panel; if it is not open, you can open it using Ctrl+Shift+S or selecting **Structure** in the **View** menu
 - c. Right click on **Business Indicators** and select **New**



- d. Specify the following values:
 - Name:** *revenueDimension*
 - Business Indicator:** Dimension
 - Type:** Int

Revenue could be a *measure* as well; therefore name it with Dimension **suffix** to remind you how it is to be used.

Bug: In this scenario, since revenue is a *double*, it would make sense to use *Decimal* type. However, a bug in the current version makes us use *Int*, forcing us to do rounding later.

- e. Specify ranges for dividing numerical **revenue** data into finite set of values:

Name	Start	Finish
<100K	0	100000
100K – 250K	100001	250000
250K – 500K	250001	500000
>500K	500001	214783646

The above ranges are just suggestions; you can choose any values that make sense to you

Tip: 214783646 is the largest value possible (in future, we may allow easier specification of upper and lower ends)

Create Business Indicator

Name: revenueDimension

Business Indicator: Dimension

Type: Int

Range

Name	Start	Finish
<100k	0	100000
100k-250k	100001	250000
250k-500k	250001	500000
>500k	500001	214783646

Auto initialize

Help OK Cancel

2. Add another **Dimension** business indicator for industry, **industry**

a. Specify the following values:

Name: *industry*

Business Indicator: Dimension

Type: String

Create Business Indicator

Name: industry

Business Indicator: Dimension

Type: String

Range

Name	Start	Finish
------	-------	--------

Auto initialize

Help OK Cancel

3. Add **Measure** business indicator for discount, **discount**

a. Specify the following values:

Name: *discount*

Business Indicator: Measure

Type: Int

Edit Business Indicator

Name: discount

Business Indicator: Measure

Type: Int

Range

Name	Start	Finish
------	-------	--------

Auto initialize

Help OK Cancel

4. Add **Counter** business indicator for counting number of times Quote is revised, **numQuoteEdits**

- a. Specify the following values:

Name: *numQuoteEdits*

Business Indicator: Counter

The screenshot shows a 'Create Business Indicator' dialog box with the following fields and options:

- Name:** numQuoteEdits
- Business Indicator:** Counter
- Type:** Int
- Range:** A table with columns Name, Start, and Finish. The table is currently empty.
- Auto initialize:**
- Buttons:** Help, OK, Cancel

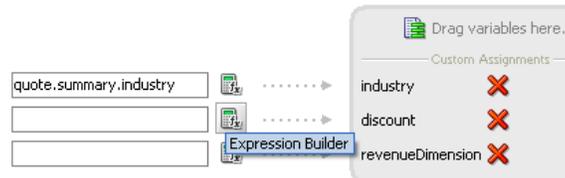
5.2. Assigning Data to Business Indicators

Now that we have defined our business indicators, we need to assign data to them. Business indicators behave just like other **data objects** regarding data assignment (association). That is, data can be assigned to them either as part of an activity's output data association or within a **Script** activity.

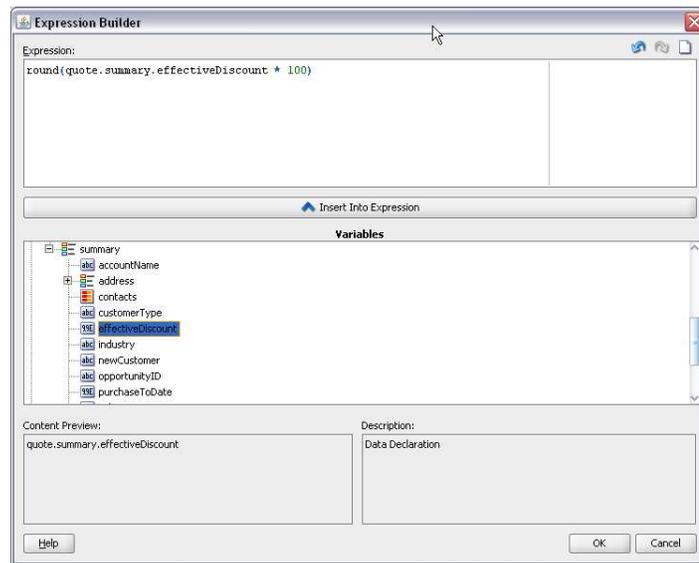
Since, in this scenario, the **Enter Quote Details** output data association is already used for assigning to **quote** data object, use a **Script** activity to assign data to the business indicators from the **quote** data object.

1. Add **Script** activity, **Assign Indicators**, after **Enter Quote Details** activity as follows
 - a. Click on the **Script** activity in the **Component Palette**
 - b. Move mouse over the connector between **Enter Quote Details** activity and **Is Business Practices Required?** gateway
 - c. When the connector turns blue, click on it
 - d. In the properties dialog box, specify **Name** as *Assign Indicators*
2. Create data associations for the Assign Indicators activity as follows
 - a. Select the **Implementation** tab of the properties dialog box (if not open from previous step, double click on **Assign Indicators** activity)
 - b. Check **Use Associations** in the Data Associations sub-panel, leave **Type** as **Simple**, and click on the pencil icon
3. Assign data to **industry**, **discount**, and **revenueDimension** as follows
 - a. Drag and drop **industry** into the variables panel
 - b. Drag and drop **discount** into the variables panel
 - c. Drag and drop **revenueDimension** into the variables panel
 - d. In the right hand panel, expand **RequestQuoteLab** node, then its **quote** child node, then its **summary** child node

- e. Drag and drop **industry** to the source (left input text box) for **industry** indicator
- f. To set the **discount**, click the **Expression Builder** icon to the right of the left input box for discount indicator

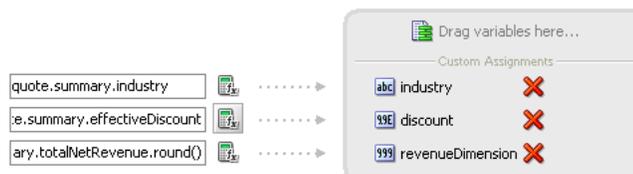


- g. Enter the expression `round(quote.summary.effectiveDiscount * 100)` and click **OK**



Note: This formula for the discount indicator expects that the effectiveDiscount value coming from the page is a percentage value in decimal form, that is, a value like .25 for 25%. In lab 10, you customize this form so that the user can enter the integer value for the discount. **For now, you must enter the decimal value for analytics to work properly.**

- h. Again, use the Expression Builder to set the expression for **revenueDimension** indicator to `round(quote.summary.totalNetRevenue)` and click **OK**.
- i. The completed expressions look like this. Note the changed syntax of the **round** function.



- j. Click **OK**, and click **OK** again to close the Properties dialog.

5.3. Adding Measurement Mark

By default, process analytic data is specified at the project level and there are 3 settings possible:

- Generate for interactive activities only
- Generate for all activities
- Do not generate

Measurement marks provide a way to add additional capture points. In addition to providing additional capture points, Measurement marks also:

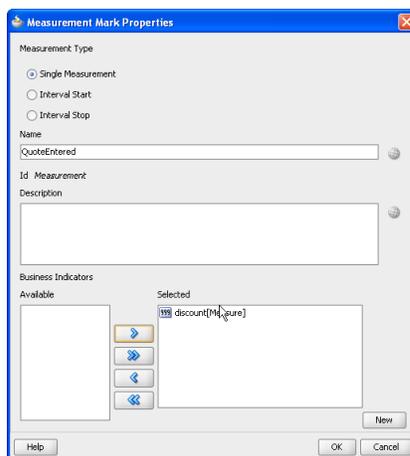
- Allow specification of a business name which can be used for filtering during analysis
- Provide a visual notation to indicate the capture point

If it is someone's preference not to have measurement marks displayed on the canvas, it is possible to specify equivalent capture points by using the **Sampling Point** property of preceding activity.

In addition to above, Measurement Marks also support **Start** and **End**, which can be used in combination to create a logical activity. One can think of it as a virtual embedded sub-process, only applicable for analytics. This lab does not use this aspect of Measurement Marks.

In the previous section, you used a **Script** activity to assign data to business indicators. Since process analytic data is by default not captured after automatic activities, unless you specify capture, it will not be captured till the next interactive activity is completed. Since you want to track quotes as soon as they are entered, you need to specify a measurement mark.

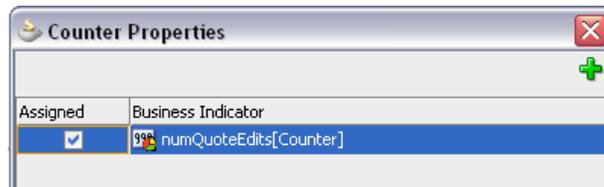
1. Add a measurement, **QuoteEntered**, after **Assign Indicators** activity as follows
 - a. Expand the **Artifacts** accordion in the **Component Palette**
 - b. Click on **Measurement**
 - c. Move mouse over the connector between **Assign Indicators** activity and **Is Business Practices Required?** gateway
 - d. When the connector turns blue, click on it
2. Specify measurement properties
 - a. **Measurement Type**: Single Measurement
 - b. **Name**: *QuoteEntered*
 - c. Move **discount** business indicator to selected and click **OK**



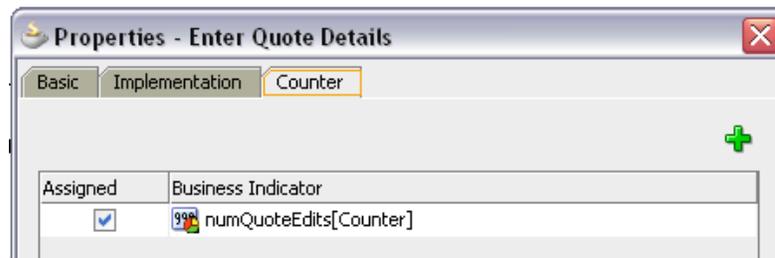
5.4. Adding Counter

In this scenario, you want to track how many times a Quote has to be revised (due to rejections).

1. Right click on **Enter Quote Details**, select **New Counter Mark**
2. In **Counter Properties** dialog, select **numQuoteEdits** and click **OK**



Once the counter is created you can view it from **Properties** on the **Counter** tab.



5.5. Running Instances to Create Sample Data

As described below, deploy the new version of the process and run a few instances so that during dashboard creation in the next section some data is already available to view.

1. Deploy the updated project

Important Tip: Since there are no changes to the UI, remember to unselect all Task Forms before deploying. You do not have to deploy them every time you deploy the composite.

2. Log in as jcooper and initiate a few instances; specify any interesting mix for the following fields.
 - a. industry
 - b. totalNetRevenue
 - c. discount

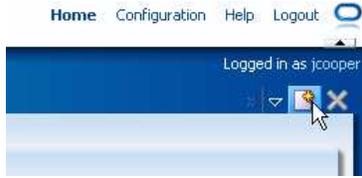
Because these fields are referenced in the process do not leave them blank.

3. Login as cdickens and submit the **Approve Deal** task

5.6. Creating Dashboards

In this section, you create the custom dashboard shown in the beginning of this lab – one that allows you to analyze **discounts** by **revenue** and **industry**.

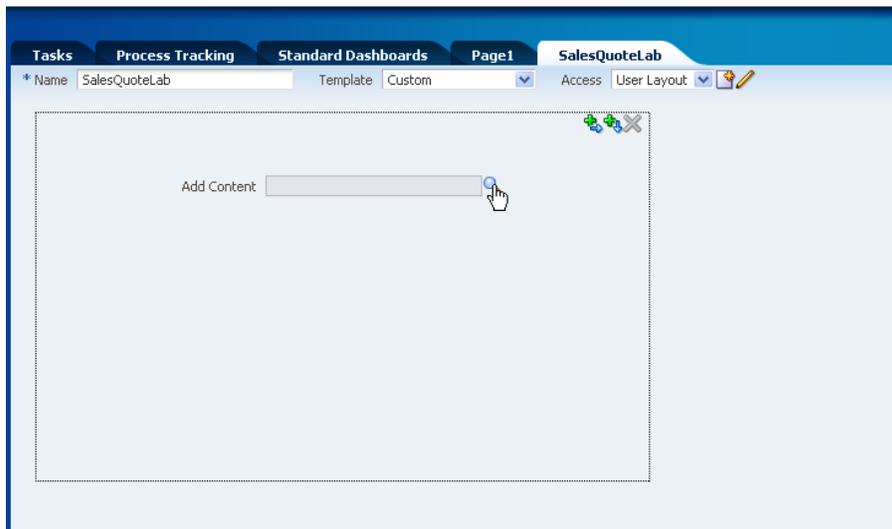
1. Log in to **Workspace** as jcooper
2. Click on the **New Page** icon (document with +) on the right top corner



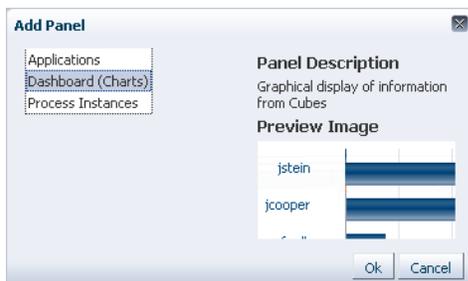
3. Give the page a meaningful name and then click on the **Add Panel** button on the far right.



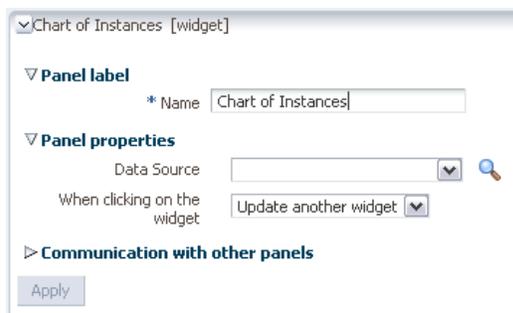
ORACLE Business Process Workspace



4. Select **Dashboard (Charts)** and select **OK**



5. Enter a meaningful name and then click on the **Magnifying Glass** next to **Data Source**



6. Click on the new icon and specify the following for the newly created data source
 - a. **Name:** Discounts-Revenue-Industry
 - b. **Title:** Discounts By Revenue and Industry
 - c. **Graph Type:** BAR_VERT_CLUST

Information: Among other usability enhancements, the graph selector will be enhanced to provide a visual cue to aide graph type selection.

- d. **Process:** [QuoteProcessLab] RequestQuoteLab
- e. **Data type:** Activity and Measurement Sampling

The three data type choices are:

- **Workload:** The workload tables capture workload and aggregated analytic data
- **Activity and Measurement Sampling:** This is essentially a snapshot of analytic data at the activity level
- **Process Level Sampling:** This is a snapshot of analytic data at the process level (and will be available only for completed instances)

Based on the above, since we want snapshot data after the Assign Indicators activity, we need to use **Activity Performance**.

- f. **Dimension Series:** revenueDimension
- g. **Dimension Group:** industry
- h. **Measure Variable:** discount
- i. **Measure Operation Type:** avg

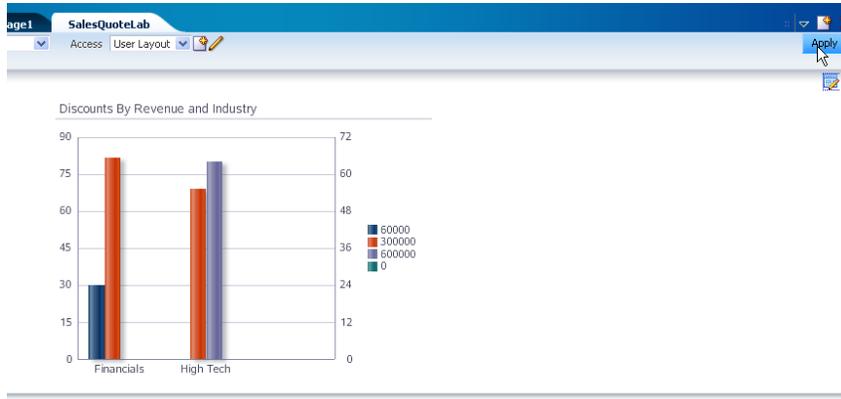
The screenshot shows the 'Data Sources' configuration window. The fields are as follows:

- Name:** Discounts-Revenue-Industry
- Title:** Discounts By Revenue and Industry
- Graph type:** BAR_VERT_CLUST
- Process:** [QuoteProcessLab] RequestQuoteLab
- Data type:** Activity and Measurement Sampling
- Dimension:**
 - Series: revenueDimension (Use range? checked)
 - Group: industry (Use range? unchecked)
 - Drilldown to Series: (Use range? unchecked)
- Measure:**
 - Variable: discount
 - Operation type: avg (selected), min, max, sum
 - Value type: Value (selected), Day(s), Hours, Minutes, Seconds, Percentage
- Filters:**
 - Conditions: Revision (Add condition button, Match, All, Any)

7. Click **OK**
8. Click **Apply** within the **Panel** (not to be confused with Apply at the page level)
9. Click on the **View Mode** icon on the right hand top corner of the panel



10. Click **Apply** at the page level



5.7. Next Step

You can continue with the next lab to integrate the process analytic information with Oracle Business Activity Monitoring (BAM).