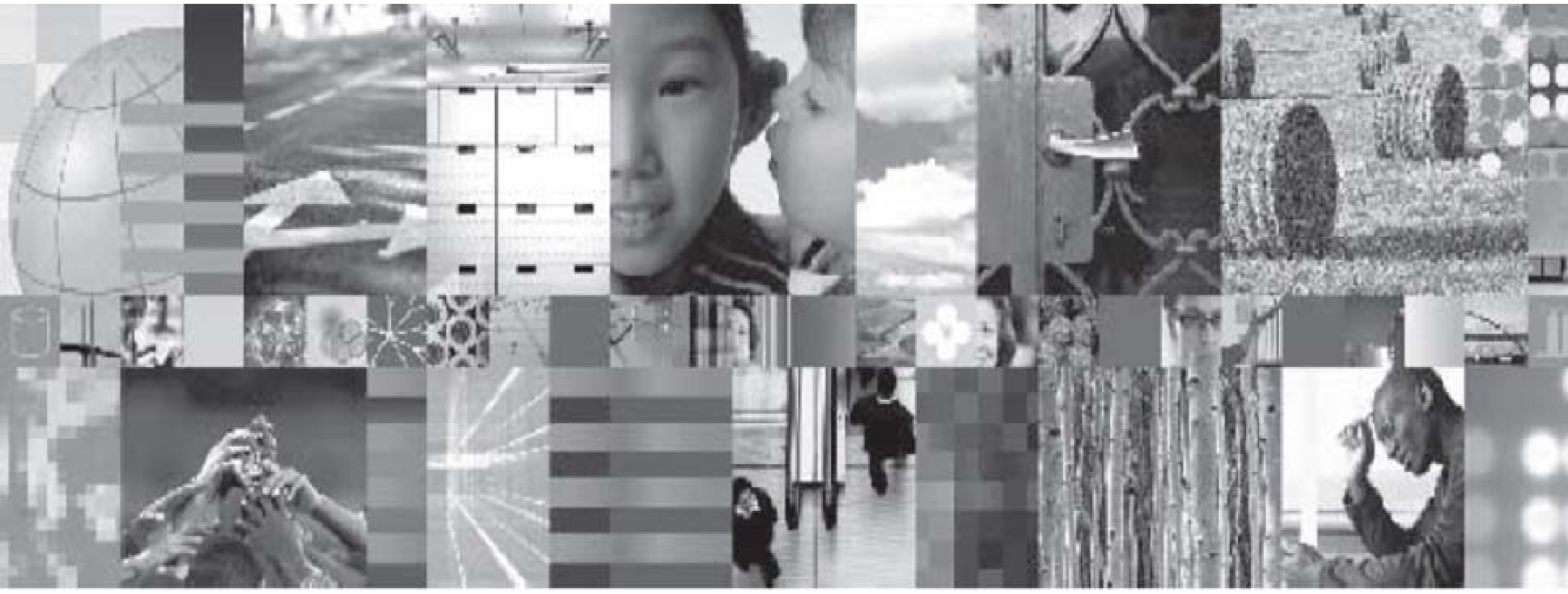
WebSphere® Monitor

Version 6.0.2



Generating a Monitor Model for a BPEL process

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Overview

This sample aims to demonstrate how to monitor a Business Process Execution Language (BPEL) business process. The BPEL process that is used was built using IBM WebSphere® Integration Developer, V6.0.2, and runs on WebSphere Process Server, V6.0.2. It makes use of a number of WebSphere Process Server capabilities such as human tasks.

This sample does not cover creating the BPEL process and application. Instead it shows you how to build the monitor model so that you can monitor the BPEL process using WebSphere Business Monitor, V6.0.2. The sample covers all steps from development to deployment.

You can follow the steps provided to build the monitor model yourself, which will help you learn how to build monitor models for BPEL processes. Alternatively, you can skip the process of actually building the monitor model and instead look at a solution that this exercise provides.

When building the monitor model you will see how you first enable the event production for the BPEL process, then generate a monitor model for these events, and then augment it with specific business measurements such as metrics and key performance indicators (KPIs).

The BPEL process used in this sample is the ClipsAndTacks Order Handling process, which is adapted from the IBM Redbooks® publication, Business Process Management: Modeling through Monitoring Using WebSphere V6 Products, SG247148. This Redbooks publication refers to several models. This sample uses the Order Handling Future 1 Process.

The application in the Redbooks publication also includes the following items that you can use to test the BPEL business process:

- A Web front-end application, ClipsAndTacksFrontWeb. This interface is available to submit orders to drive events through the ClipsAndTacks future 1 process.
- Human task JSP pages in a Web application named ClipsAndTacksHumanCustomWeb. This application provides a simple interface to the handle the human tasks for the BPEL process.

For more information about the Order Handling Future1 BPEL application, refer to the Redbooks publication at:

http://www.redbooks.ibm.com/abstracts/sg247148.html.

Sample Project Interchange file and EAR files

- ClipsAndTacksBPELMMPI.zip: This Project Interchange file contains the complete solution for this sample, and can be immediately imported into WebSphere Integration Developer. It includes the BPEL application and the completed monitor model.
- ClipsAndTacksBPELProcessPI3.zip: This file contains the BPEL application only, and is a starting point for this sample.
- ClipsAndTacksBPELMMEAR.ear, ClipsAndTacksApp.ear and ClipsAndTacksHumanCustomEAR.ear: These are generated enterprise archive (EAR) files that are ready to be deployed on the Monitor Server.
- The Scalable Vector Graphics (SVG) diagrams for this sample:
  - KM_Order_Handling__x0028_Future_1_x0029__KC.svg
  - MDM_Order_Handling__x0028_Future_1_x0029__MC.svg

Software requirements

To complete this sample, you must have the following software installed:

- WebSphere Integration Developer, V6.0.2
- WebSphere Business Monitor, V6.0.2
  - WebSphere Business Monitor Development Toolkit
  - Basic Installation including the Dashboard Server and Monitor Server
- Adobe SVG Viewer, a freeware browser plug-in for viewing SVG images within Web pages; download from:
  http://www.adobe.com/svg/viewer/install/

Part 1. Import the BPEL process

If you do not want to work through this sample you can import the complete solution for this sample, which is provided as a Project Interchange file that can be immediately imported into WebSphere Integration Developer. It includes the BPEL application, and the completed monitor model. See Appendix A1 for instructions on importing the Project Interchange file.

Note: There is a Problems page that displays errors concerning the model. Periodically check this view to see if there are any problems that need to be addressed.

____ 1. Start WebSphere Integration Developer and set up the environment.

__ a. Start WebSphere Integration Developer, V6.0.2, and when prompted, point to a new workspace, such as C:\workspaces\ClipsAndTacksBPEL.

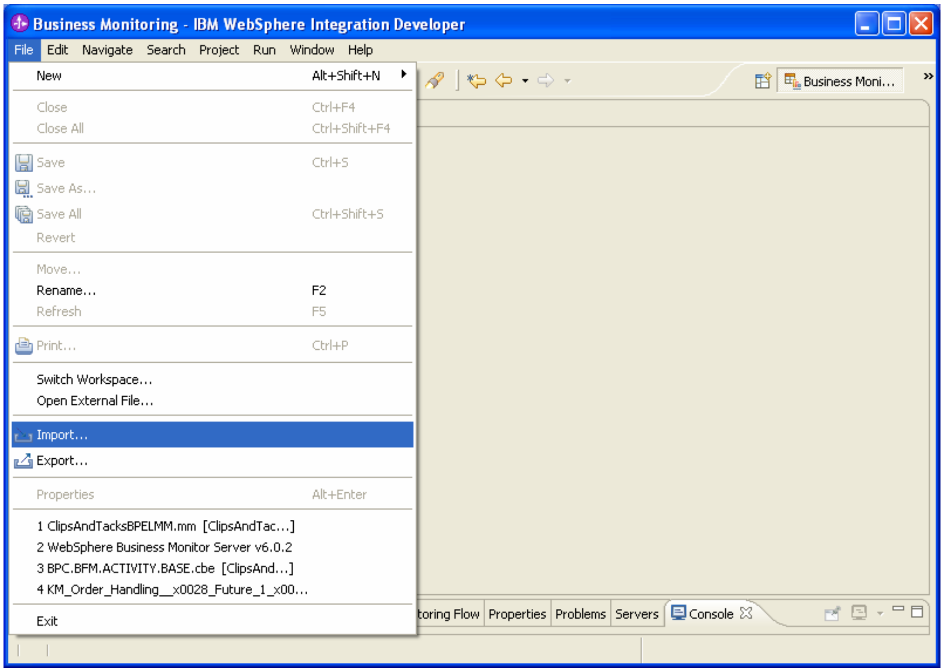
__ b. Close the Welcome page. By default, you are in the Business Integration perspective.

__ c. If you are asked to confirm enablement, click **OK**.

____ 2. Import the Project Interchange file for the ClipsAndTacks Future 1 business process (ClipsAndTacksBPELProcessPI3.zip) into WebSphere Integration Developer, V6.0.2 as shown in the following example. Wait for the project to be built, which takes a few minutes. This Project Interchange file also includes a Web front-end application to submit customer orders to the business process. This application allows users to select products and place orders that are entered into a Cloudscape database. This application is embedded in the ClipsAndTacksApp.ear file.

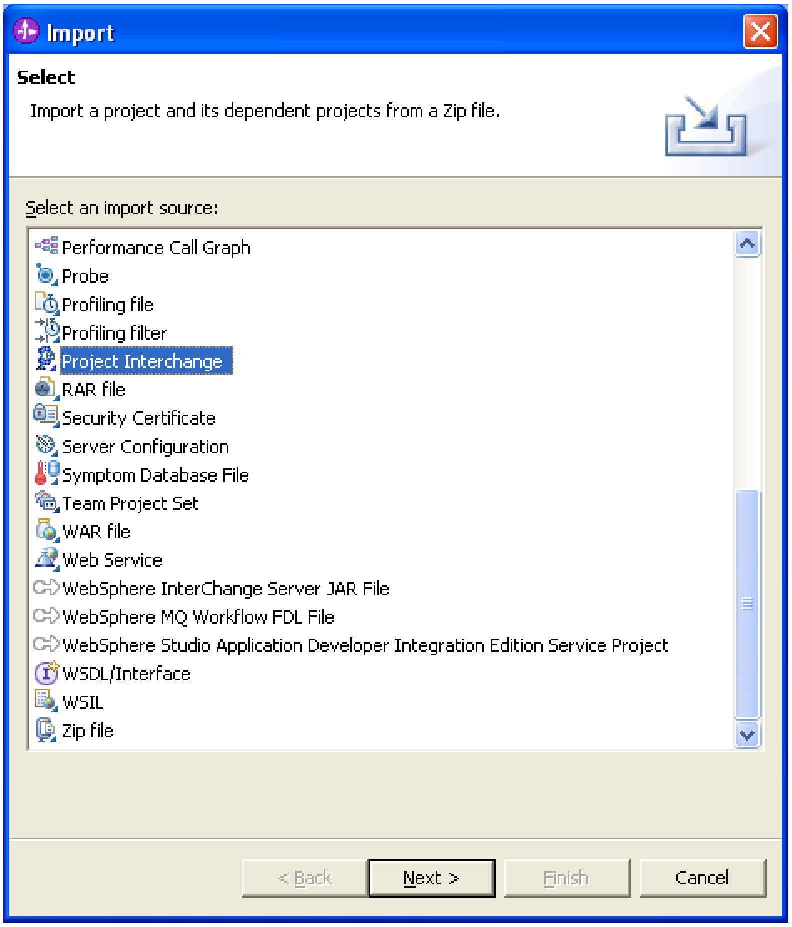
__ a. Click **File ▶ Import**.

Figure 1. Click File ▶ Import


Business Monitoring - IBM WebSphere Integration Developer
File Edit Navigate Search Project Run Window Help
New Alt+Shift+N
Close Ctrl+F4
Close All Ctrl+Shift+F4
Save Ctrl+S
Save As...
Save All Ctrl+Shift+S
Revert
Move...
Rename... F2
Refresh F5
Print... Ctrl+P
Switch Workspace...
Open External File...
Import...
Export...
Properties Alt+Enter
1 ClipsAndTacksBPELMM.mm [ClipsAndTac...]
2 WebSphere Business Monitor Server v6.0.2
3 BPC.BFM.ACTIVITY.BASE.cbe [ClipsAnd...]
4 KM_Order_Handling__x0028_Future_1_x00...
Exit
Business Moni...
toring Flow Properties Problems Servers Console

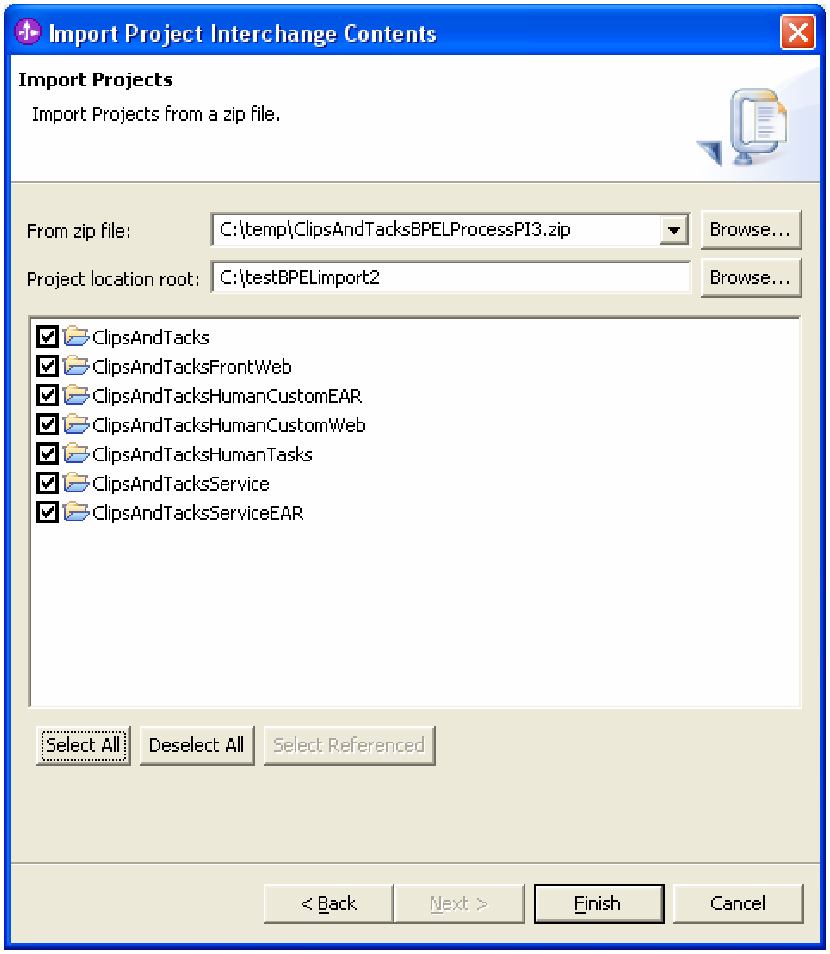
__ b. Click **Project Interchange**.

Figure 2. Click Project Interchange



__ c. Click **Next**.

Figure 3. Click Next



Import Project Interchange Contents

Import Projects

Import Projects from a zip file.

From zip file: C:\temp\ClipsAndTacksBPELProcessPI3.zip

Project location root: C:\testBPELimport2

☑ ClipsAndTacks
☑ ClipsAndTacksFrontWeb
☑ ClipsAndTacksHumanCustomEAR
☑ ClipsAndTacksHumanCustomWeb
☑ ClipsAndTacksHumanTasks
☑ ClipsAndTacksService
☑ ClipsAndTacksServiceEAR

__ d. In the Import Project Interchange Contents window:
1) Browse to the location containing the Project Interchange file ClipsAndTacksBPELProcessPI3.zip.
2) Accept the default project location or type a project location.
3) Click **Select All**, and then click **Finish**.

__ e. Right-click **ClipsAndTacks** and then click **Refresh**. Ensure that OrderHandlingFuture1 is listed in the Process view.

__ f. If the import failed, clean the project and rebuild.

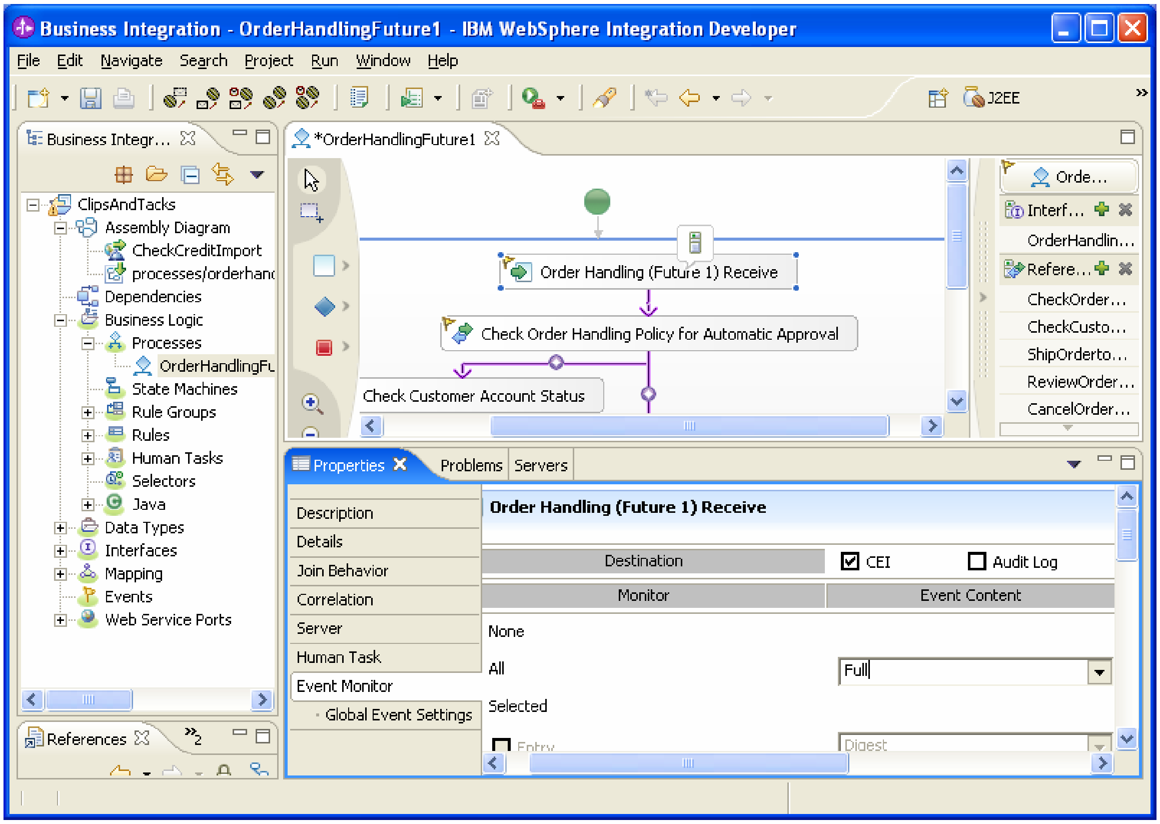
_____ 3. Using WebSphere Integration Developer, you can simultaneously generate a monitor model and event definitions from BPEL processes. There is a set number of predefined events that it is capable of emitting. However, before you can generate event definitions for any predefined events, you must modify the Event Monitor settings, so that it will emit all events and ensure that events carry data.

____ 4. In the Business Integration view, expand **ClipsAndTacks** in the navigation pane. Then expand **Processes**. Double-click **OrderHAndlingFuture1** to see the process. Click the **Event Monitor** tab in the Properties view. Click **All** to see all events, and select **Full** from the list so that the event will carry business information.

__ a. Click **Order Handling (Future 1) Receive** and then click the **Properties** tab.

__ b. Click **Event Monitoring**. Change the Event Content value from Digest or Empty to **Full**.

Figure 4. Change the Event Content value to Full



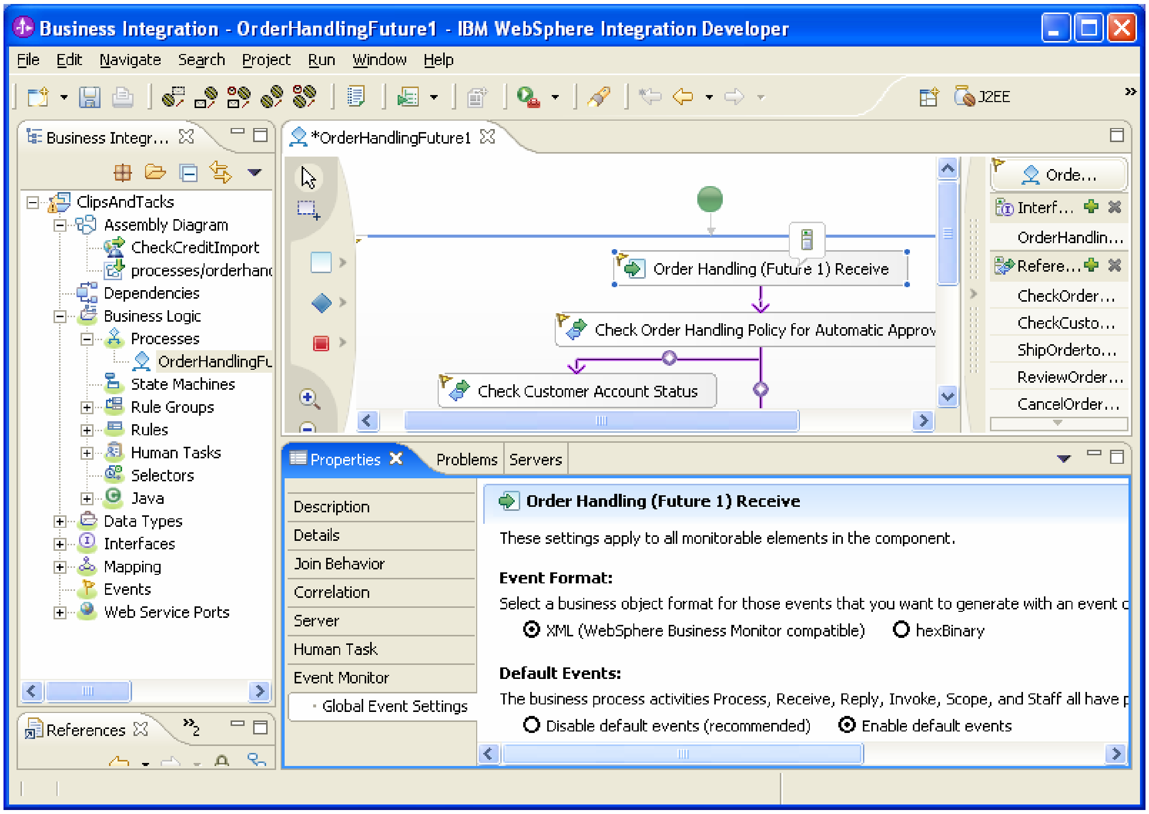
Order Handling (Future 1) Receive

Destination	☑ CEI	☐ Audit Log

Monitor	Event Content
None	
All	Full
Selected	
☐ Entry	Digest

__ c. Click **Global Event Settings** and make sure that the Event Format selected is **XML** (WebSphere Business Monitor compatible).

Figure 5. Click Global Event Settings



Order Handling (Future 1) Receive

These settings apply to all monitorable elements in the component.

Event Format:

Select a business object format for those events that you want to generate with an event c

◉ XML (WebSphere Business Monitor compatible) ○ hexBinary

Default Events:

The business process activities Process, Receive, Reply, Invoke, Scope, and Staff all have p

○ Disable default events (recommended) ◉ Enable default events

__ d. Select **Enable default events** if it is not already selected. This will generate default events for the Process, Receive, Reply, Invoke, Scope, and Staff elements of Future1.

__ e. Repeat the preceding steps for every piece of the process element in the assembly diagram.

__ f. Press **Ctrl+S** to save your work.

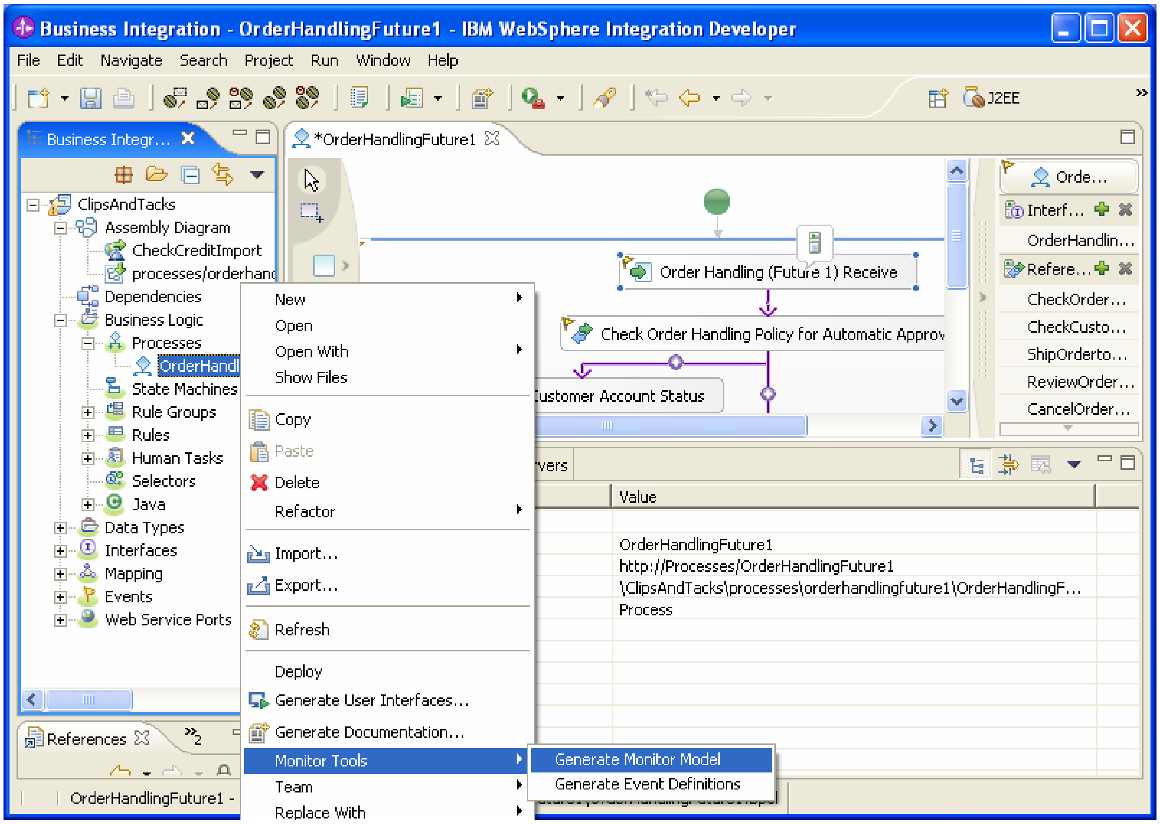
Part 2. Generate the monitor model

You will use the Monitor Model Editor in WebSphere Integration Developer generate the monitor model from the BPEL process.

____ 1. Generate the ClipsAndTacks monitor model into a new Business Monitoring project.

__ a. In the Business Integration navigation pane, right-click **OrderHandlingFuture1** process, then click **Monitor Tools ► Generate Monitor Model**.

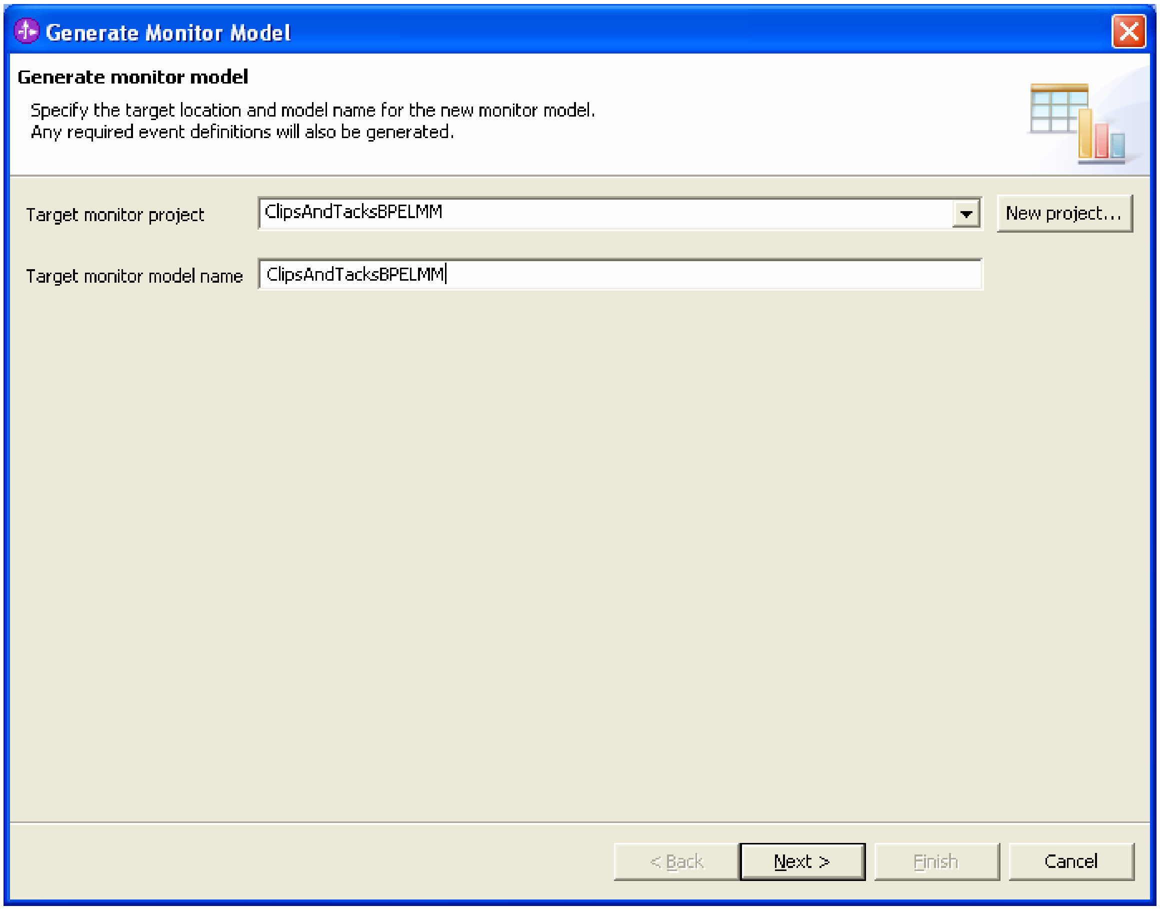
Figure 6. Click Monitor Tools ► Generate Monitor Model



OrderHandlingFuture1
http://Processes/OrderHandlingFuture1
\ClipsAndTacks\processes\orderhandlingfuture1\OrderHandlingF...
Process

____ 2. Specify a name for the new Business Monitoring project and the new model as shown in the following example, then click **Next**.

Figure 7. Specify a name for the new Business Monitoring project and model



Generate Monitor Model

Generate monitor model

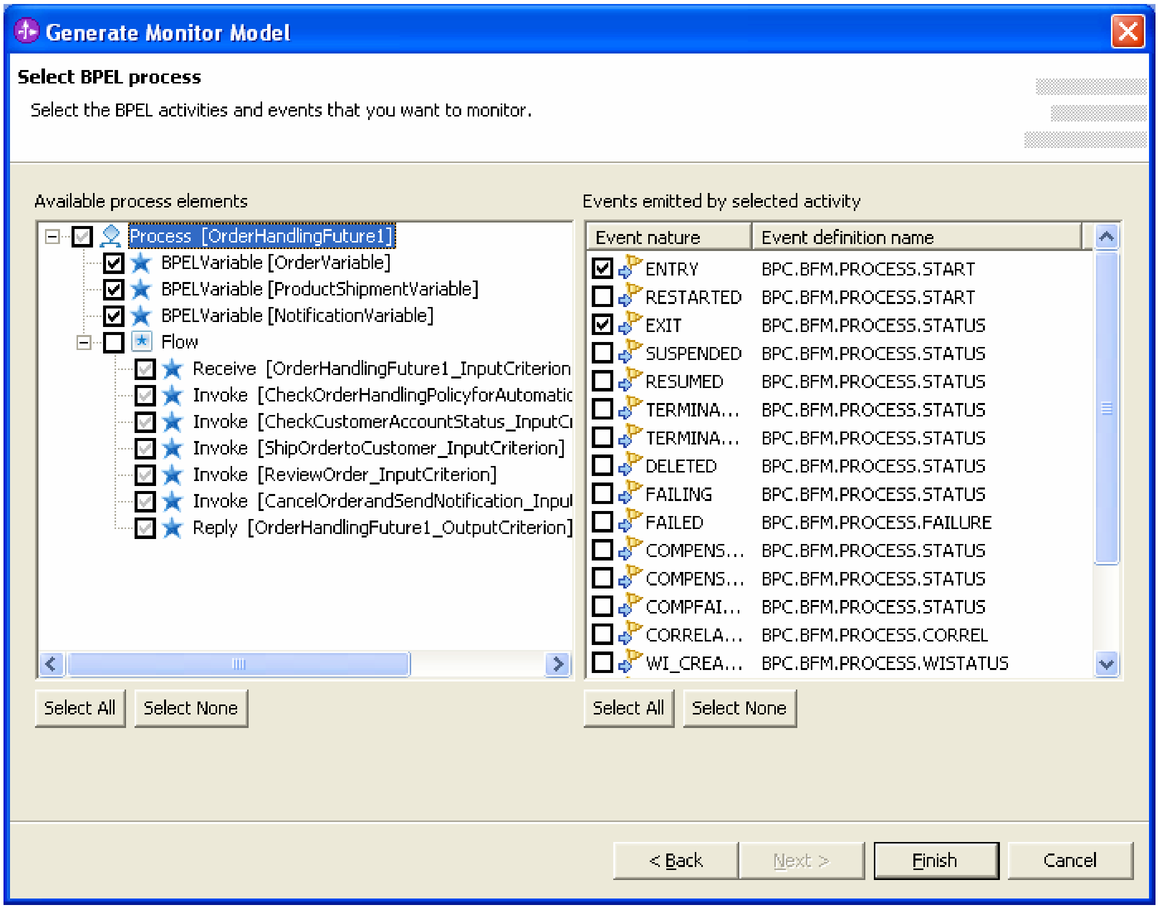
Specify the target location and model name for the new monitor model.
Any required event definitions will also be generated.

Target monitor project: ClipsAndTacksBPELMM

Target monitor model name: ClipsAndTacksBPELMM

____ 3. Select the BPEL events and activities to monitor. For this sample all the ENTRY and EXIT events were selected as shown in the following example. Select the ENTRY and EXIT events for the process OrderHandlingFuture1 as shown in the following example. Repeat this selection of the ENTRY and EXIT events for the Receive, Reply and Invoke elements of the flow.

Figure 8. Select the BPEL events and activities to monitor



Generate Monitor Model

Select BPEL process

Select the BPEL activities and events that you want to monitor.

Available process elements

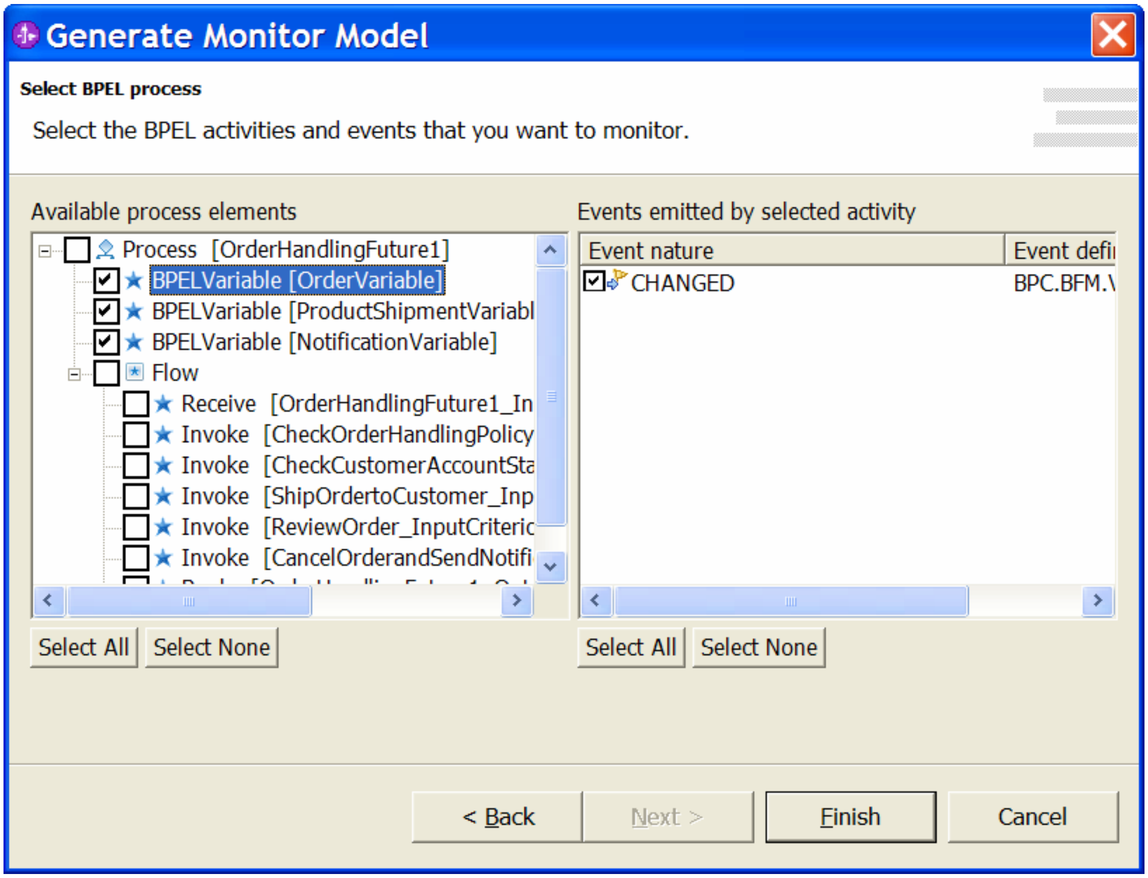
- ☑ Process [OrderHandlingFuture1]
  - ☑ BPELVariable [OrderVariable]
  - ☑ BPELVariable [ProductShipmentVariable]
  - ☑ BPELVariable [NotificationVariable]
  - □ Flow
    - ☑ Receive [OrderHandlingFuture1_InputCriterion
    - ☑ Invoke [CheckOrderHandlingPolicyforAutomatic
    - ☑ Invoke [CheckCustomerAccountStatus_InputCı
    - ☑ Invoke [ShipOrdertoCustomer_InputCriterion]
    - ☑ Invoke [ReviewOrder_InputCriterion]
    - ☑ Invoke [CancelOrderandSendNotification_Inpul
    - ☑ Reply [OrderHandlingFuture1_OutputCriterion]

Events emitted by selected activity

Event nature	Event definition name
☑ ENTRY	BPC.BFM.PROCESS.START
□ RESTARTED	BPC.BFM.PROCESS.START
☑ EXIT	BPC.BFM.PROCESS.STATUS
□ SUSPENDED	BPC.BFM.PROCESS.STATUS
□ RESUMED	BPC.BFM.PROCESS.STATUS
□ TERMINA...	BPC.BFM.PROCESS.STATUS
□ TERMINA...	BPC.BFM.PROCESS.STATUS
□ DELETED	BPC.BFM.PROCESS.STATUS
□ FAILING	BPC.BFM.PROCESS.STATUS
□ FAILED	BPC.BFM.PROCESS.FAILURE
□ COMPENS...	BPC.BFM.PROCESS.STATUS
□ COMPENS...	BPC.BFM.PROCESS.STATUS
□ COMPFAI...	BPC.BFM.PROCESS.STATUS
□ CORRELA...	BPC.BFM.PROCESS.CORREL
□ WI_CREA...	BPC.BFM.PROCESS.WISTATUS

____ 4. For each of the three BPEL variables, select the Event Definition check box as shown in the following example.

Figure 9. Select the Event Definition check box for each variable



Select BPEL process

Select the BPEL activities and events that you want to monitor.

Available process elements

- □ Process [OrderHandlingFuture1]
  - ☑ BPELVariable [OrderVariable]
  - ☑ BPELVariable [ProductShipmentVariabl
  - ☑ BPELVariable [NotificationVariable]
  - □ Flow
    - □ Receive [OrderHandlingFuture1_In
    - □ Invoke [CheckOrderHandlingPolicy
    - □ Invoke [CheckCustomerAccountSta
    - □ Invoke [ShipOrdertoCustomer_Inp
    - □ Invoke [ReviewOrder_InputCriteric
    - □ Invoke [CancelOrderandSendNotifi

Events emitted by selected activity

Event nature	Event defi
☑ CHANGED	BPC.BFM.\

__ a. Click **Finish**. You will be prompted to switch to the Business Monitoring perspective.

Part 3. Augment the monitor model with Monitor Model Editor

The monitor model is a top-level container, and contains five parts:

- The monitor details model (which contains monitoring contexts and their associated metrics, keys, counters, stopwatches, triggers, and events)
- The data mart model (which contains cubes, dimensions, and measures)
- The KPI model (which contains KPI contexts and KPIs with their events and triggers)
- The visual model (which contains diagrams associated with monitoring contexts and KPI contexts for display in the dashboard)
- The event model (which contains references to event definitions for all inbound and outbound events)

The monitor details model holds most of the monitor model information.

This section provides the steps required to define some of the KPIs in this sample. However, it does not provide step-by-step instructions for all the metrics, cubes, measures, dimensions and KPIs defined in this sample model. You can import the Project Interchange file to examine the steps that are not covered in this section.

____ 1. Edit the monitor model with Monitor Model Editor (MME). MME is an Eclipse-based tool that is used to author monitor models and event definitions. Augment the generated monitor model in the Business Monitor perspective.

____ 2. Notice that there are four tabs in the Business Monitor perspective:
1. Monitor Details Model
2. Data Mart Model
3. KPI Model
4. Visual Model

____ 3. When augmenting or creating a monitor model you normally start with the monitor details model. Add details to the model in the following order:
1. Triggers
2. Stopwatches
3. Metrics
4. Counters

____ 4. Next, augment the model by selecting the data mart model. This model contains the fact tables for each metric, counter, and stopwatch defined in the monitor details model. The facts will be used to add measures. The cube that is automatically created for the sample monitoring context will be augmented with dimensions.

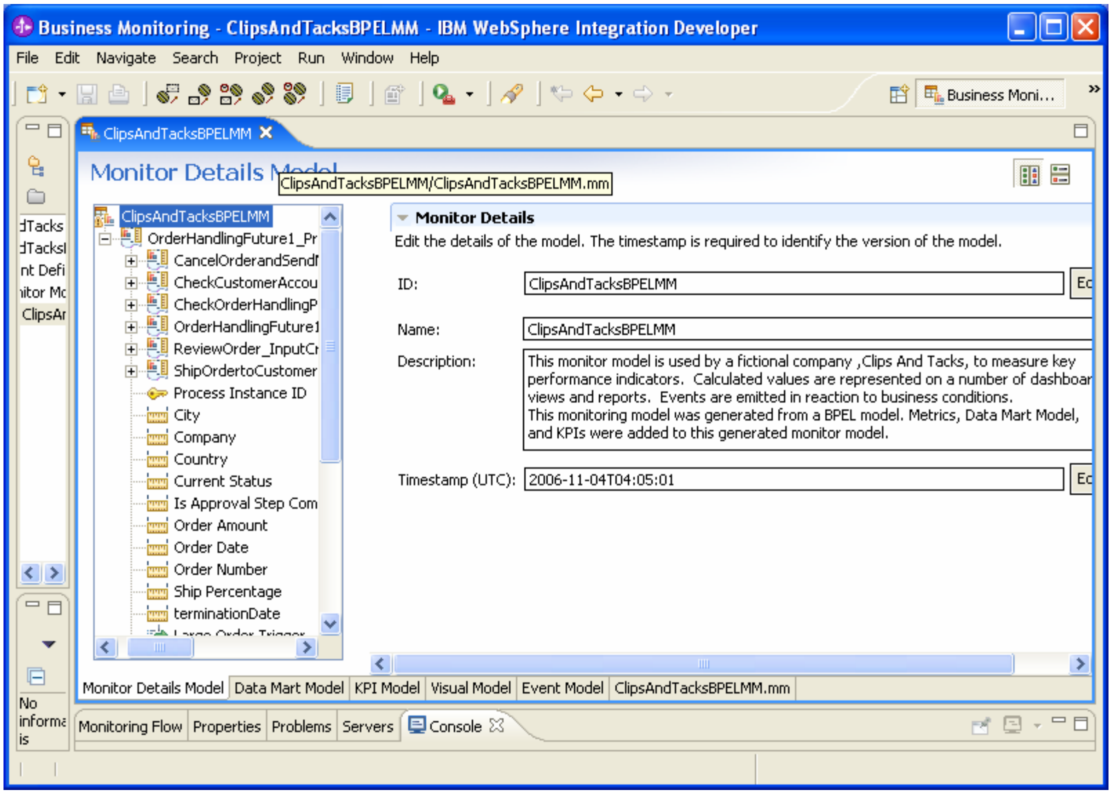
- Measures are aggregations performed on facts to combine them into a single value. For example, the Average Order Price measure is based on the values of the Order Amount metric.
- Dimensions are categories used to organize and select data for monitoring and analysis. They are composed of one or more attributes, which are hierarchical. This sample uses a Location dimension with attributes City and Country.

____ 5. Next, add KPI definitions to the KPI model. KPIs are built on measures and dimensions. A KPI can have a target, a set of ranges, or both, to measure how well a business is achieving its objectives. To define a KPI, choose the measure that you want to analyze, and the dimensions that you want to use to filter the retrieved data. This sample analyzes the Average Order Amount measure organized by the defined Location dimension.

____ 6. Finally, define visualizations in the visual model. Each visualization is an SVG diagram that can be displayed in the WebSphere Business Monitor dashboards. The visualization can include a set of actions describing how and when the diagram will be modified based on the values of metrics and KPIs.

Confirm that the Monitor Details page for the augmented monitor model ClipsAndTacksBPELMM looks like the example shown below.

Figure 10. Confirm that the Monitor Details page looks like this example



Monitor Details

Edit the details of the model. The timestamp is required to identify the version of the model.

ID: ClipsAndTacksBPELMM

Name: ClipsAndTacksBPELMM

Description: This monitor model is used by a fictional company ,Clips And Tacks, to measure key performance indicators. Calculated values are represented on a number of dashboar views and reports. Events are emitted in reaction to business conditions.
This monitoring model was generated from a BPEL model. Metrics, Data Mart Model, and KPIs were added to this generated monitor model.

Timestamp (UTC): 2006-11-04T04:05:01

Defining the Average Order Price (US Dollars) KPI

The Average Order Price (US Dollars) KPI tracks the average price of orders received by the Clips And Tacks company. The average price is calculated in U.S. dollars.

- This KPI has a defined target to achieve as well as ranges against which it is tracked.
- The KPI is based on the Average Order Price measure.
- The Average Order Price measure is in turn based on the values of the Order Amount metric.
- Every metric is associated with one or more maps, which define how the metric gets its value. Each map can optionally have a trigger. The map runs when the trigger fires. The map on the Order Amount metric runs when the Received New Order Trigger fires. The map expression in this sample uses the value carried by the event OrderHandlingFuture1_InputCriterion EXIT to set the value of the metric.

To define the Average Order Price (US Dollars) KPI, define the following values in the order shown:

1. Received New Order Trigger
2. Order Amount metric
3. Average Order Price measure
4. Average Order Price (US Dollars) KPI

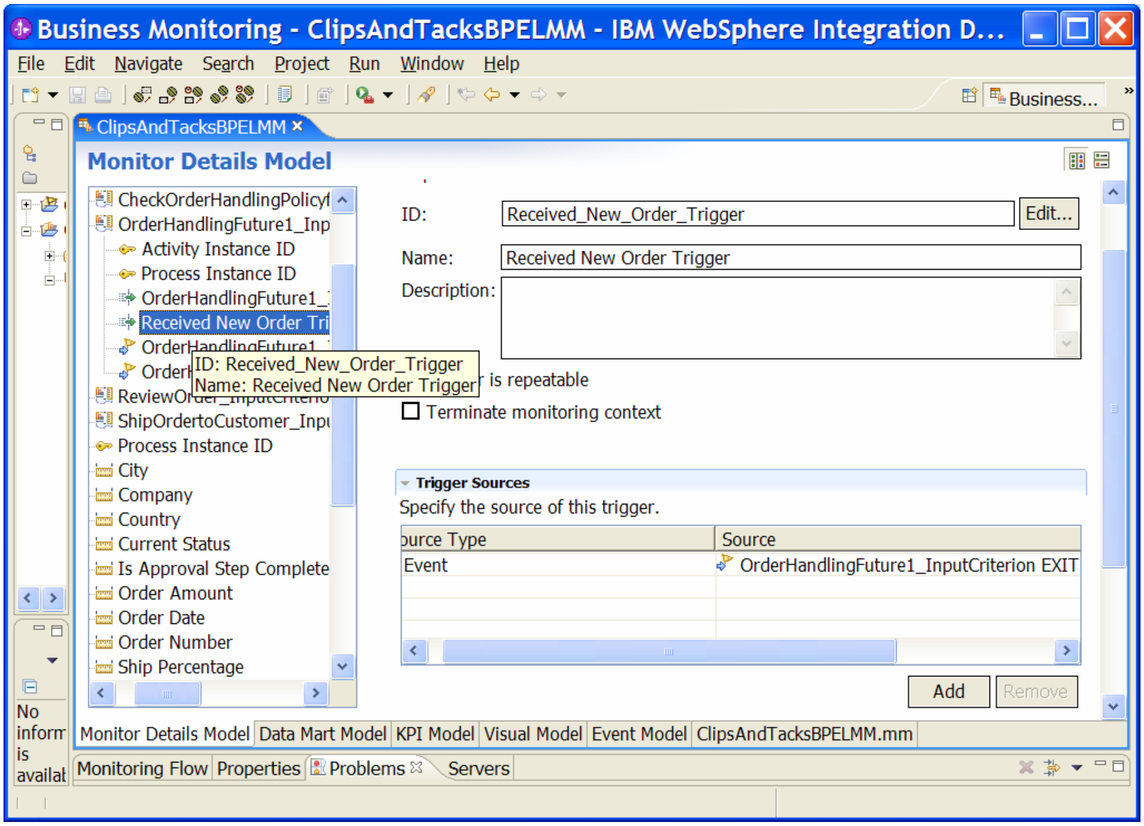
____ 1. Define Received New Order Trigger. On the Monitor Model Details page, right-click **OrderHandlingFuture1_InputCriterion_Activity**, and then click **New ► Trigger**.

__ a. Enter these values:

- For Name, type **Received New Order Trigger**.
- For ID, type **Received_New_Order_Trigger**.
- For Trigger Sources, click **Add**, then select **Other source type**.
- Select the inbound event **OrderHandlingFuture1_InputCriterion EXIT** from the list.

__ b. Click **OK** to save completed trigger as shown in the following example.

Figure 11. Click OK to save completed trigger



ID: Received_New_Order_Trigger [Edit...]

Name: Received New Order Trigger

Description:

ID: Received_New_Order_Trigger
Name: Received New Order Trigger

r is repeatable

□ Terminate monitoring context

Trigger Sources

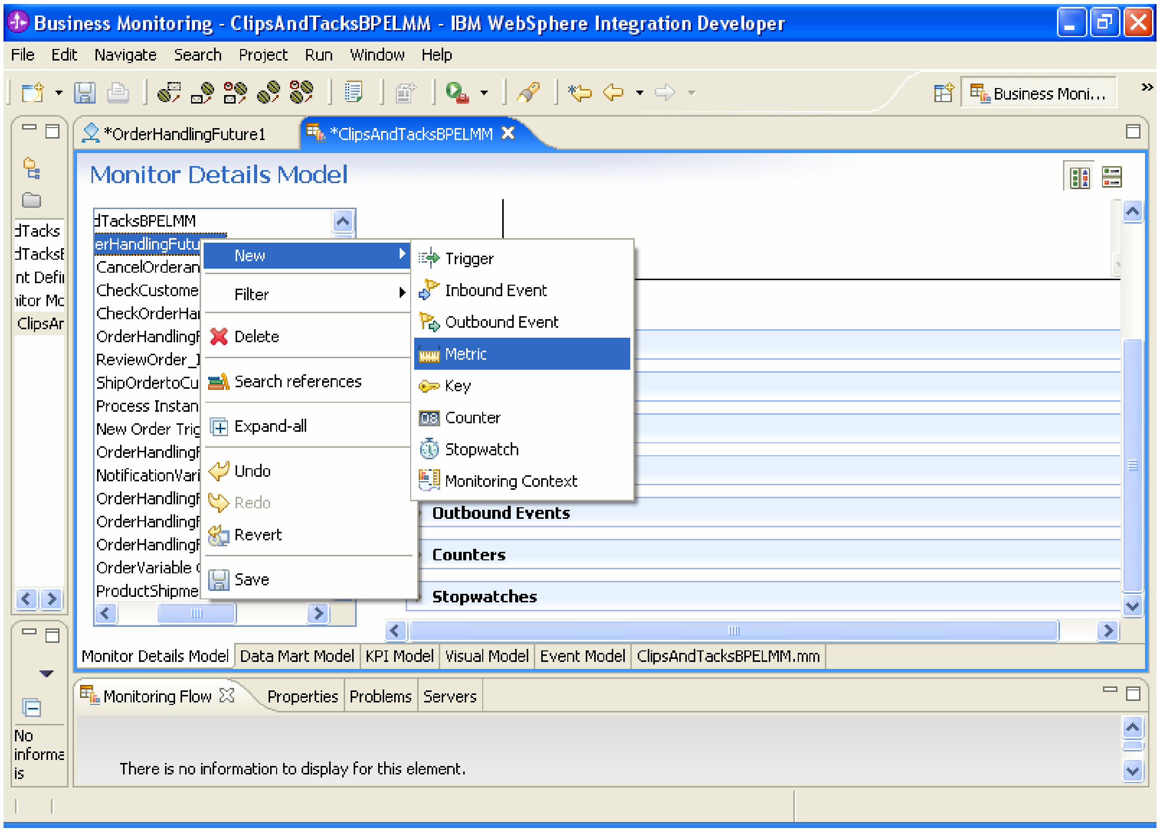
Specify the source of this trigger.

ource Type	Source
Event	OrderHandlingFuture1_InputCriterion EXIT

[Add] [Remove]

____ 2. Now define the Order Amount metric. In the model navigation pane, right-click **OrderHandlingFuture1_Process monitoring context**, then click **New ▶ Metric**.

Figure 12. Click New ▶ Metric



There is no information to display for this element.

__ a. Enter the following values:

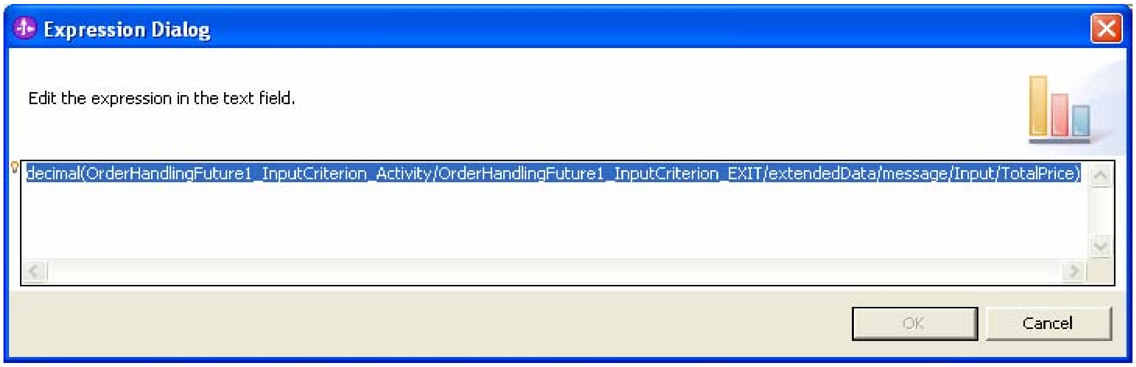
- For Name, type **Order Amount**.
- For ID, type **Order_Amount**.
- For Type, select **Decimal**.
- In the first row of the Metric Value Maps table, select the cell under the Trigger column, then click the button that is displayed. Click **Trigger type ▶ OrderHandlingFuture1_process ▶ OrderHandlingFuture1_InputCriterion_Activity ▶ Received New Order Trigger**.

__ b. Click **OK**.

__ c. In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter the following text (or press **Ctrl+Space** for assistance):

decimal(OrderHandlingFuture1_InputCriterion_Activity/OrderHandlingFuture1_InputCriterion_EXIT/extendedData/message/Input/TotalPrice)

Figure 13. Enter the following text or press Ctrl+Space


Expression Dialog

Edit the expression in the text field.

decimal(OrderHandlingFuture1_InputCriterion_Activity/OrderHandlingFuture1_InputCriterion_EXIT/extendedData/message/Input/TotalPrice)

__ d. Click **OK**.

__ e. Press **Ctrl+S** to save your work.

____ 3. Define the Average Order Price measure in the data mart model based on the Order Amount fact, which is automatically created when the Order Amount metric is defined.

__ a. Click the **Data Mart Model** tab of the editor and scroll down to the **Measures** table.

__ b. Select **OrderHandlingFuture1 Cube** and click **Add Measure**.

Note: A data mart model contains one cube for each monitoring context definition. Each cube keeps track of all the information that the monitoring context collects over time. The cube can combine all the instances of that monitoring context so that you can query aggregate information.

1) Enter the following values:
   - For Name, type **Average Order Price**.
   - For ID, type **Average_Order_Price**.

2) Click **OK**.

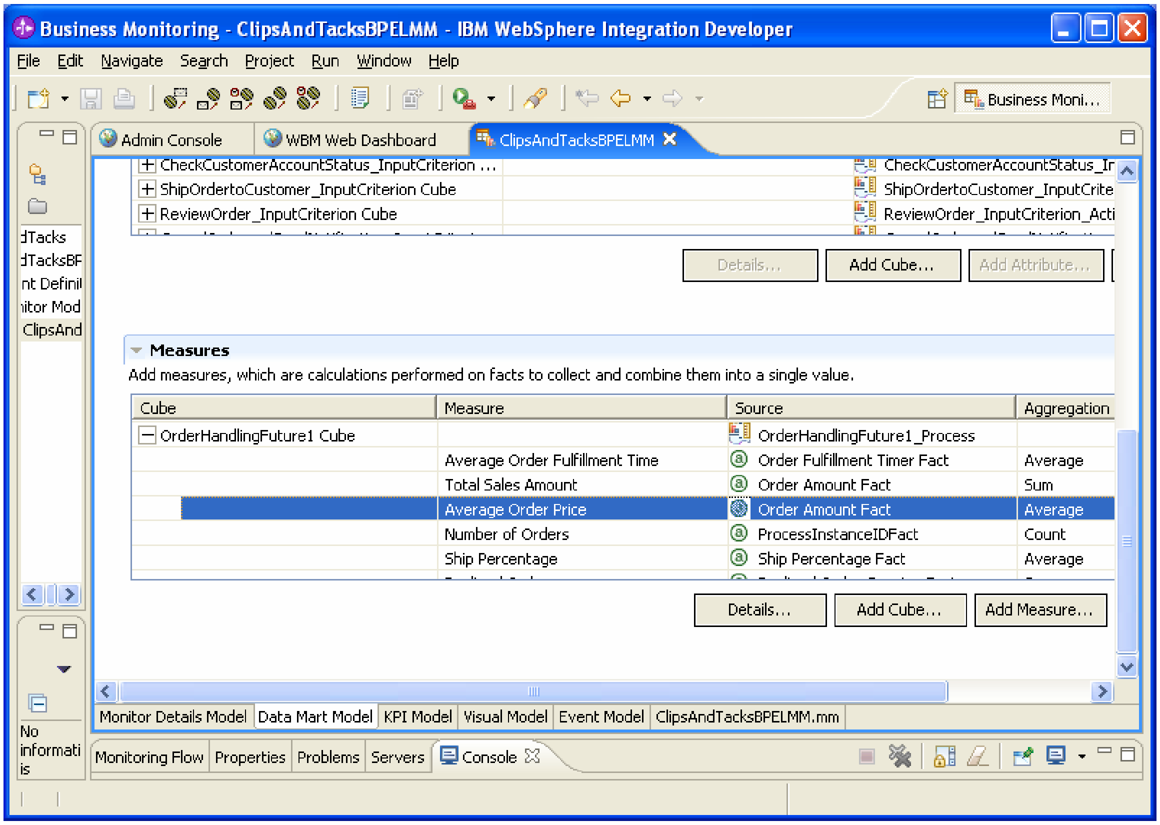
3) Click the Source cell and click the button that is displayed to open the **Select Fact Attribute** window. Select **Order Amount Fact** as the source of the measure.

4) Click **OK**.

5) Click the **Aggregation Function** cell and select the **Average function** from the list.

6) Press **Ctrl+S** to save your work as shown in the following example :

Figure 14. Press Ctrl+S to save your work



CheckCustomerAccountStatus_InputCriterion ...	CheckCustomerAccountStatus_Ir
ShipOrdertoCustomer_InputCriterion Cube	ShipOrdertoCustomer_InputCrite
ReviewOrder_InputCriterion Cube	ReviewOrder_InputCriterion_Acti

Measures

Add measures, which are calculations performed on facts to collect and combine them into a single value.

Cube	Measure	Source	Aggregation
OrderHandlingFuture1 Cube		OrderHandlingFuture1_Process	
	Average Order Fulfillment Time	Order Fulfillment Timer Fact	Average
	Total Sales Amount	Order Amount Fact	Sum
	Average Order Price	Order Amount Fact	Average
	Number of Orders	ProcessInstanceIDFact	Count
	Ship Percentage	Ship Percentage Fact	Average

____ 4. Define Average Order Price KPI using the Average Order Price measure.

__ a. Before defining a KPI, you must define a KPI context. This sample has already defined one cube containing at least one measure, which is also a prerequisite for defining a KPI.

__ b. Click the **KPI Model** tab of the editor, right-click the monitor details model, **ClipsAndTacksBPELMM**, at the top of the tree, and click **New ► KPI Context**.

__ c. For Name, type **Order Handling KPI Context**.

__ d. Confirm that Order Handling KPI Context has been added to the model tree.

__ e. Right-click **Order Handling KPI Context** and click **New ► KPI**.

__ f. For Name, type **Average Order Price (US Dollars)**.

__ g. For ID, type **Average_Order_Price_(US_Dollars)**.

__ h. Click **OK**. Confirm that the KPI and its icon have been added to the model tree under the KPI context node.

__ i. Double-click the newly created KPI to edit the definition.

1) From the list of KPI types, select **Decimal**.

2) For the initial target, type **300**.

3) Specify ranges. Click **Add** to add a range. In the Add Range window, type **High Range** as the name. The name must be unique within the set of ranges that contain the range.

4) Click the **Start Value** and **End Value** cells for High Range and specify the values **300** and **<1000** respectively. Both values are required. The name of the range is displayed under the range set in the model tree.
Important: The start value of each row must equal the end value for the previous row. After adding ranges, you can click **Sort** to sort them from the lowest start value to the highest start value.

5) Click **Add** to add another range. In the Add Range window, type **Low Range** as the name.

6) Click the **Start Value** and **End Value** cells for Low Range and specify the values **0** and **<300** respectively.

7) Press **Ctrl+S** to save your work.

__ j. The values for the KPIs are extracted from the cube. Specify the way the KPI is evaluated as follows in the KPI Definition section:

1) Click **Browse** to select the **OrderHandlingFuture1** cube to associate with the KPI.

2) Click **Browse** to select the **Average Order Price** measure within the cube.

Note: There is no Time dimension specified within the OrderHandlingFuture1 cube. Since you do not select a time dimension, the KPI will be evaluated using all available values.

3) Press **Ctrl+S** to save your work.

__ k. Some of the other KPIs in this sample can be defined using the same steps.

Defining the Average Order Fulfillment Time KPI

The Average Order Fulfillment Time KPI tracks the average time taken to fill orders received by the Clips And Tacks Company.

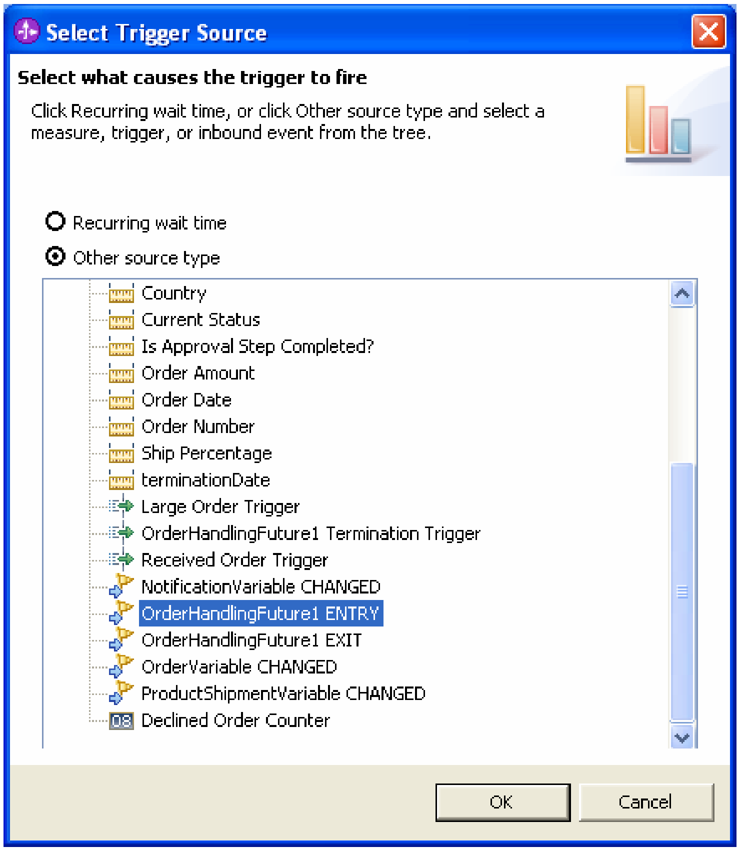
- This KPI has a defined target to achieve as well as ranges against which it is tracked.
- The KPI is based on the Average Order Fulfillment Time measure.
- The Average Order Fulfillment Time measure is in turn based on the values of the Order Fulfillment Timer stopwatch.
- The stopwatch is used to measure the time between two events. The stopwatch is started and stopped by triggers.

To define the Average Order Fulfillment Time KPI, define the following values in the order shown:

__ a. New Order Trigger
__ b. Average Order Fulfillment Timer stopwatch
__ c. Current Status metric
__ d. Average Order Fulfillment Time measure
__ e. Current Status dimension
__ f. Average Order Fulfillment Time KPI

____ 1. Define New Order Trigger. In the Monitor Model Details view, right-click **OrderHandlingFuture1_Process**, and then click **New** ▶ **Trigger**. Enter these values:

1) For Name, type **New Order Trigger**.
2) For ID, type **New_Order_Trigger**.
3) For Trigger Sources, click **Add**, then select **Other source type**.
4) From the list of source types, select **OrderHandlingFuture1 ENTRY** and click **OK**.



Select Trigger Source

Select what causes the trigger to fire

Click Recurring wait time, or click Other source type and select a measure, trigger, or inbound event from the tree.

○ Recurring wait time

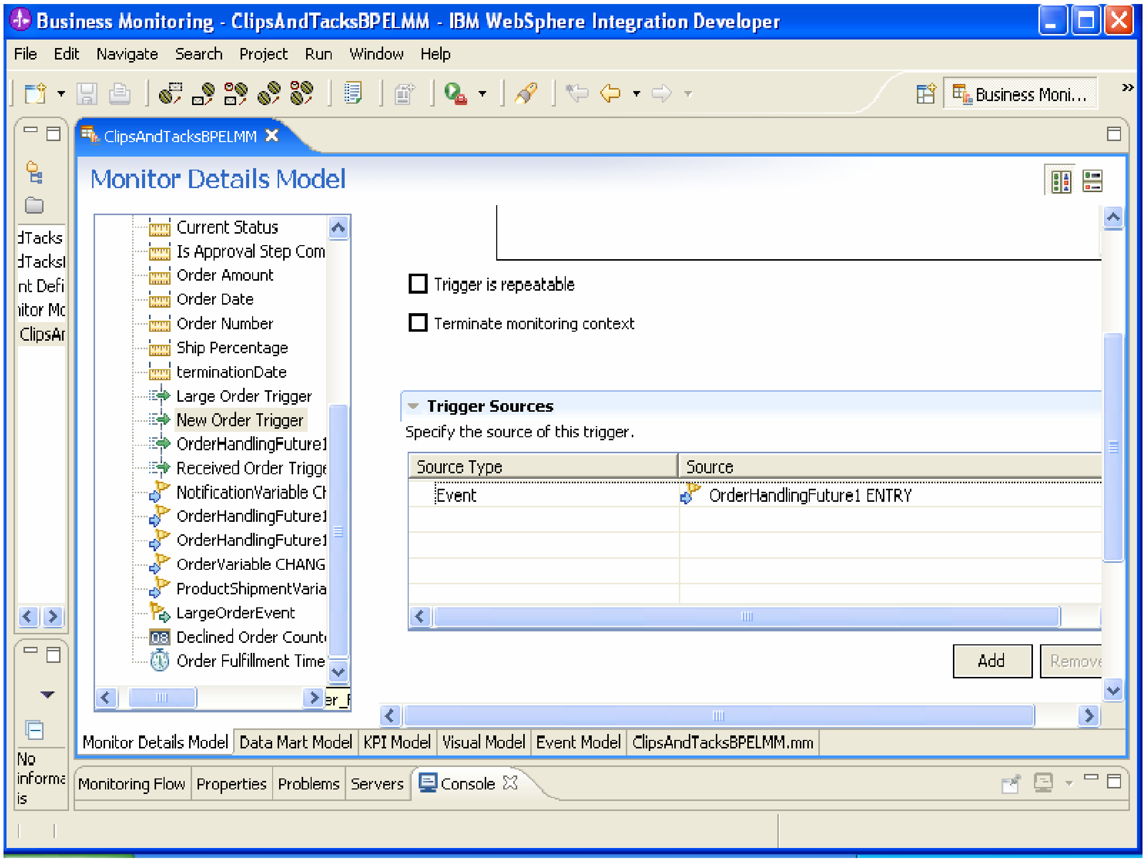
● Other source type

Country
Current Status
Is Approval Step Completed?
Order Amount
Order Date
Order Number
Ship Percentage
terminationDate
Large Order Trigger
OrderHandlingFuture1 Termination Trigger
Received Order Trigger
NotificationVariable CHANGED
OrderHandlingFuture1 ENTRY
OrderHandlingFuture1 EXIT
OrderVariable CHANGED
ProductShipmentVariable CHANGED
Declined Order Counter

Figure 15. Select OrderHandlingFuture1 ENTRY

5) Click **OK**.

Figure 16. Click OK



☐ Trigger is repeatable

☐ Terminate monitoring context

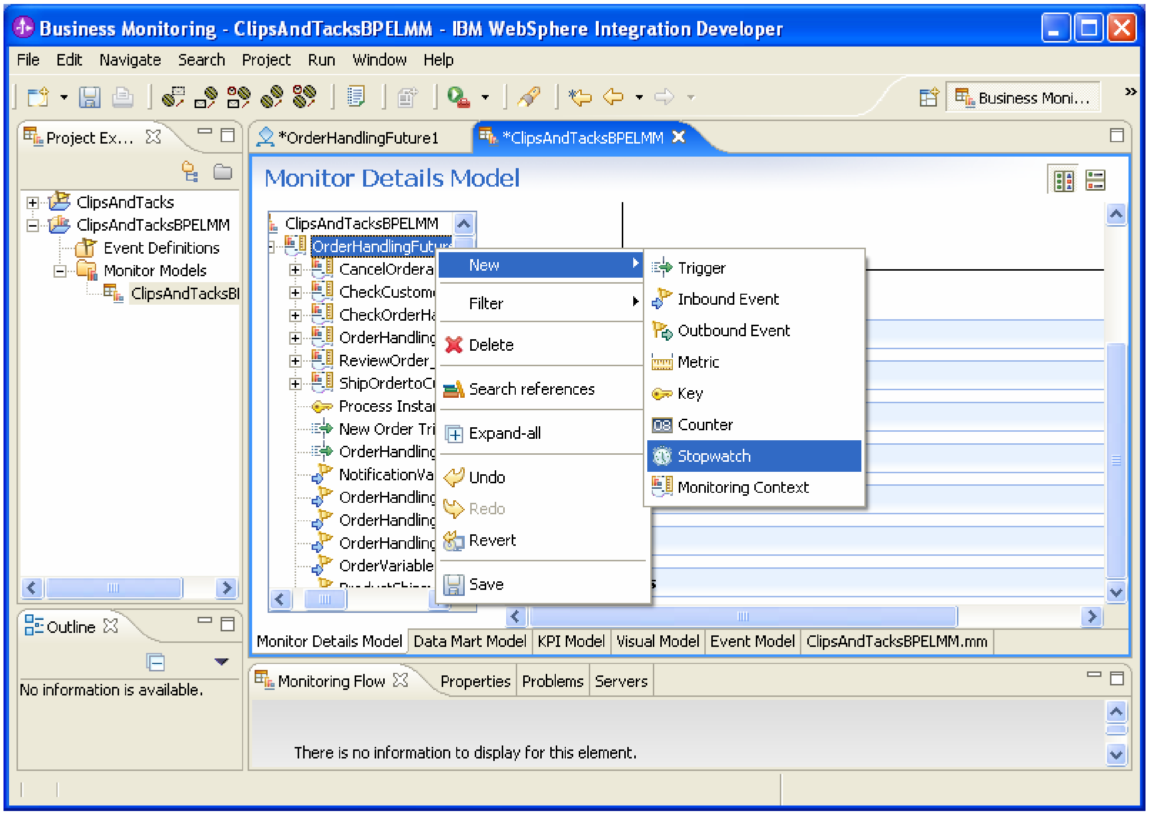
Trigger Sources

Specify the source of this trigger.

Source Type	Source
Event	OrderHandlingFuture1 ENTRY

____ 2. Right-click **OrderHandlingFuture1_Process MC**, and then select **New ▶ Stopwatch**.

Figure 17. Select New ▶ Stopwatch



__ a. Now define the new Stopwatch information.

1) For Name, type **Order Fulfillment Timer**.

2) For ID, type **Order_Fulfillment_Timer**.

3) For Stopwatch Controls, click **Add**, then select **OrderHandlingFuture1_Process monitoring context ▶ New Order Trigger**, then click **OK**.

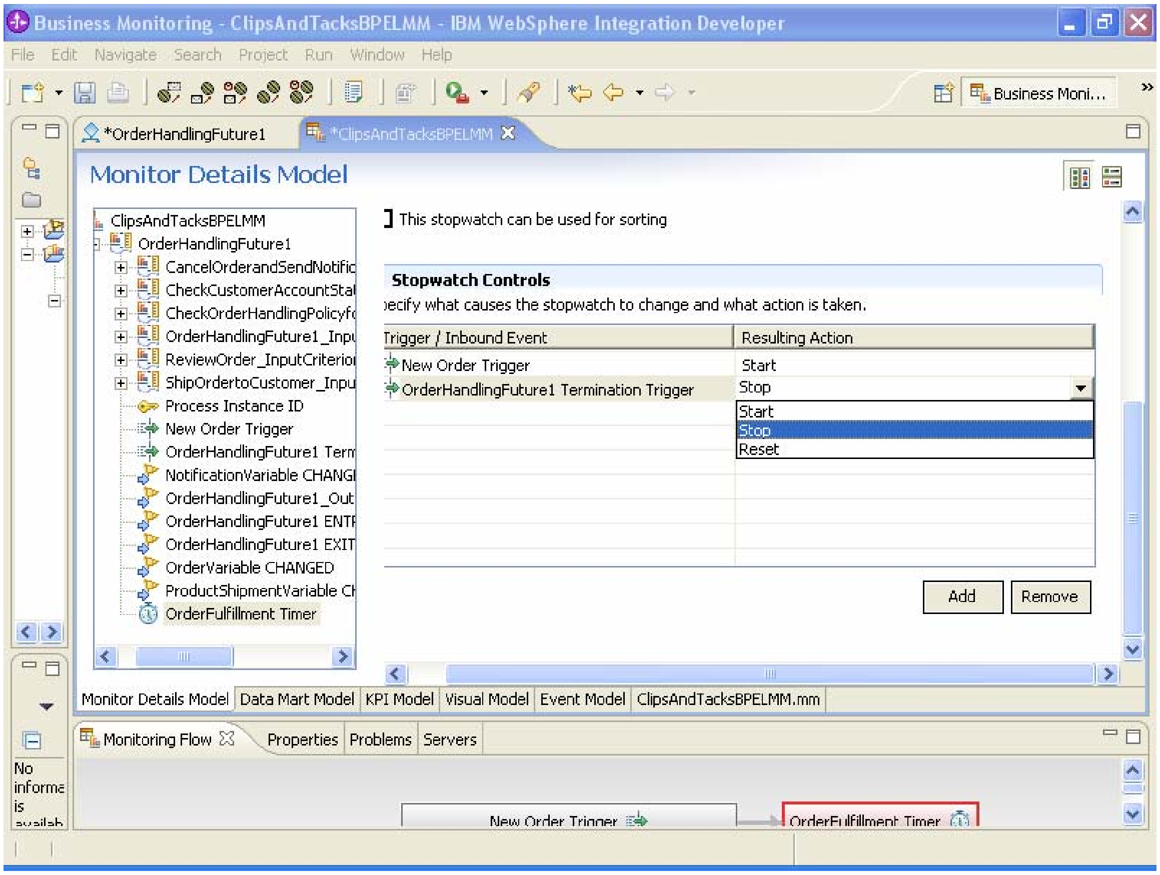
Note: The default value for Resulting Action is Start.

4) For Stopwatch Controls, click **Add**, then select **OrderHandlingFuture1_Process Monitoring Context ▶ OrderHandlingFuture1 Termination Trigger**, and then click **OK**.

Note: OrderHandlingFuture1 Termination Trigger was generated by MME.

5) The default value for Resulting Action is **Start.** You need to change it to **Stop** for this trigger. To do so, click the second row in Resulting Action column. From the list, select **Stop**.

Figure 18. Select Stop



This stopwatch can be used for sorting

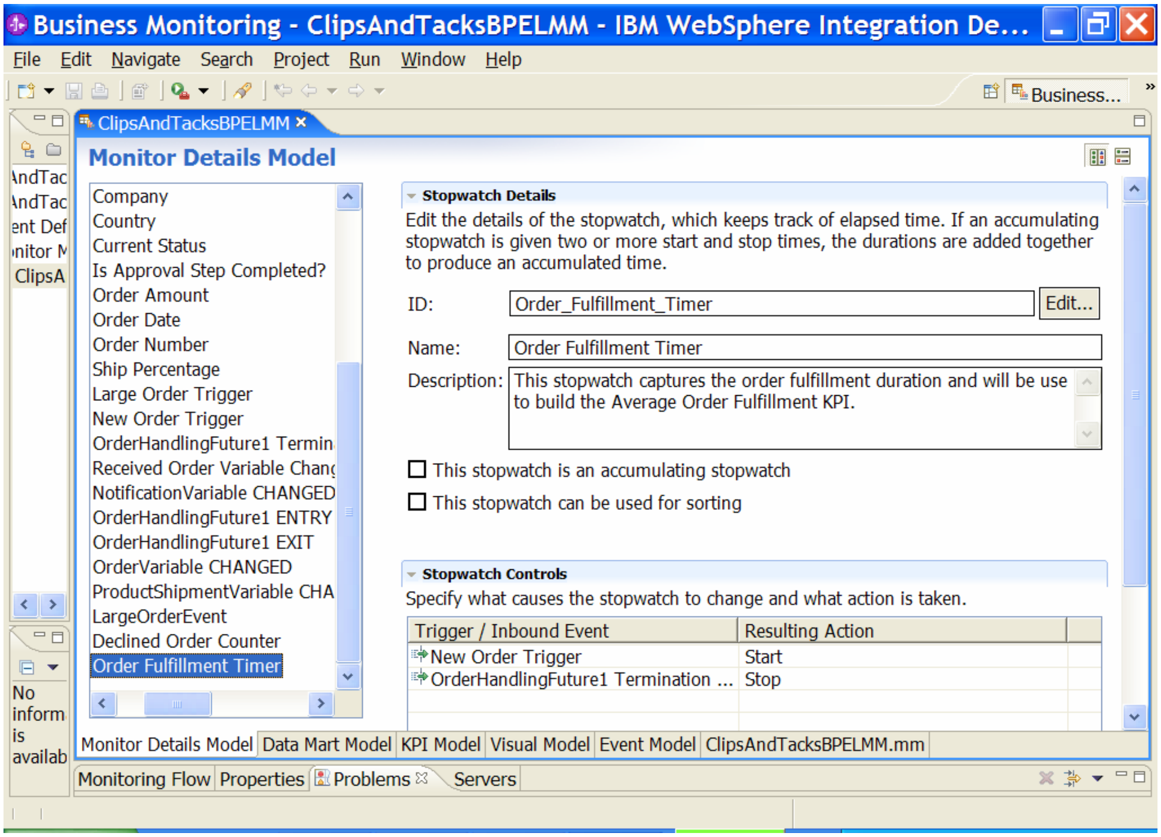
Stopwatch Controls

pecify what causes the stopwatch to change and what action is taken.

Trigger / Inbound Event	Resulting Action
New Order Trigger	Start
OrderHandlingFuture1 Termination Trigger	Stop Start Stop Reset

6) Press **Ctrl+S** to save your work. Confirm that the completed Stopwatch controls look like the following example.

Figure 19. Confirm that the completed Stopwatch controls look like this



Stopwatch Details

Edit the details of the stopwatch, which keeps track of elapsed time. If an accumulating stopwatch is given two or more start and stop times, the durations are added together to produce an accumulated time.

ID: Order_Fulfillment_Timer Edit...

Name: Order Fulfillment Timer

Description: This stopwatch captures the order fulfillment duration and will be use to build the Average Order Fulfillment KPI.

☐ This stopwatch is an accumulating stopwatch

☐ This stopwatch can be used for sorting

Stopwatch Controls

Specify what causes the stopwatch to change and what action is taken.

Trigger / Inbound Event	Resulting Action
New Order Trigger	Start
OrderHandlingFuture1 Termination ...	Stop

Define the Current Status metric. The value of this metric reflects the status of an order in the Future1 process. The status of an order can be one of the following values:

- Started: This metric value is set when the New Order Trigger is fired.
- Review Order: This metric is set when the Review Order Started Trigger is fired.
- Cancel Order: This metric is set when the Cancel Order Started Trigger is fired.
- Ship Order: This metric is set when the Ship Order Started Trigger is fired.
- Cancelled: This metric is set when the CancelOrderandSendNotification_InputCriterion Termination Trigger is fired.
- Shipped: This metric is set when the ShipOrdertoCustomer_InputCriterion Termination Trigger is fired.

__ a. In the model navigation pane, right-click **OrderHandlingFuture1_Process** monitoring context, then select **New ▶ Metric**.

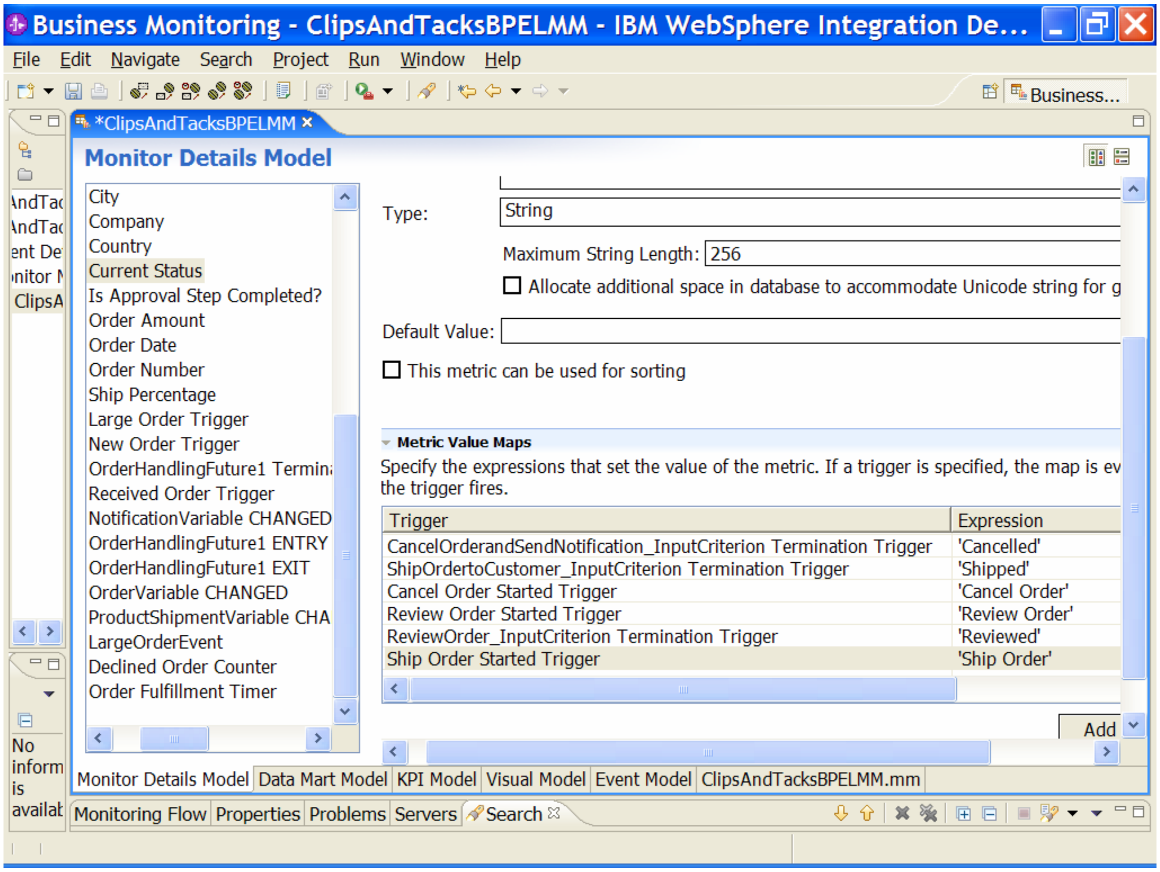
1) Enter these values:

- For Name, type **Current Status**.
- For ID, type **Current_Status**.
- For Type, select **String**.
- In the first row of the Metric Value Maps table, select the cell under the Trigger column. Then, click the button that is displayed. Click **Trigger type ▶ OrderHandlingFuture1_process ▶ OrderHandlingFuture1_InputCriterion _Activity ▶ Received New Order Trigger**.
- In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text, including the single quotation marks:

  'Started'

__ b. Using the Metric Values Map table, define the rest of the entries that are listed after the new Current Status metric, as shown in the following example:

Figure 20. Define the rest of the entries that are listed



City
Company
Country
Current Status
Is Approval Step Completed?
Order Amount
Order Date
Order Number
Ship Percentage
Large Order Trigger
New Order Trigger
OrderHandlingFuture1 Termin
Received Order Trigger
NotificationVariable CHANGED
OrderHandlingFuture1 ENTRY
OrderHandlingFuture1 EXIT
OrderVariable CHANGED
ProductShipmentVariable CHA
LargeOrderEvent
Declined Order Counter
Order Fulfillment Timer

Type: String

Maximum String Length: 256

☐ Allocate additional space in database to accommodate Unicode string for g

Default Value:

☐ This metric can be used for sorting

Metric Value Maps

Specify the expressions that set the value of the metric. If a trigger is specified, the map is ev the trigger fires.

Trigger	Expression
CancelOrderandSendNotification_InputCriterion Termination Trigger	'Cancelled'
ShipOrdertoCustomer_InputCriterion Termination Trigger	'Shipped'
Cancel Order Started Trigger	'Cancel Order'
Review Order Started Trigger	'Review Order'
ReviewOrder_InputCriterion Termination Trigger	'Reviewed'
Ship Order Started Trigger	'Ship Order'

____ 3. Define the Average Order Fulfillment Time measure in the data mart model based on the Order Fulfillment Timer fact, which is automatically created when the Order Fulfillment Timer stopwatch is defined.

__ a. Click the **Data Mart Model** tab in the business monitoring perspective and scroll down to the Measures table.

__ b. Select the **OrderHandlingFuture1 Cube** and click **Add Measure**.

Note: A data mart model contains one cube for each monitoring context definition. Each cube keeps track of all the information that the monitoring context collects over time. The cube can combine all the instances of that monitoring context so that you can query aggregate information.

1) Enter the following values:

- For Name, type **Average Order Fulfillment Time**.
- For ID, type **Average_Order_Fulfillment_Time**.

2) Click **OK**.

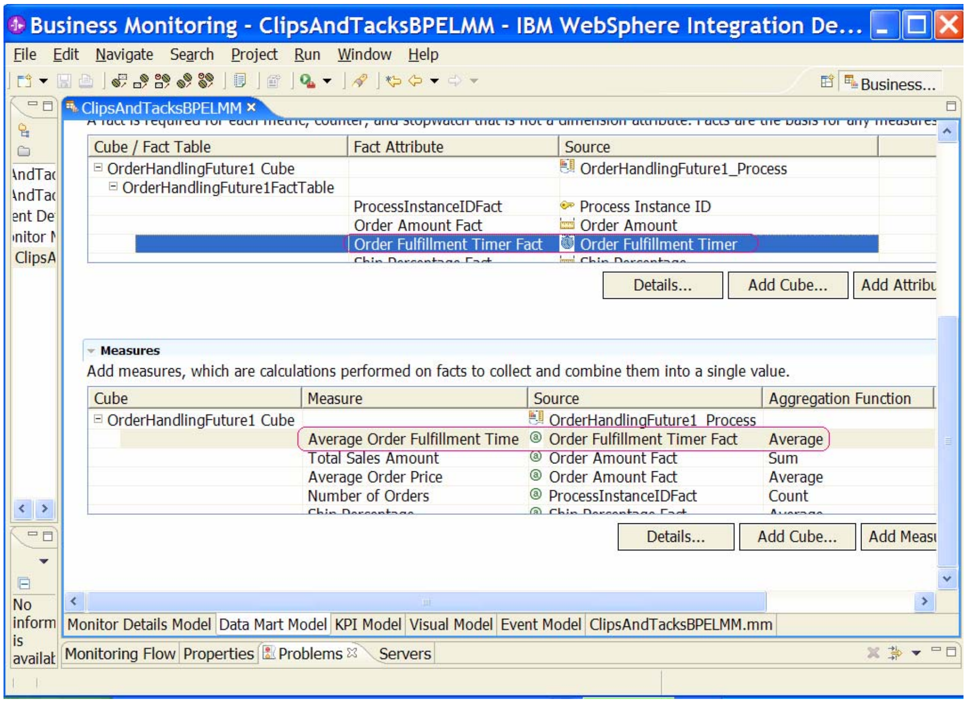
3) Click the **Source** cell, and then click the button that is displayed to open the Select Fact Attribute window. Select the **Order Fulfillment Timer Fact** as the source of the measure.

4) Click **OK**.

5) Click the **Aggregation Function** cell and select the Average function from the list.

6) Press **Ctrl+S** to save your work as shown in the following example:

Figure 21. Save your work as shown



Cube / Fact Table	Fact Attribute	Source
OrderHandlingFuture1 Cube		OrderHandlingFuture1_Process
OrderHandlingFuture1FactTable		
	ProcessInstanceIDFact	Process Instance ID
	Order Amount Fact	Order Amount
	Order Fulfillment Timer Fact	Order Fulfillment Timer
	Chip Percentage Fact	Chip Percentage

Measures

Add measures, which are calculations performed on facts to collect and combine them into a single value.

Cube	Measure	Source	Aggregation Function
OrderHandlingFuture1 Cube		OrderHandlingFuture1_Process	
	Average Order Fulfillment Time	Order Fulfillment Timer Fact	Average
	Total Sales Amount	Order Amount Fact	Sum
	Average Order Price	Order Amount Fact	Average
	Number of Orders	ProcessInstanceIDFact	Count
	Chip Percentage	Chip Percentage Fact	Average

____ 4. Add the Current Status dimension to the data mart model. This information will be used later when you create the definition of the KPI.

__ a. Scroll up to the Dimensions table.

__ b. Select the **OrderHandlingFuture1 Cube** and click **Add Dimension**.

Note: A data mart model contains one cube for each monitoring context definition. Each cube keeps track of all the information that the monitoring context collects over time. The cube can combine all the instances of that monitoring context so that you can query aggregate information.

1) Enter the following values:
- For Name, type **Current Status**.
- For ID, type **Current_Status**.

2) Click **Add Attribute**.

a) For Name, type **Current Status**.

b) For ID, type **Current_Status**.

3) In the Dimensions table, in the row containing Dimension Attribute Current Status, click the cell in the Source column. Click the button that is displayed, and then click **OrderHandlingFuture1_process ► Current Status**.

4) In the Dimensions table, in the row containing Dimension Attribute Current Status, click the cell in the **Is Key** column. Click the button that is displayed, select the check box, and then click **OK**.

5) Press **Ctrl+S** to save your work.

____ 5. Define Average Order Fulfillment Time KPI using the Average Order Fulfillment Time measure.

__ a. Select the **KPI Model** tab in the Business Monitoring perspective.

__ b. Right-click the **Order Handling KPI Context** and select **New ► KPI**.

__ c. For Name, type **Average Order Fulfillment Time**.

__ d. For ID, type **Average_Order_Fulfillment_Time**.

__ e. Click **OK**. Confirm that the KPI and its icon have been added to the model tree under the KPI context node.

__ f. Double-click the newly created KPI to edit the definition.

1) From the list of KPI types, select **Duration**.

2) For the initial target, type **3 Days**.

3) Specify ranges of One Day, Two Days, Three Days and Four Days as shown in the following example.

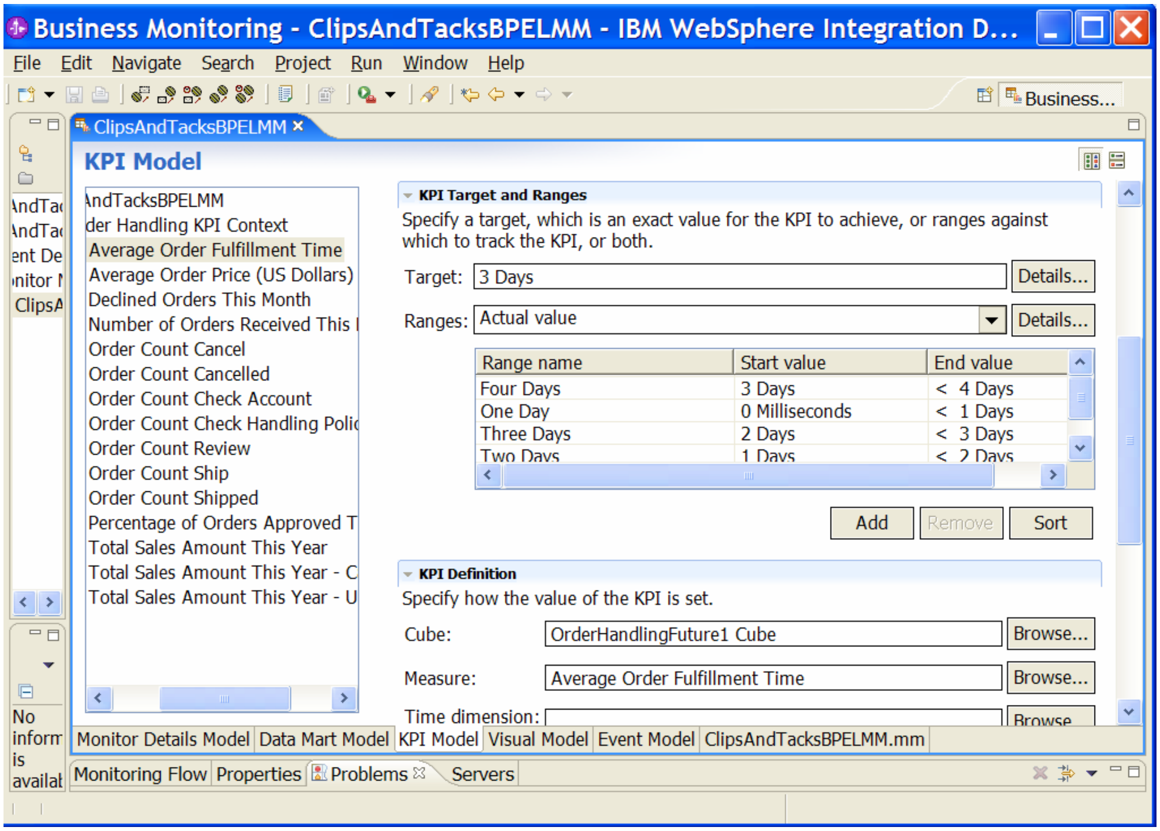
4) Click **Add** to add the One Day range. In the Add Range window, type **One Day** as the name. The name must be unique within the set of ranges that contain the range.

5) Click the **Start Value** and **End Value** cells for the One Day and specify the values **0 Milliseconds** and **<1 Days** respectively. Both values are required. The name of the range is displayed under the range set in the model tree.

Important: The start value of each row must equal the end value for the previous row. After adding ranges, you can click **Sort** to sort them from the lowest start value to the highest start value.

6) Follow the same procedure to add the Two Days, Three Days and Four Days ranges as shown in the following example:

Figure 22. Add the Two Days, Three Days and Four Days ranges



Business Monitoring - ClipsAndTacksBPELMM - IBM WebSphere Integration D...
File Edit Navigate Search Project Run Window Help
Business...
ClipsAndTacksBPELMM
KPI Model

AndTacksBPELMM
der Handling KPI Context
Average Order Fulfillment Time
Average Order Price (US Dollars)
Declined Orders This Month
Number of Orders Received This I
Order Count Cancel
Order Count Cancelled
Order Count Check Account
Order Count Check Handling Polic
Order Count Review
Order Count Ship
Order Count Shipped
Percentage of Orders Approved T
Total Sales Amount This Year
Total Sales Amount This Year - C
Total Sales Amount This Year - U

KPI Target and Ranges

Specify a target, which is an exact value for the KPI to achieve, or ranges against which to track the KPI, or both.

Target: 3 Days

Ranges: Actual value

Range name	Start value	End value
Four Days	3 Days	< 4 Days
One Day	0 Milliseconds	< 1 Days
Three Days	2 Days	< 3 Days
Two Days	1 Days	< 2 Days

KPI Definition

Specify how the value of the KPI is set.

Cube: OrderHandlingFuture1 Cube

Measure: Average Order Fulfillment Time

Time dimension:

7) Press **Ctrl+S** to save your work.

__ g. The values for the KPIs are extracted from the cube. Specify the way the KPI is evaluated as follows in the KPI Definition section:

1) Click **Browse** to select the **OrderHandlingFuture1 Cube** to associate with the KPI.

2) Click **Browse** to select the **Average Order Fulfillment Time** measure within the cube.

Note: There is no Time dimension specified within the OrderHandlingFuture1 Cube. Because you do not select a time dimension, the KPI will be evaluated using all available values.

3) Use the Dimensions in the KPI Definition section to restrict the set of facts that is included in the KPI calculation. For example, in this example you can specify a Current Status value of Shipped. This will restrict the set of facts to the Orders whose Current status is Shipped.
4) In the KPI Definition section for this KPI, below the Dimensions table, click **Add**.
5) In the window that opens, navigate to **OrderHandlingFuture1 Cube ► Current Status ► Current Status**, then click **OK**.
6) In the Dimensions table, expand **Current Status Dimension**.
7) In the row containing Attribute Current Status, click the cell in the **Value** column. Click the button that is displayed, then enter this text in the editor window:

Shipped

8) Press **Ctrl+S** to save your work.

Visual model definitions

This sample includes visual model definitions for the ClipsAndTacksBPELMM model. Diagram views will be used to display the diagrams on the Dashboard. The SVG diagrams for this sample were exported from the WebSphere Business Modeler, V6.0.2.

The following files are generated by the Modeler export. The first SVG diagram is for the KPI context, and the second is for the monitoring context.

- KM_Order_Handling__x0028_Future_1_x0029__KC.svg. If the version specified in the file is not 6.0.2, overwrite it as shown in the following example:

```
<svg
xmlns:mm="http://www.ibm.com/xmlns/prod/websphere/
monitoring/6.0.2/mm"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns="http://www.w3.org/2000/svg" color-
interpolation="auto" color-rendering="auto" fill="black"
fill-opacity="1" font-family="'sansserif'" font-size="12"
font-style="normal" font-weight="normal" height="810"
image-rendering="auto" shape-rendering="auto"
stroke="black" stroke-dasharray="none" stroke-
dashoffset="0" stroke-linecap="square" stroke-
linejoin="miter" stroke-miterlimit="10" stroke-opacity="1"
stroke-width="1" text-rendering="auto" width="2121">
```

- MDM_Order_Handling__x0028_Future_1_x0029__MC.svg. If the version specified in the file is not 6.0.2, overwrite it as shown in the following example:

```
<svg
xmlns:mm="http://www.ibm.com/xmlns/prod/websphere/
monitoring/6.0.2/mm"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns="http://www.w3.org/2000/svg" color-
interpolation="auto" color-rendering="auto" fill="black"
fill-opacity="1" font-family="'sansserif'" font-size="12"
font-style="normal" font-weight="normal" height="810"
image-rendering="auto" shape-rendering="auto"
stroke="black" stroke-dasharray="none" stroke-
dashoffset="0" stroke-linecap="square" stroke-
linejoin="miter" stroke-miterlimit="10" stroke-opacity="1"
stroke-width="1" text-rendering="auto" width="2121">
```

- OrderHandling(Future1).mm

____ 1. Import the SVG Diagrams into WebSphere Integration Developer. In the Business Monitoring perspective, select ClipsAndTacksBPELMM Business Monitoring project in Project Explorer pane.

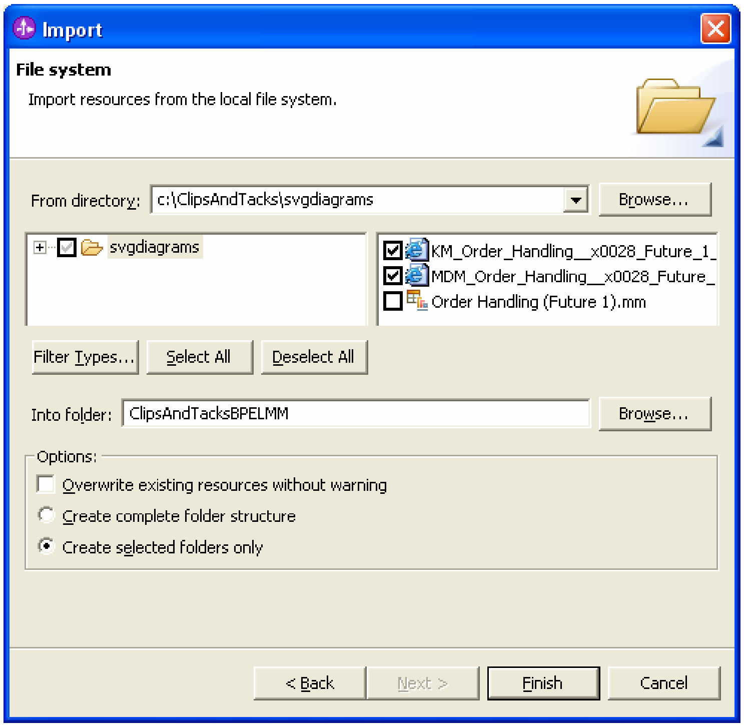
____ 2. Select **File ► Import ► File System** as shown in the following example.

____ 3. Select the two SVG diagrams for import.

____ 4. Click **Finish**.

____ 5. Press **Ctrl+S** to save your work.

Figure 23. Select the two SVG diagrams for import



Import

File system

Import resources from the local file system.

From directory: c:\ClipsAndTacks\svgdiagrams

☐ svgdiagrams

☑ KM_Order_Handling__x0028_Future_1_

☑ MDM_Order_Handling__x0028_Future_

☐ Order Handling (Future 1).mm

Into folder: ClipsAndTacksBPELMM

Options:

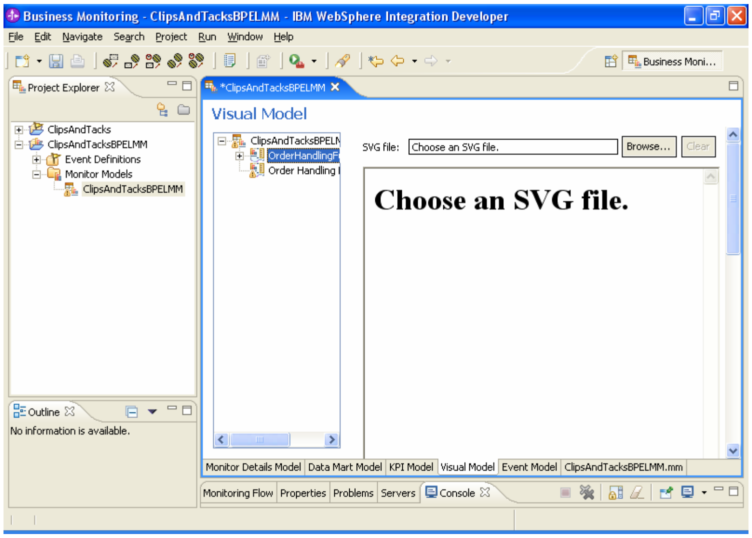
☐ Overwrite existing resources without warning

○ Create complete folder structure

● Create selected folders only

____ 6. Click the **Visual Model** tab in the Business Monitoring perspective. Click **OrderHandlingFuture1_Process**. Confirm that no SVG diagrams are displayed.

Figure 24. Click OrderHandlingFuture1_Process



Business Monitoring - ClipsAndTacksBPELMM - IBM WebSphere Integration Developer

Project Explorer

- ClipsAndTacks
- ClipsAndTacksBPELMM
  - Event Definitions
  - Monitor Models
    - ClipsAndTacksBPELMM

*ClipsAndTacksBPELMM

Visual Model

- ClipsAndTacksBPELM
  - OrderHandlingF
  - Order Handling (

SVG file: Choose an SVG file.

Choose an SVG file.

Outline

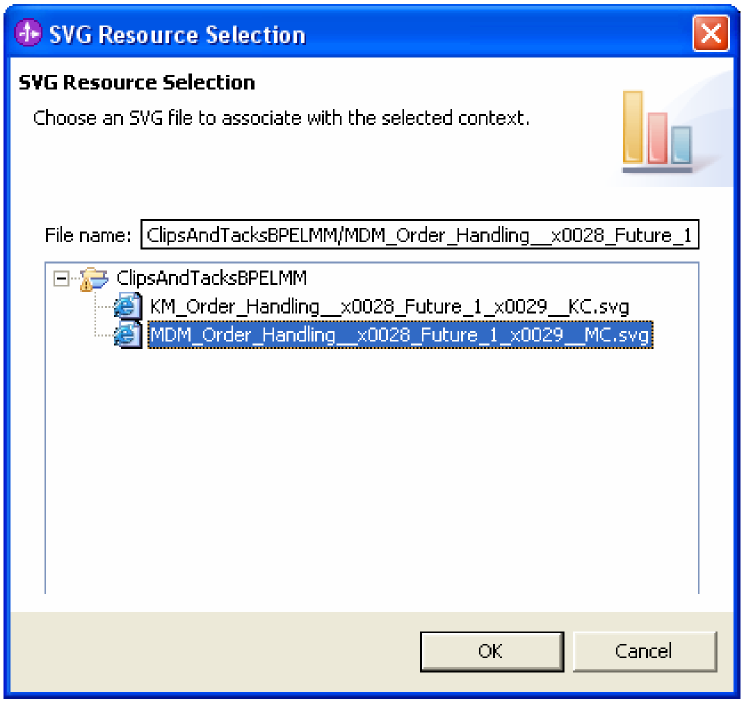
No information is available.

____ 7. To select the monitoring context SVG, click **Browse**, then select the following file, as shown in the following example: **MDM_Order_Handling__x0028_Future_1_x0029__MC.svg**.

____ 8. Click **OK**.

____ 9. Press **Ctrl+S** to save your work.

Figure 25. Select MDM_Order_Handling__x0028_Future_1_x0029__MC.svg



SVG Resource Selection

SVG Resource Selection

Choose an SVG file to associate with the selected context.

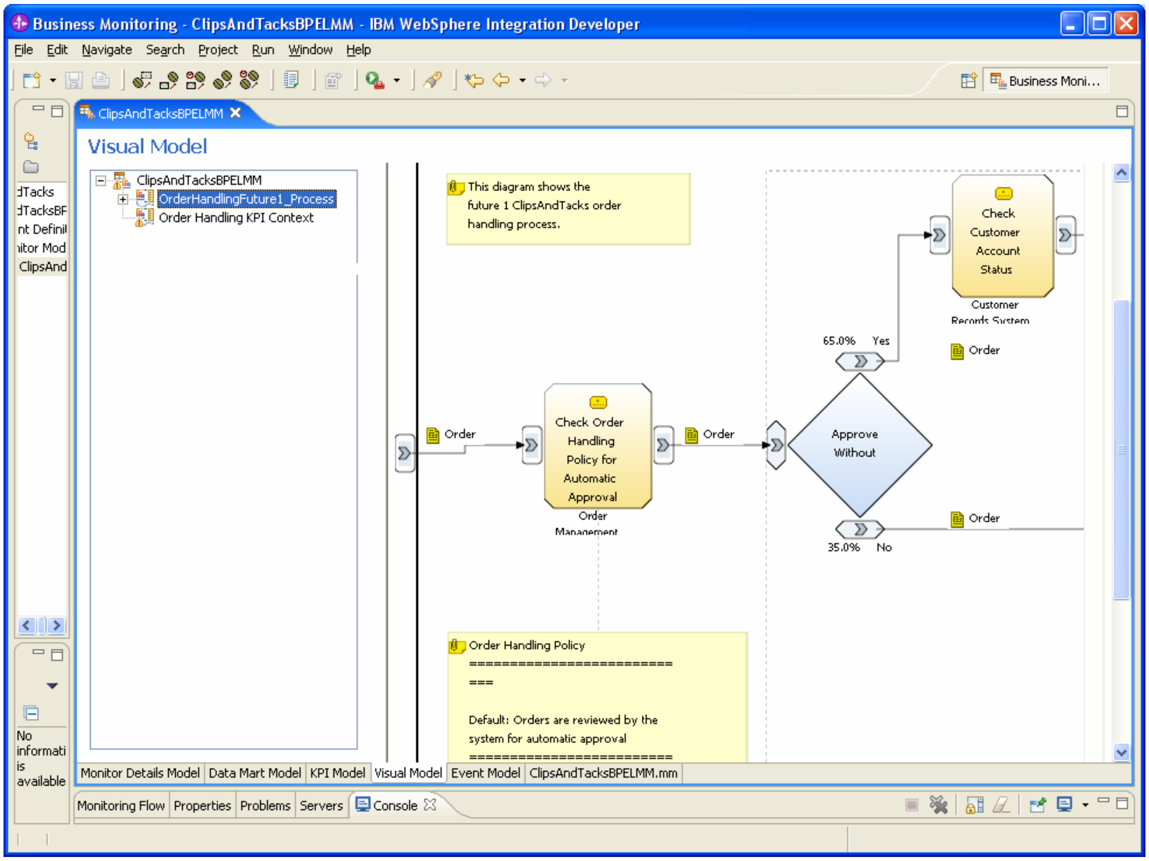
File name: ClipsAndTacksBPELMM/MDM_Order_Handling__x0028_Future_1

- ClipsAndTacksBPELMM
  - KM_Order_Handling__x0028_Future_1_x0029__KC.svg
  - MDM_Order_Handling__x0028_Future_1_x0029__MC.svg

____ 10. To select the SVG diagram for the KPI order-handling context, repeat the preceding steps and select **KM_Order_Handling__x0028_Future_1_x0029__KC.svg**.

____ 11. Confirm that an SVG diagram is displayed when you select the monitoring context or KPI context in the visual model. Here is the diagram for the monitoring context.

Figure 26. The diagram for the monitoring context



This diagram shows the future 1 ClipsAndTacks order handling process.

Order Handling Policy
=========================
===

Default: Orders are reviewed by the system for automatic approval
=========================

____ 12. Manually edit the visualization part of a monitor model. Click the ClipsAndTacksBPELMM.mm tab to examine the XML coding of the monitor model.

____ 13. Confirm that the <visualModel> tag has been added to the .mm file, as shown in the following example.

```
<visualModel id="VM">
  <visualization
context="MDM/OrderHandlingFuture1_Process">
   <svgDocument>
        <import
location="/ClipsAndTacksBPELMM/MDM_Order_Handling
__x0028_Future_1_x0029__MC.svg"/>
   </svgDocument>
  </visualization>
</visualModel>
```

____ 14. Using cut and paste, manually merge data from the .mm file produced by Modeler V6.0.2 into the existing ClipsAndTacksBPELMM.mm.

__ a. For each visualization, copy the <shapeSets> and <actions/> tags from the OrderHandling(Future1).mm file into the corresponding <visualModel> section of the ClipsAndTacksBPELMM.mm. To check how your updates should look, see the ClipsAndTacksBPELMM.mm file shipped with this model. Note: this exercise did not change the <shapeSets> tags.

__ b. Add the following actions for the monitoring context visualization in ClipsAndTacksBPELMM.mm. The Added actions will highlight the tasks selected on the Instances view in the Dashboard. The color will depend on the Current Status for the instance selected. The Review Order task will be highlighted in blue if the Current status is ‘Review Order’.

```
<actions>
              <setColor condition="Current_Status = 'Review Order' " outlineColor="blue">
                <shapeSet ref="Review_Order" />
              </setColor>
              <setColor condition="Current_Status = 'Ship Order' " outlineColor="green">
                <shapeSet ref="Ship_Order_to_Customer" />
              </setColor>
              <setColor condition="Current_Status = 'Shipped' " outlineColor="green">
                <shapeSet ref="Ship_Order_to_Customer" />
              </setColor>
              <setColor condition="Current_Status = 'Cancel Order' " outlineColor="red">
                <shapeSet ref="Cancel_Order_and_Send_Notification" />
              </setColor>
              <setColor condition="Current_Status = 'Cancelled' " outlineColor="red">
                <shapeSet ref="Cancel_Order_and_Send_Notification" />
              </setColor>
</actions>
```

__ c. Add following actions for the KPI context visualization in ClipsAndTacksBPELMM.mm. The added actions will display counts above each task in the KPI context diagram.

```
<actions>
        <setText textValue="concat('Review Order:', Order_Count_Review )"
        textColor="blue">
        <shapeSet ref="Review_Order_2_top_label" />
        </setText>
        <setText textValue="concat('Ship Order:', Order_Count_Ship )" textColor="blue">
          <shapeSet ref="Ship_Order_to_Customer_2_top_label" />
                      </setText>
        <setText textValue="concat('Shipped:', Order_Count_Shipped )" textColor="blue">
        <shapeSet ref="Ship_Order_to_Customer_2_bottom_label" />
                      </setText>
        <setText textValue="concat('Cancel Order:', Order_Count_Cancel )"
        textColor="blue">
        <shapeSet ref="Cancel_Order_and_Send_Notification_2_top_label" />
                      </setText>
        <setText textValue="concat('Cancelled:', Order_Count_Cancelled )"
        textColor="blue">
          <shapeSet ref="Cancel_Order_and_Send_Notification_2_bottom_label" />
              </setText>
</actions>
```

__ d. To confirm that you have completed your manual updates correctly, check your results against the ClipsAndTacksBPELMM.mm file shipped with this model.

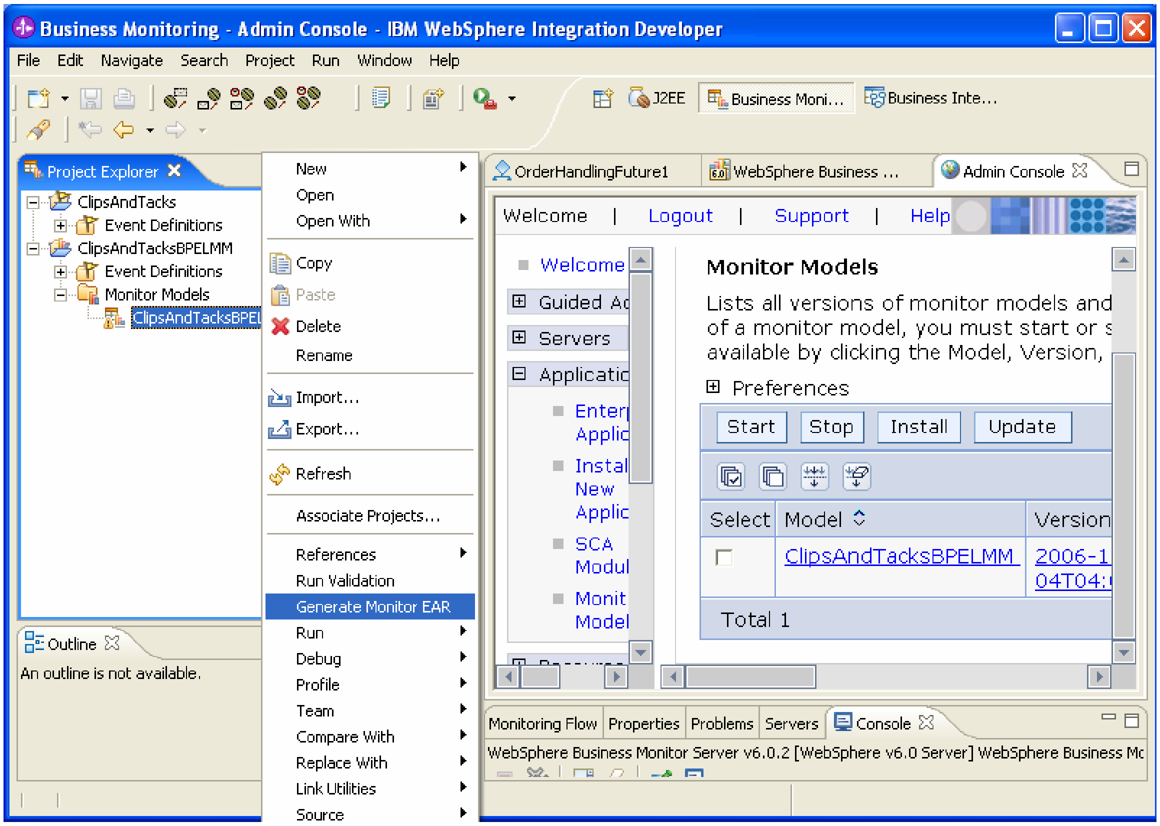
Part 4. Generate the monitor model EAR file

If you do not want to generate a Monitor model EAR file, you can skip this section and deploy the ClipsAndTacksBPELMMEAR.ear file supplied with this sample. Proceed to the next section on deploying the monitor model on the Monitor server.

____ 1. Generate the monitor model EAR file from the monitor model in the Business Monitoring perspective.

__ a. Right-click the **ClipsAndTacksBPELMM** monitor model and select **Generate Monitor EAR**.

Figure 27. Select Generate Monitor EAR



An outline is not available.

Monitor Models

Lists all versions of monitor models and of a monitor model, you must start or s available by clicking the Model, Version,

Select	Model	Version
□	ClipsAndTacksBPELMM	2006-1 04T04:
Total 1		

WebSphere Business Monitor Server v6.0.2 [WebSphere v6.0 Server] WebSphere Business Mc

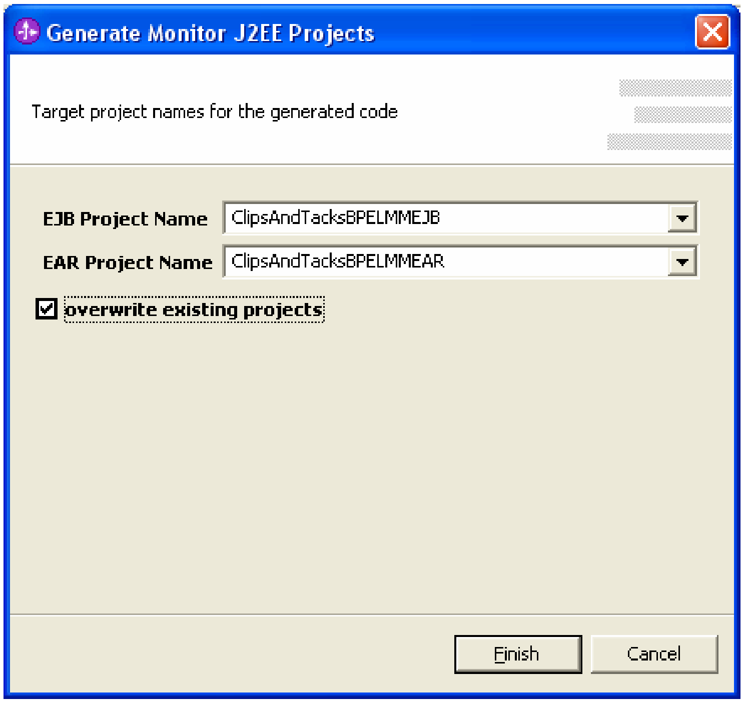
____ 2. Enter the following information for the project names:

__ a. For EJB Project Name, select **ClipsAndTacksBPELMMEJB**.

__ b. For EAR Project Name, select **ClipsAndTacksBPELMMEAR**.

__ c. Select the **overwrite existing projects** check box, and then click **Finish**.

Figure 28. Select the overwrite existing projects check box



Generate Monitor J2EE Projects

Target project names for the generated code

EJB Project Name: ClipsAndTacksBPELMMEJB

EAR Project Name: ClipsAndTacksBPELMMEAR

☑ overwrite existing projects

_____ 3. Deploy the monitor model from the J2EE perspective.

__ a. Open the **J2EE** perspective.

__ b. In the Project Explorer pane, right-click **EJB Projects ► ClipsAndTacksBPELMMEJB**, then select **Deploy**. A progress window shows the status of the operation, and then closes when the operation is complete.

__ c. Wait for deployment to be completed without any errors.

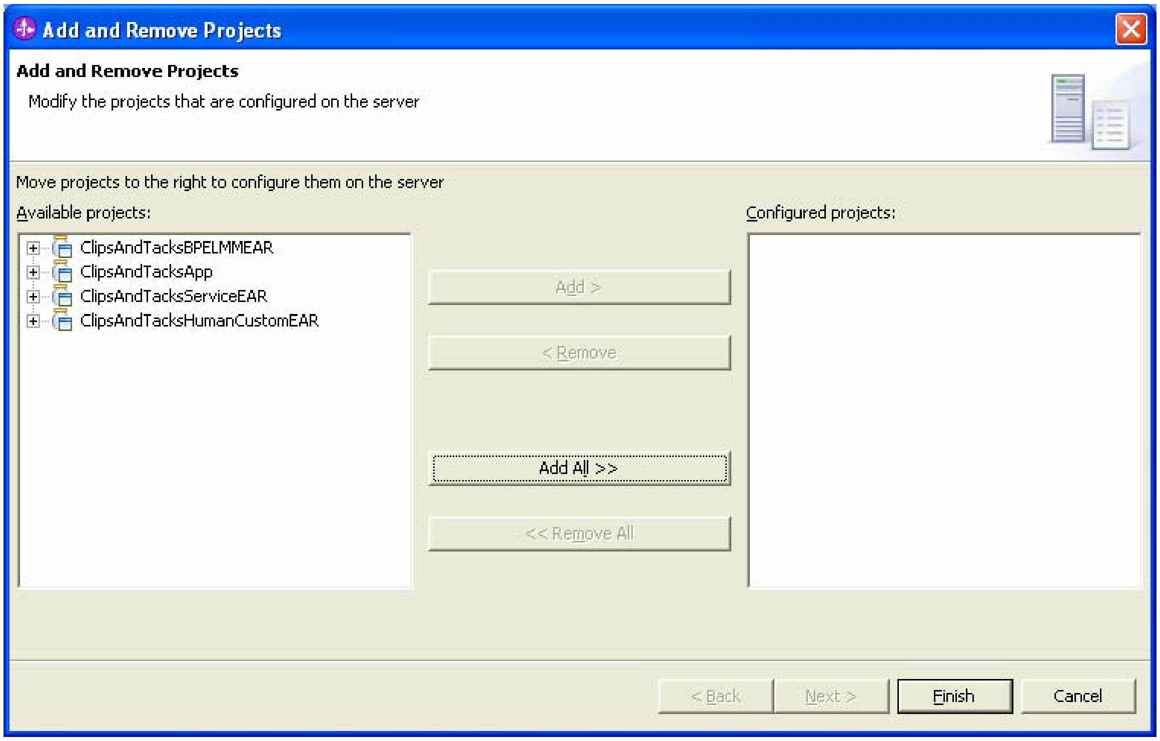
_____ 4. Deploy the EAR file using Add and Remove Projects, and complete the deployment on WebSphere Monitor Server using the WebSphere Administrative Console.

__ a. Start the WebSphere Monitor Server from the **Servers** tab. Wait until the status indicates Started.

__ b. Right-click the server and select **Add and remove project**.

__ c. Click **Add All** to deploy all of the projects.

Figure 29. Click Add All to deploy all of the projects



Add and Remove Projects

Add and Remove Projects

Modify the projects that are configured on the server

Move projects to the right to configure them on the server

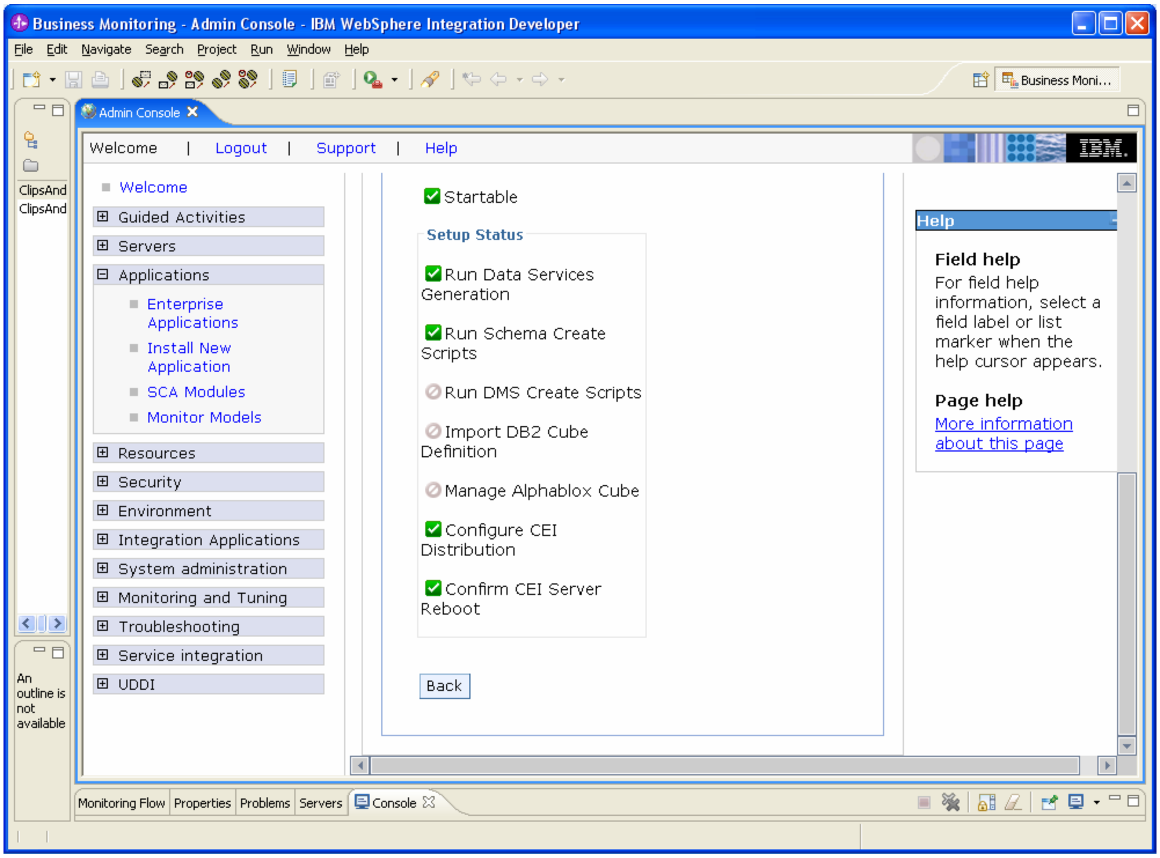
Available projects:

- ClipsAndTacksBPELMMEAR
- ClipsAndTacksApp
- ClipsAndTacksServiceEAR
- ClipsAndTacksHumanCustomEAR

Configured projects:

Note: In the Monitor Unit Test Environment (UTE) there are fewer life cycle steps to run. Life cycle steps 3, 4, and 5 are disabled. Complete steps 1, 2, 6 and 7 following the directions for each life cycle step as shown in the following example.

Figure 30. Follow the directions for each life cycle step as shown



☑ Startable

Setup Status

☑ Run Data Services Generation

☑ Run Schema Create Scripts

⊘ Run DMS Create Scripts

⊘ Import DB2 Cube Definition

⊘ Manage Alphablox Cube

☑ Configure CEI Distribution

☑ Confirm CEI Server Reboot

Help

Field help
For field help information, select a field label or list marker when the help cursor appears.

Page help
More information about this page

Refer to the deployment document provide with the Clips and Tacks samples for more-detailed instructions for each step.

____ 5. Create data and events to monitor using the ClipsAndTacks application. First, follow the instructions in the Redbooks publication to define the CLIPTACK data source and create the CLIPTACK database, using information at this Web address: http://localhost:9080/ClipsAndTacksFrontWeb

/CreateDatabaseServlet. (This address might be different on your system.)

After completing this step, you can place orders using the Web front-end application, which was deployed with ClipsAndTacksApp. The Order Handling (Future1) process will be invoked and will proceed through the Check Order Handling for Automatic Approval activity (business rule), then will wait in the Review Order activity (human task) if the order amount exceeds $750.00. Otherwise, the order will be approved and will wait in the ShipOrderToCutomer or CancelOrderAndSendNotification human tasks.

Run the custom human task applications to process the human tasks with the external browser, as specified in the Redbooks publication. You can review orders and approve or decline them. You can also confirm shipment or cancel shipment of orders. Run the applications using these Web addresses:

- To place orders:
  http://localhost:9080/ClipsAndTacksFrontWeb/
- To process orders:
  http://localhost:9080/ClipsAndTacksHumanCustomWeb/
- To see the updates in the CLIPTACK database after orders are placed, use this Web address:

  http://localhost:9080/ClipsAndTacksFrontWeb/ListServlet

Note: Your port number might be different from the one shown in the preceding Web addresses.
To find the port number, browse the Process Server log, then search for the ClipsAndTacksFrontWeb and ClipsAndTacksHumanTasks Web modules. For example, check the SystemOut.log file at C:\IBM\WebSphere\ProcServer\profiles\wbmonitor\logs\server1\SystemOut.log, or C:\IBM\WebSphere\ID\602\pf\wbmonitor\logs\server1\SystemOut.log if you are using WebSphere Integration Developer and an embedded Process Server.

```
[2/6/07 17:33:08:391 EST] 0000003d WebGroup      A
SRVE0169I: Loading Web Module: ClipsAndTacksFrontWeb.
[2/6/07 17:33:08:453 EST] 0000003d VirtualHost   I
SRVE0250I: Web Module ClipsAndTacksFrontWeb has been
bound to default_host[*:9081,*:80,*:9444].
[2/6/07 17:33:08:516 EST] 0000003d WebGroup      A
SRVE0169I: Loading Web Module: ClipsAndTacksHumanTasks.
[2/6/07 17:33:08:625 EST] 0000003d VirtualHost   I
SRVE0250I: Web Module ClipsAndTacksHumanTasks has been
bound to default_host[*:9081,*:80,*:9444].
```

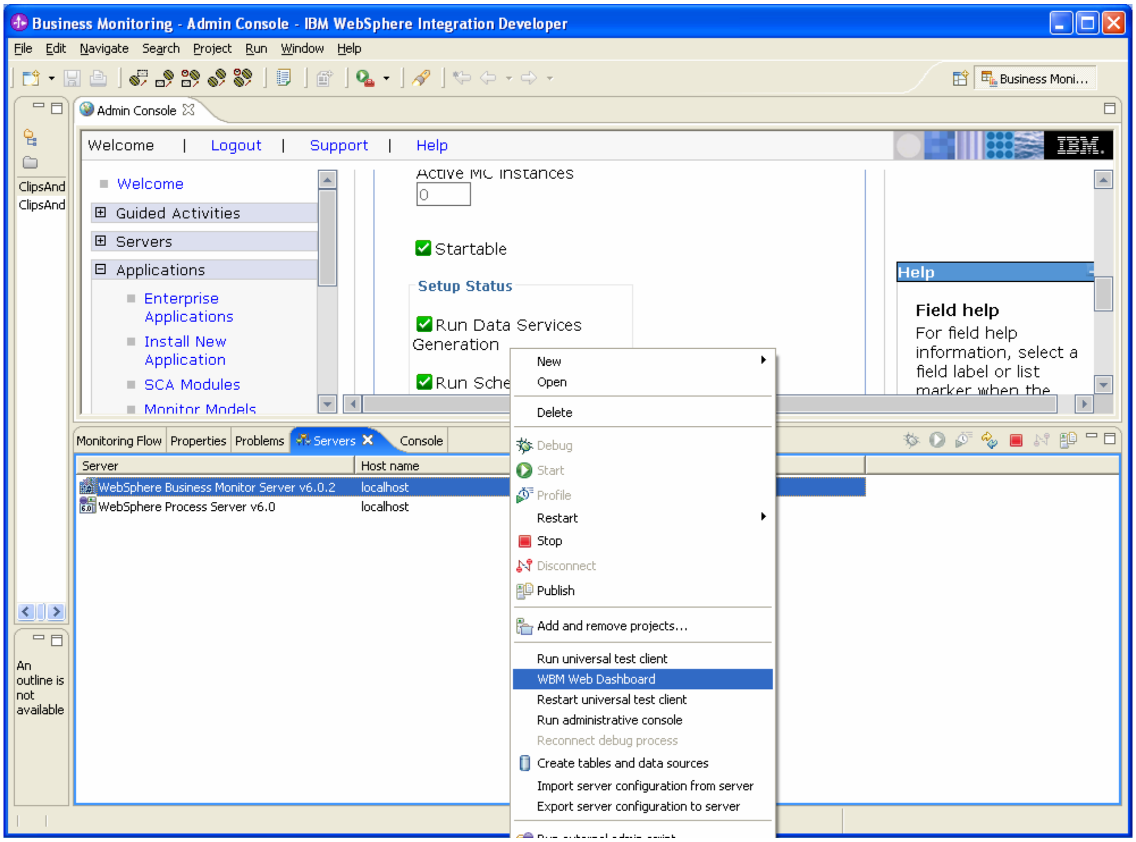
In the preceding logs, the ClipsAndTacks sample Web modules are bound to port 9081.

____ 6. Use the WebSphere Business Monitor Unit Test Environment (UTE) to validate that the monitor model is processing events as expected. This lightweight environment avoids the Dashboard prerequisites such as Portal, AlphaBlox and CubeViews. Use the WebSphere Business Monitor Dashboard to verify the deployed monitor model.

__ a. Start WebSphere Business Monitor Server, V6.0.2 from the Servers view if it is stopped. Wait until the Server status indicates Started.

__ b. Right-click the server and select WBM Web Dashboard.

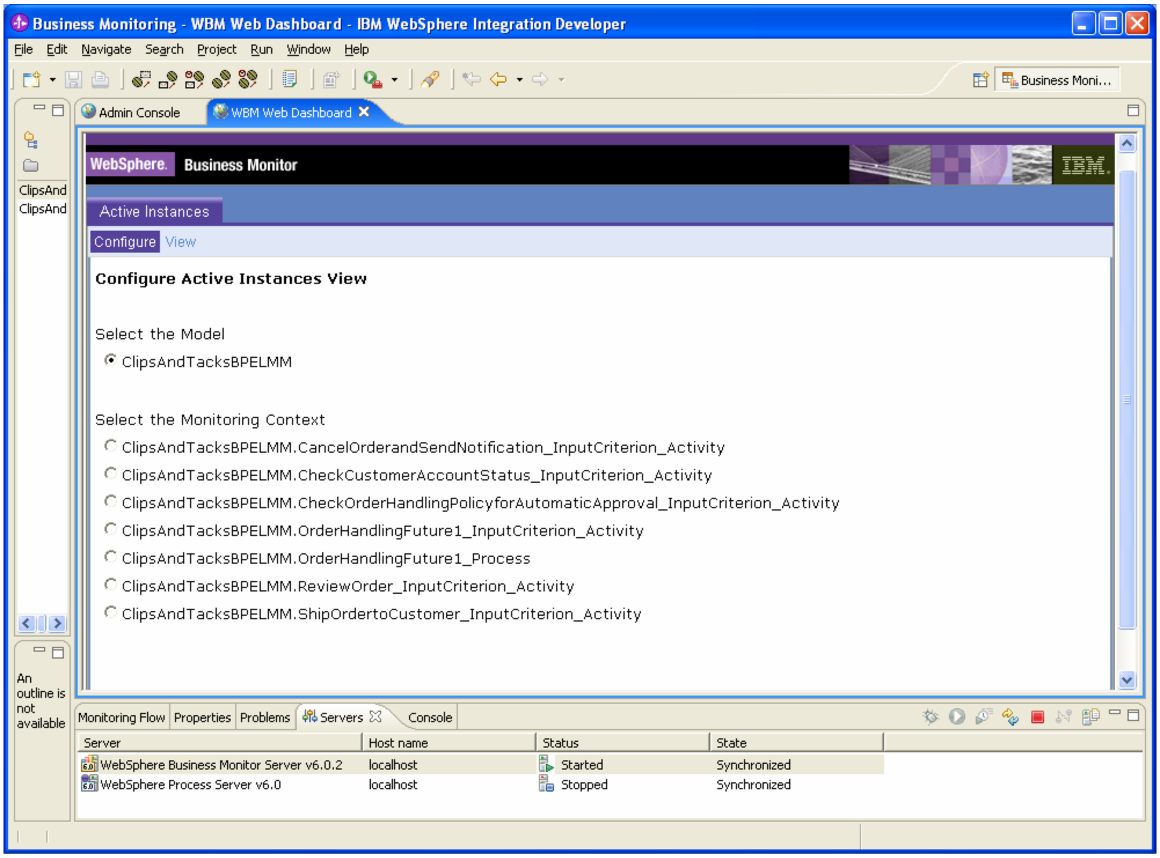
Figure 31. Select WBM Web Dashboard


Business Monitoring - Admin Console - IBM WebSphere Integration Developer
File Edit Navigate Search Project Run Window Help
Business Moni...
Admin Console
ClipsAnd
ClipsAnd
Welcome | Logout | Support | Help
IBM.
Welcome
Guided Activities
Servers
Applications
Enterprise Applications
Install New Application
SCA Modules
Monitor Models
Active MC instances
0
Startable
Setup Status
Run Data Services Generation
Run Sche
Help
Field help
For field help information, select a field label or list marker when the
An outline is not available
Monitoring Flow
Properties
Problems
Servers
Console
New
Open
Delete
Debug
Start
Profile
Restart
Stop
Disconnect
Publish
Add and remove projects...
Run universal test client
WBM Web Dashboard
Restart universal test client
Run administrative console
Reconnect debug process
Create tables and data sources
Import server configuration from server
Export server configuration to server

Server	Host name
WebSphere Business Monitor Server v6.0.2	localhost
WebSphere Process Server v6.0	localhost

__ c. In the Configure Active Instances view, select the **ClipsAndTacksBPELMM** model. A list of the monitoring contexts that are available in the model will be displayed.

Figure 32. A list of available monitoring contexts are displayed



Configure Active Instances View

Select the Model

● ClipsAndTacksBPELMM

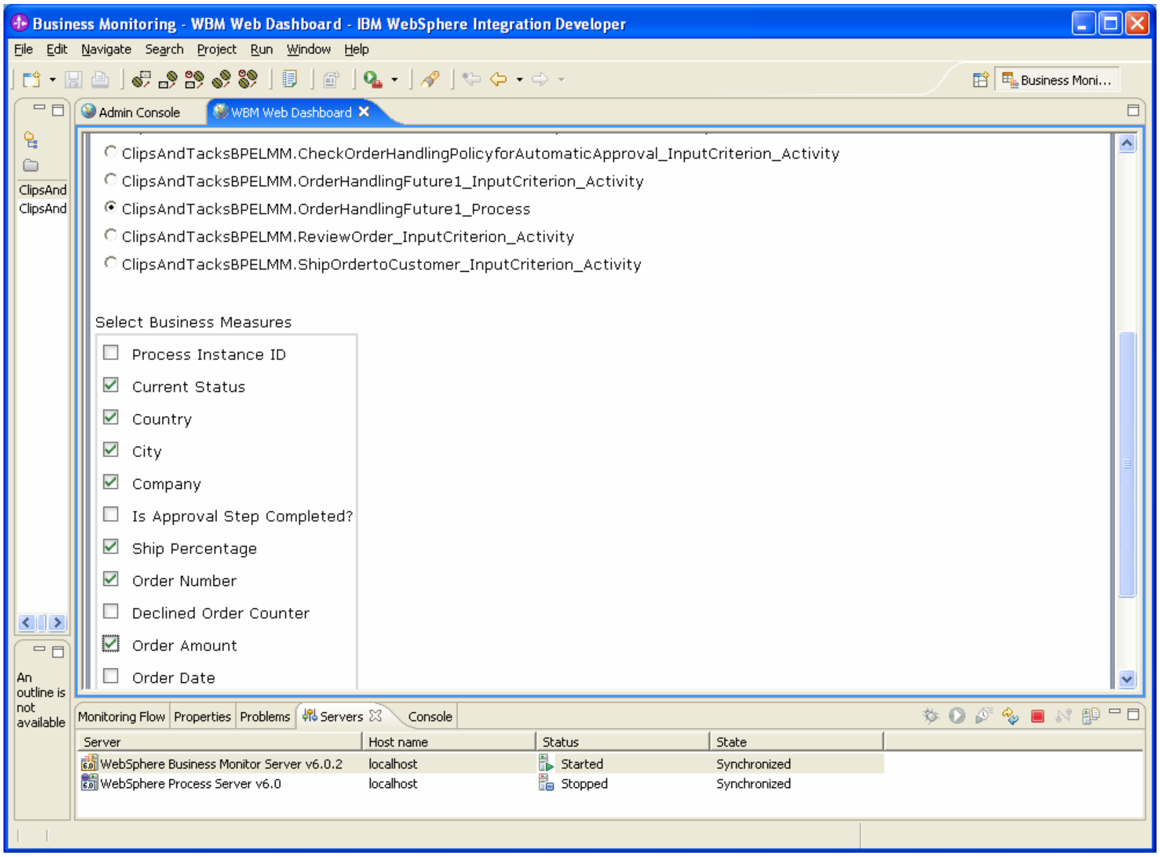
Select the Monitoring Context

○ ClipsAndTacksBPELMM.CancelOrderandSendNotification_InputCriterion_Activity
○ ClipsAndTacksBPELMM.CheckCustomerAccountStatus_InputCriterion_Activity
○ ClipsAndTacksBPELMM.CheckOrderHandlingPolicyforAutomaticApproval_InputCriterion_Activity
○ ClipsAndTacksBPELMM.OrderHandlingFuture1_InputCriterion_Activity
○ ClipsAndTacksBPELMM.OrderHandlingFuture1_Process
○ ClipsAndTacksBPELMM.ReviewOrder_InputCriterion_Activity
○ ClipsAndTacksBPELMM.ShipOrdertoCustomer_InputCriterion_Activity

Server	Host name	Status	State
WebSphere Business Monitor Server v6.0.2	localhost	Started	Synchronized
WebSphere Process Server v6.0	localhost	Stopped	Synchronized

__ d. Select **ClipsAndTacksBPELMM.OrderHandlingFuture1_Process**. The list of business measures for the selected context will be displayed.

Figure 33. A list of business measures for the context are displayed


Business Monitoring - WBM Web Dashboard - IBM WebSphere Integration Developer
File Edit Navigate Search Project Run Window Help
Business Moni...
Admin Console
WBM Web Dashboard
ClipsAnd
ClipsAnd
An outline is not available
Monitoring Flow
Properties
Problems
Servers
Console

○ ClipsAndTacksBPELMM.CheckOrderHandlingPolicyforAutomaticApproval_InputCriterion_Activity
○ ClipsAndTacksBPELMM.OrderHandlingFuture1_InputCriterion_Activity
● ClipsAndTacksBPELMM.OrderHandlingFuture1_Process
○ ClipsAndTacksBPELMM.ReviewOrder_InputCriterion_Activity
○ ClipsAndTacksBPELMM.ShipOrdertoCustomer_InputCriterion_Activity

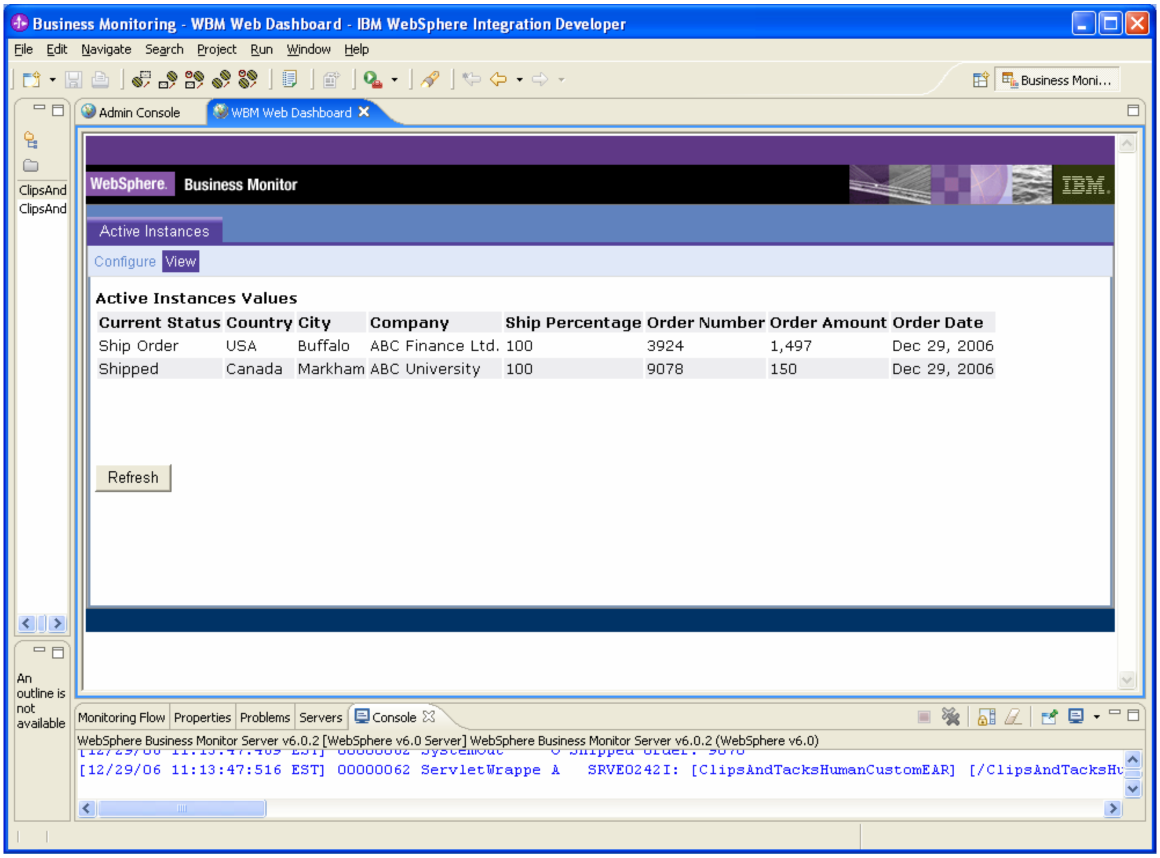
Select Business Measures

- □ Process Instance ID
- ☑ Current Status
- ☑ Country
- ☑ City
- ☑ Company
- □ Is Approval Step Completed?
- ☑ Ship Percentage
- ☑ Order Number
- □ Declined Order Counter
- ☑ Order Amount
- □ Order Date

Server	Host name	Status	State
WebSphere Business Monitor Server v6.0.2	localhost	Started	Synchronized
WebSphere Process Server v6.0	localhost	Stopped	Synchronized

__ e. Select the measures to be displayed and click **View**. This view should display the instance data that was created using the ClipsAndTacksFrontWeb Web application and the ClipsAndTacksHumanCustomWeb JSP pages. Examine the order data and current status for accuracy as shown in the following example. This example shows two active instances: one with a current status of Shipped and the other with a current status of Ship Order. The Ship Percentage value for both is 100, because the Ship Order trigger has been fired. You can check other defined metrics such as Country, City, Company Name, Order Number, Order Amount, and Order Date for accuracy.

Figure 34. This example shows two active instances


Business Monitoring - WBM Web Dashboard - IBM WebSphere Integration Developer
File Edit Navigate Search Project Run Window Help
Business Moni...
Admin Console
WBM Web Dashboard
ClipsAnd
ClipsAnd
WebSphere. Business Monitor
IBM.
Active Instances
Configure
View
Refresh
An outline is not available
Monitoring Flow
Properties
Problems
Servers
Console

Active Instances Values

Current Status	Country	City	Company	Ship Percentage	Order Number	Order Amount	Order Date
Ship Order	USA	Buffalo	ABC Finance Ltd.	100	3924	1,497	Dec 29, 2006
Shipped	Canada	Markham	ABC University	100	9078	150	Dec 29, 2006

WebSphere Business Monitor Server v6.0.2 [WebSphere v6.0 Server] WebSphere Business Monitor Server v6.0.2 (WebSphere v6.0)

```
[12/29/06 11:13:47:469 EST] 00000062 SystemOut     O Shipped Order: 9078
[12/29/06 11:13:47:516 EST] 00000062 ServletWrappe A   SRVE0242I: [ClipsAndTacksHumanCustomEAR] [/ClipsAndTacksHu
```

Part 5. Deploy the monitor model on the Monitor server

The monitor model can be deployed on the Monitor server and tested with a Dashboard Server after testing in the UTE environment is completed.

1. Export the ClipsAndTacksApp.ear, ClipsAndTacksHumanCustomEAR.ear, and ClipsAndTacksBPELMMEAR.ear files from WebSphere Integration Developer. For example, right-click the **ClipsAndTacksApp** application from the **J2EE** perspective. Select **Export ► EAR File**.

2. Deploy the ClipsAndTacksApp.ear, ClipsAndTacksHumanCustomEAR.ear, and ClipsAndTacksBPELMMEAR.ear files on a Monitor server using the administrative console. See the deployment document provided with the Clips and Tacks samples for further details.

3. Use the WebSphere Portal Server administrative features to create Dashboard pages. Configure different types of views: Gauge, Dimensional, Instance, and KPI.

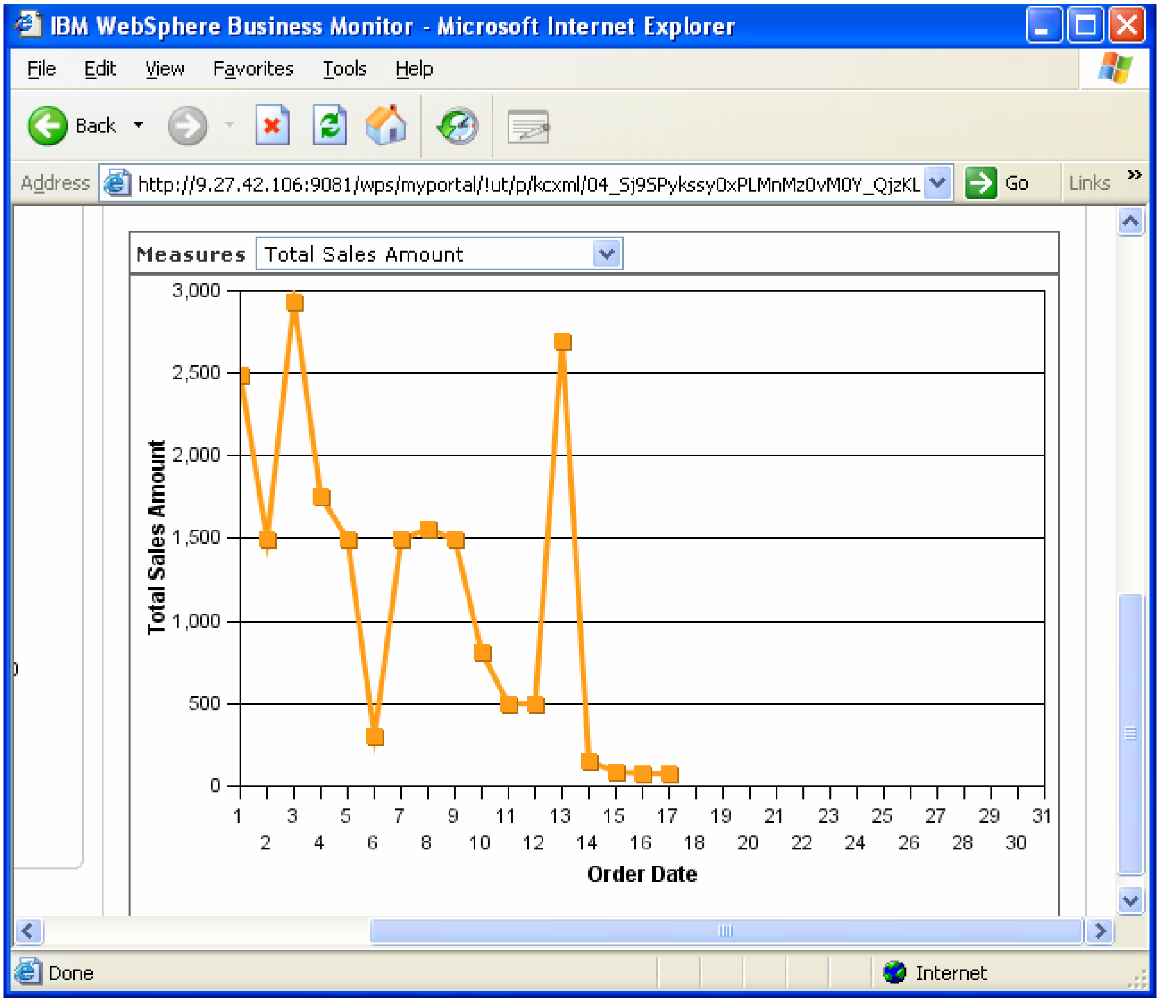
4. Assemble dashboards from the different configured views. See the Creating a dashboard document provided with the Clips and Tacks samples or further details.

5. Used the Web applications available with the Order Handling (Future 1) project to verify execution and values of metrics defined in MME.

The following view shows a Dashboard page assembled with a Gauge view, a KPI view and a Dimensional view. For clarity, each view is shown separately.

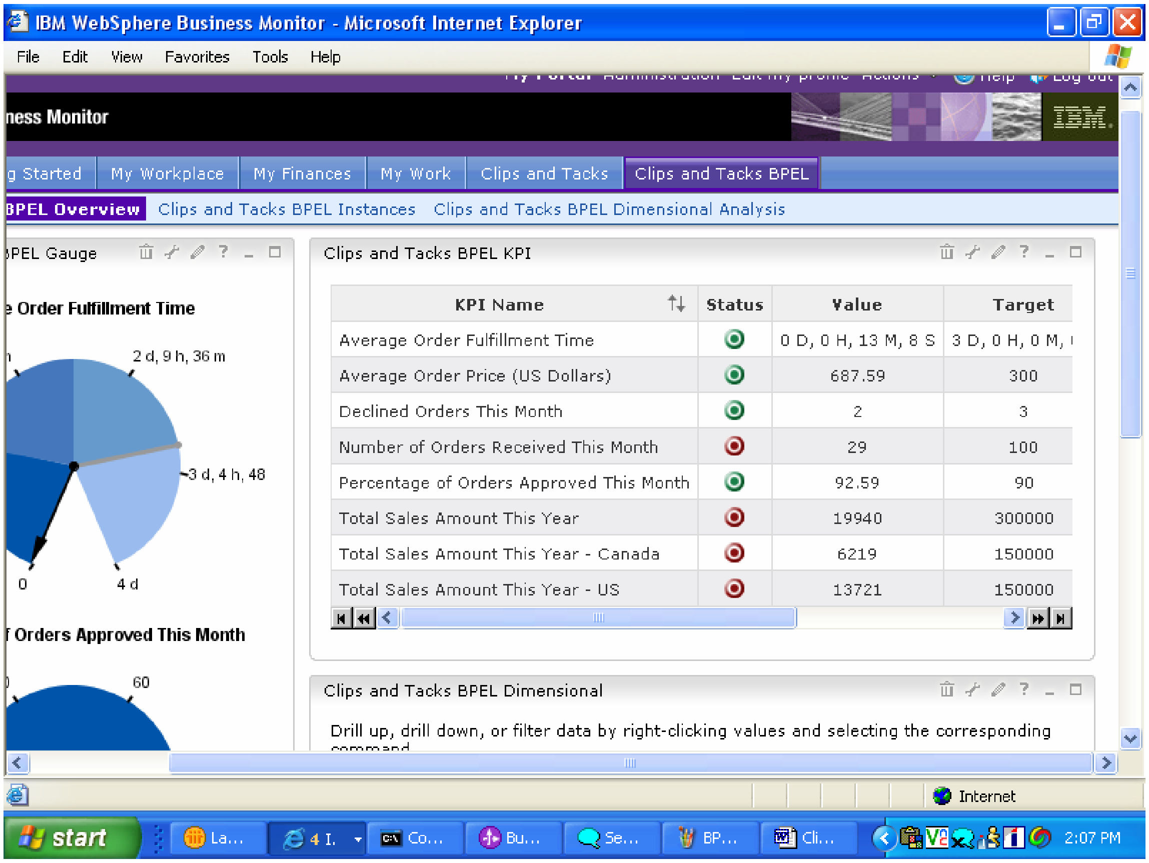
The following figure illustrates the **Dimensional** view:

Figure 35.The Dimensional view



The following figure illustrates the **KPI** view and part of the **Gauge** view:

Figure 36. The KPI view and part of the Gauge view

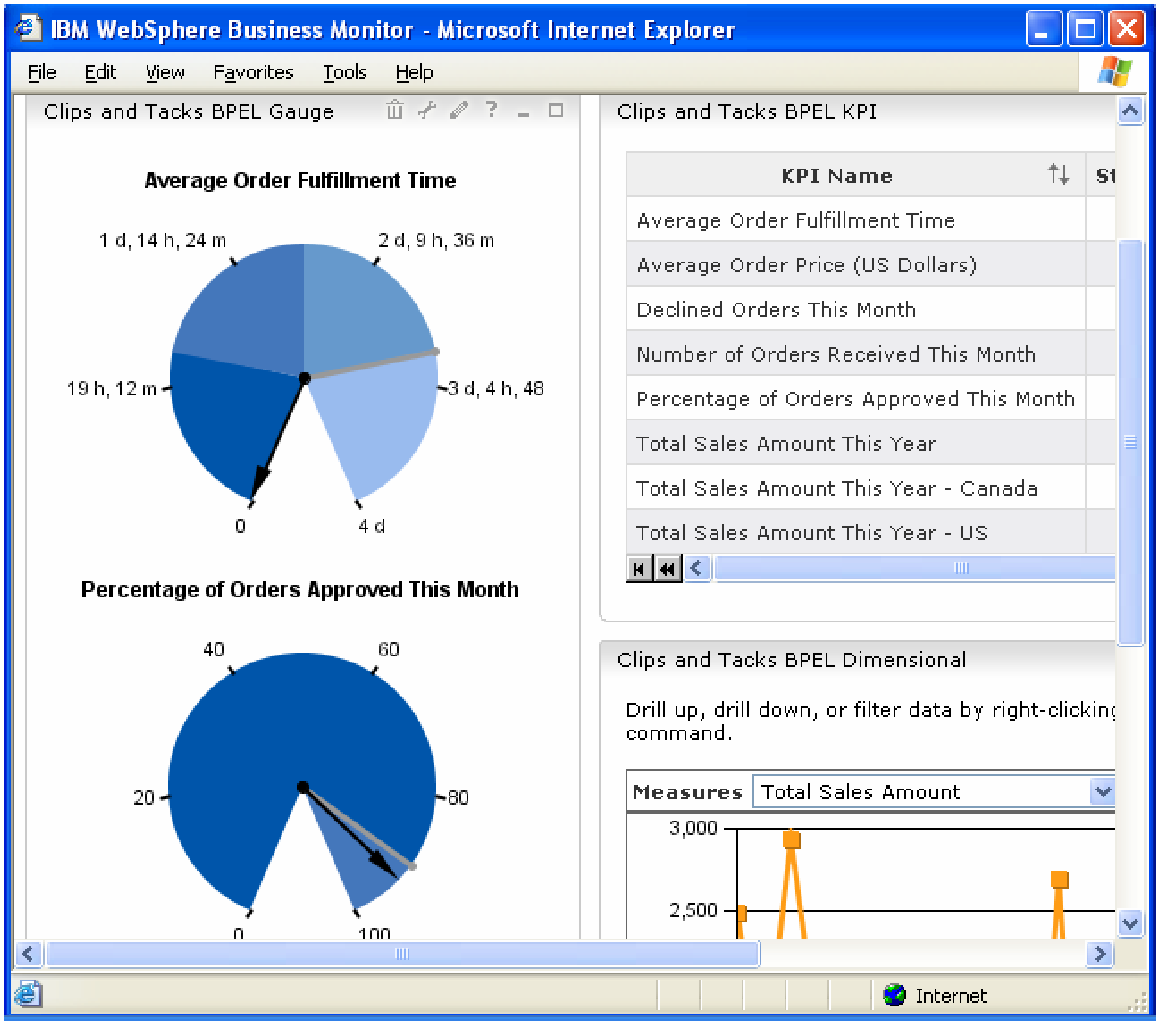

IBM WebSphere Business Monitor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
ness Monitor
g Started My Workplace My Finances My Work Clips and Tacks Clips and Tacks BPEL
BPEL Overview Clips and Tacks BPEL Instances Clips and Tacks BPEL Dimensional Analysis
BPEL Gauge
e Order Fulfillment Time
2 d, 9 h, 36 m
3 d, 4 h, 48
0
4 d
f Orders Approved This Month
60
Clips and Tacks BPEL KPI
Clips and Tacks BPEL Dimensional
Internet
start
2:07 PM

KPI Name	Status	Value	Target
Average Order Fulfillment Time	🟢	0 D, 0 H, 13 M, 8 S	3 D, 0 H, 0 M, (
Average Order Price (US Dollars)	🟢	687.59	300
Declined Orders This Month	🟢	2	3
Number of Orders Received This Month	🔴	29	100
Percentage of Orders Approved This Month	🟢	92.59	90
Total Sales Amount This Year	🔴	19940	300000
Total Sales Amount This Year - Canada	🔴	6219	150000
Total Sales Amount This Year - US	🔴	13721	150000

Drill up, drill down, or filter data by right-clicking values and selecting the corresponding command

The following figure illustrates the **Gauge** view:

Figure 37. The Gauge view

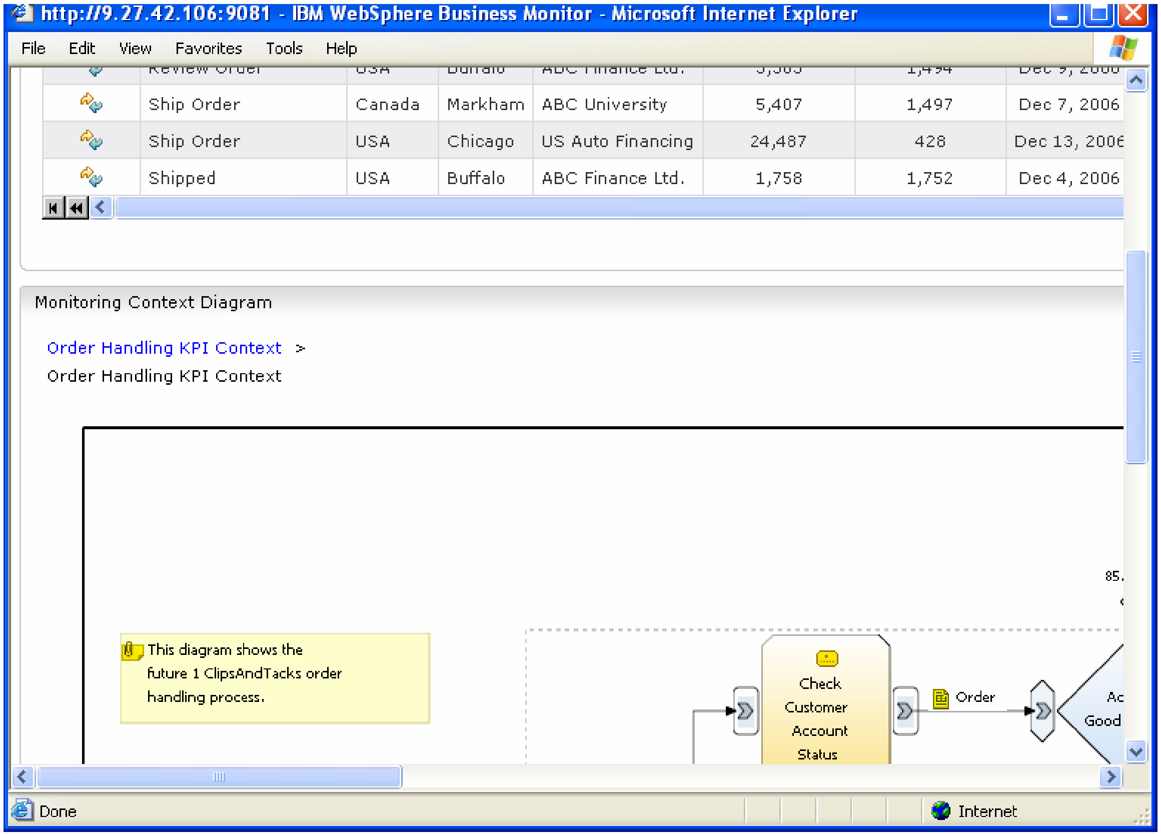

IBM WebSphere Business Monitor - Microsoft Internet Explorer
File
Edit
View
Favorites
Tools
Help
Clips and Tacks BPEL Gauge
Average Order Fulfillment Time
1 d, 14 h, 24 m
2 d, 9 h, 36 m
19 h, 12 m
3 d, 4 h, 48
0
4 d
Percentage of Orders Approved This Month
40
60
20
80
0
100
Clips and Tacks BPEL KPI
Clips and Tacks BPEL Dimensional
Measures
Total Sales Amount
3,000
2,500
Internet

KPI Name	St
Average Order Fulfillment Time	
Average Order Price (US Dollars)	
Declined Orders This Month	
Number of Orders Received This Month	
Percentage of Orders Approved This Month	
Total Sales Amount This Year	
Total Sales Amount This Year - Canada	
Total Sales Amount This Year - US	

Drill up, drill down, or filter data by right-clicking
command.

The following example shows the **Dashboard** page assembled with an **Instance** view and a **KPI Context Diagram** view.

Figure 38. Dashboard page with Instance view and KPI Context Diagram view



http://9.27.42.106:9081 - IBM WebSphere Business Monitor - Microsoft Internet Explorer
File
Edit
View
Favorites
Tools
Help

	Review Order	USA	Buffalo	ABC Finance Ltd.	5,565	1,494	Dec 9, 2006
	Ship Order	Canada	Markham	ABC University	5,407	1,497	Dec 7, 2006
	Ship Order	USA	Chicago	US Auto Financing	24,487	428	Dec 13, 2006
	Shipped	USA	Buffalo	ABC Finance Ltd.	1,758	1,752	Dec 4, 2006

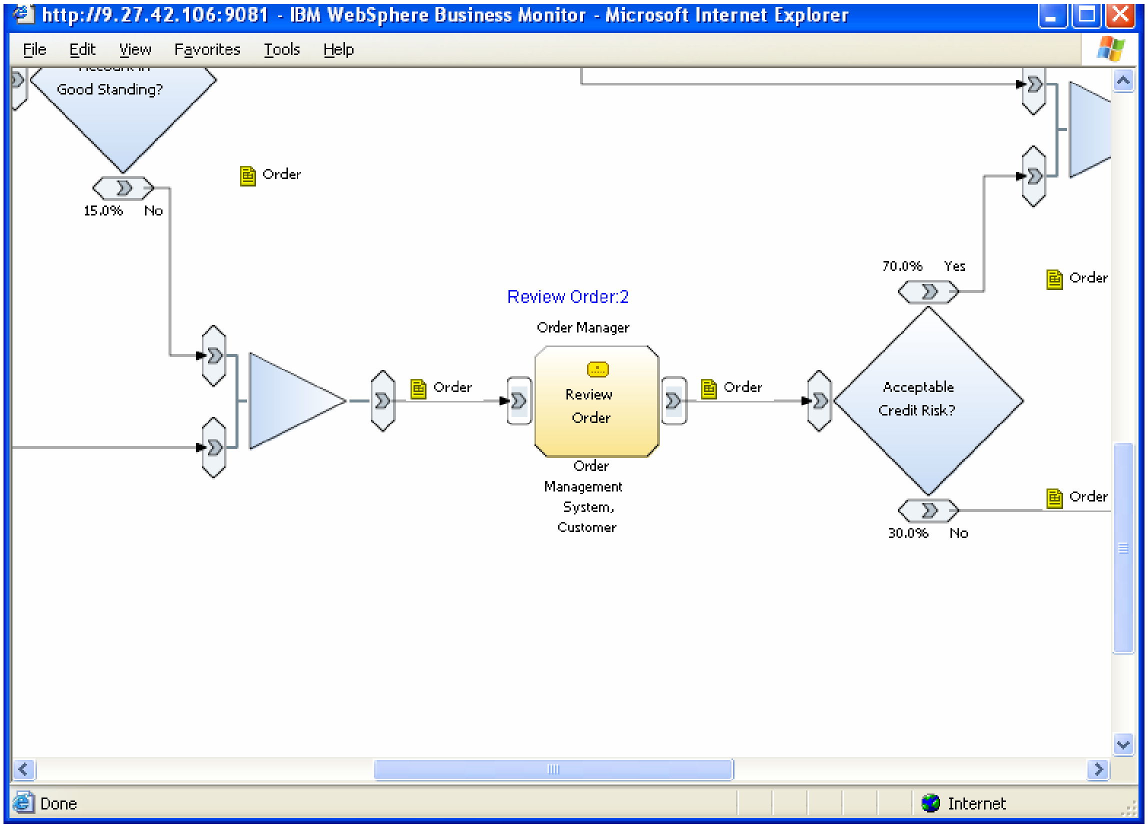
Monitoring Context Diagram

Order Handling KPI Context >
Order Handling KPI Context

This diagram shows the future 1 ClipsAndTacks order handling process.

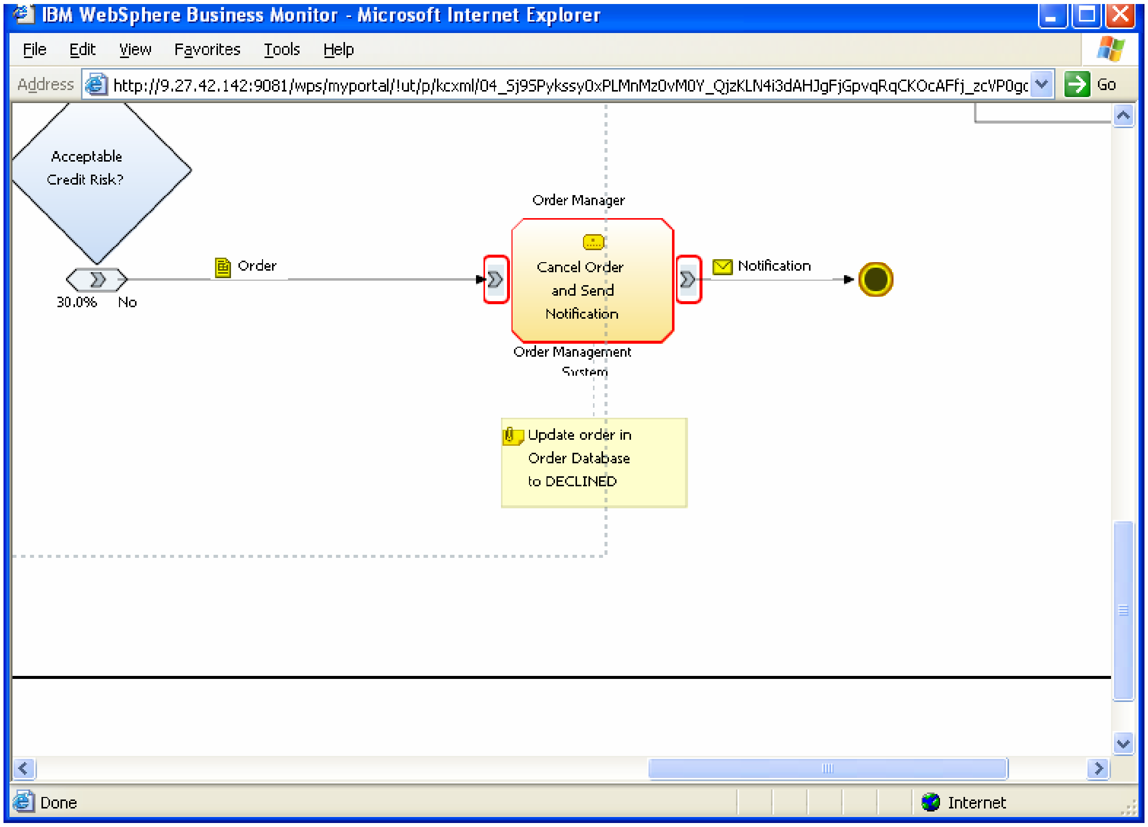
The Following SVG diagram is displayed for the KPI context on the same page. The text in blue (Review Order: 2) displays the count of instances (2) with a given status (Review Order). This diagram reflects the values in the **Clips And Tacks BPEL Status KPI**.

Figure 39.Values in the Clips And Tacks BPEL Status KPI



The following SVG diagram is displayed for each monitoring context when the diagram link on an instance is clicked. The status box in the middle is highlighted in red to reflect the current status of the instance, which is **Cancelled**. This highlighting was defined in the monitor model <visualModel>.

Figure 40. Box in the middle is highlighted to reflect current status

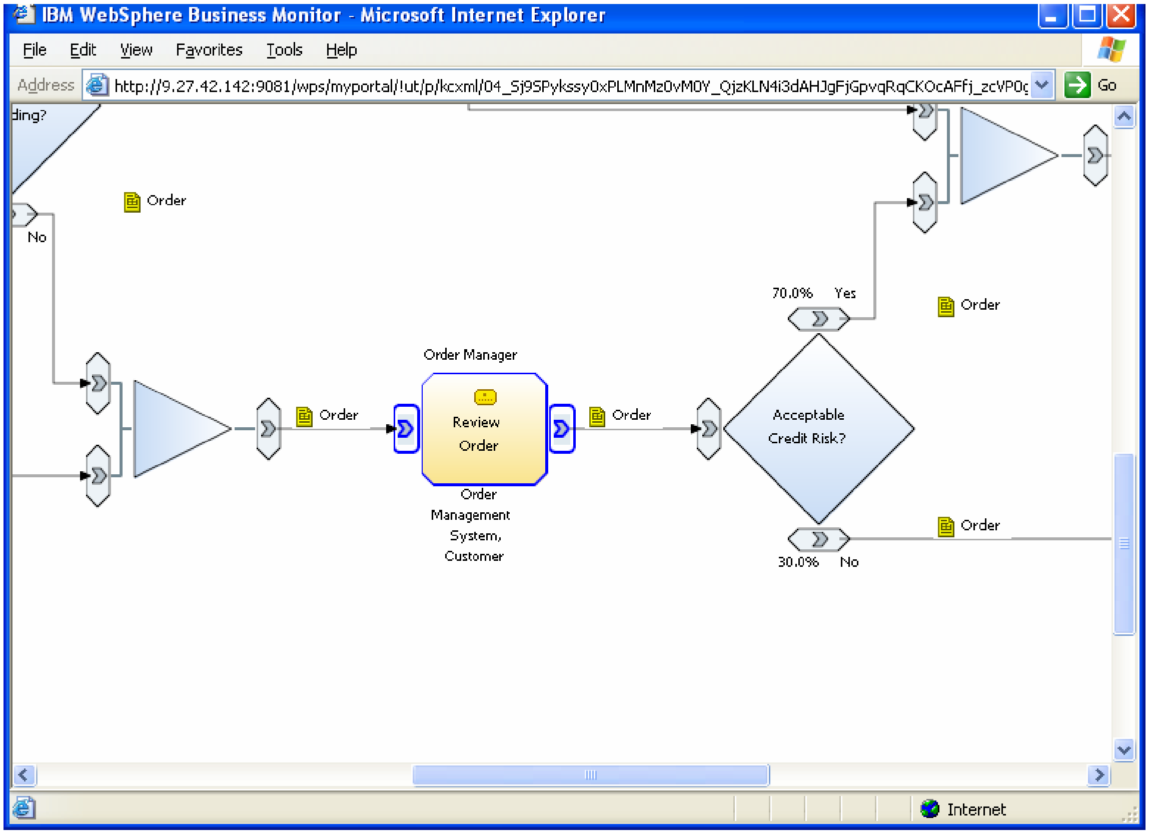


IBM WebSphere Business Monitor - Microsoft Internet Explorer

Address http://9.27.42.142:9081/wps/myportal/!ut/p/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLN4i3dAHJgFjGpvqRqCKOcAFfj_zcVP0gc

The following SVG diagram is displayed for a monitoring context when the diagram link on an instance is clicked. The box in the middle is highlighted in blue to reflect the current status of the instance, which is **Review Order**. This highlighting was defined in the monitor model <visualModel>.

Figure 41. Box in the middle is highlighted to reflect current status


IBM WebSphere Business Monitor - Microsoft Internet Explorer
File
Edit
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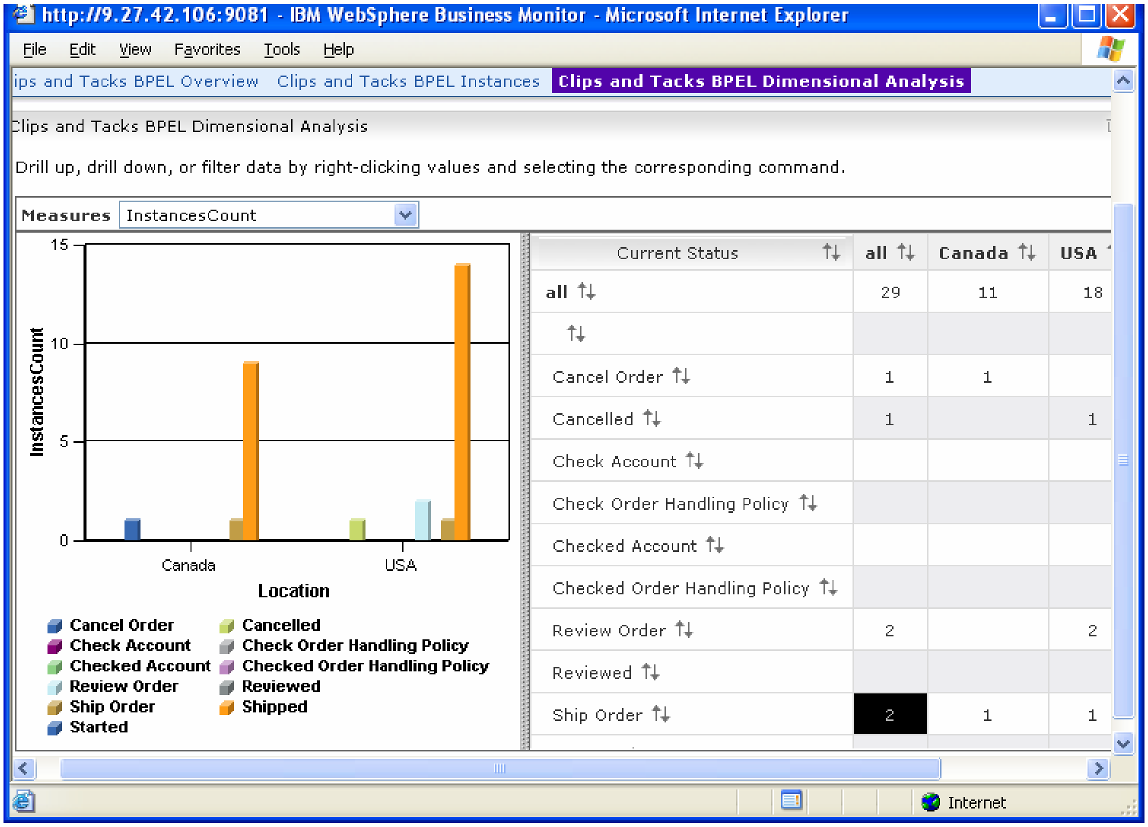
Favorites
Tools
Help
Address
http://9.27.42.142:9081/wps/myportal/!ut/p/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLN4i3dAHJgFjGpvqRqCKOcAFfj_zcVP0c
Go
ding?
Order
No
70.0%
Yes
Order
Order Manager
Order
Review
Order
Order
Acceptable
Credit Risk?
Order
Management
System,
Customer
Order
30.0%
No
Internet

The following dashboard shows a **Dimensional** view where you can drill up or down, as well as filter data.

Figure 42. Dimensional view enables drilling up, down, and filter data


http://9.27.42.106:9081 - IBM WebSphere Business Monitor - Microsoft Internet Explorer
File
Edit
View
Favorites
Tools
Help
ips and Tacks BPEL Overview
Clips and Tacks BPEL Instances
Clips and Tacks BPEL Dimensional Analysis
Measures
InstancesCount
15
10
5
0
InstancesCount
Canada
USA
Location
Cancel Order
Check Account
Checked Account
Review Order
Ship Order
Started
Cancelled
Check Order Handling Policy
Checked Order Handling Policy
Reviewed
Shipped
Internet

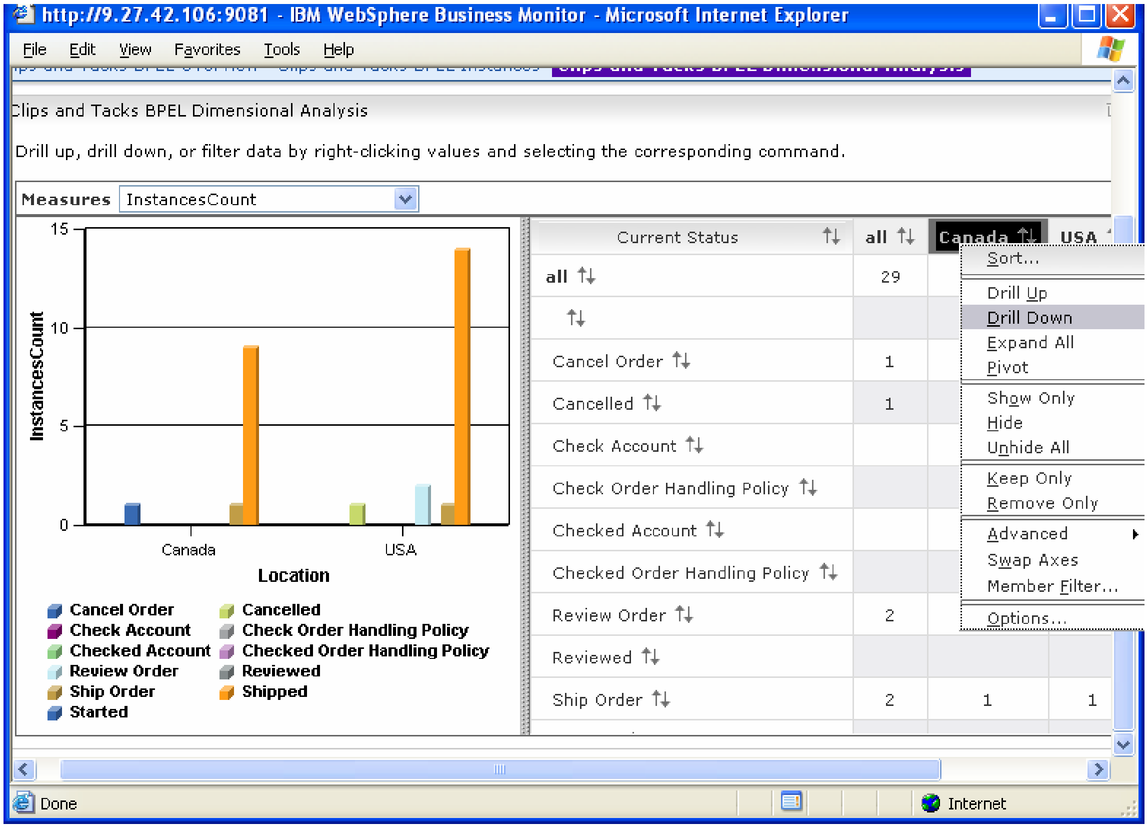
Clips and Tacks BPEL Dimensional Analysis

Drill up, drill down, or filter data by right-clicking values and selecting the corresponding command.

Current Status ⇅	all ⇅	Canada ⇅	USA
all ⇅	29	11	18
⇅			
Cancel Order ⇅	1	1	
Cancelled ⇅	1		1
Check Account ⇅			
Check Order Handling Policy ⇅			
Checked Account ⇅			
Checked Order Handling Policy ⇅			
Review Order ⇅	2		2
Reviewed ⇅			
Ship Order ⇅	2	1	1

Right-click on the **Canada** column heading and select **Drill Down** to drill down on the data:

Figure 43. Select to Drill Down on the data



http://9.27.42.106:9081 - IBM WebSphere Business Monitor - Microsoft Internet Explorer

Clips and Tacks BPEL Dimensional Analysis

Drill up, drill down, or filter data by right-clicking values and selecting the corresponding command.

Measures: InstancesCount

Current Status	all	Canada	USA
all	29		
Cancel Order	1		
Cancelled	1		
Check Account			
Check Order Handling Policy			
Checked Account			
Checked Order Handling Policy			
Review Order	2		
Reviewed			
Ship Order	2	1	1

Done

A1. Import the Project Interchange file into WebSphere Integration Developer

A Project Interchange file has been provided so that you do not have to build the model from scratch. This section shows you how to import the model into WebSphere Integration Developer from the Project Interchange file. After importing the model you can proceed to generate the EAR file and deploy the model.

____ 1. Start WebSphere Integration Developer and set up the environment.

__ a. Start WebSphere Integration Developer, V6.0.2, and when prompted, point to a new workspace, such as C:\workspaces\ClipsAndTacks.

__ b. Close the Welcome page.

__ c. By default, you are in the Business Integration perspective. Select **File ► Import ► Project Interchange ► Next**.

__ d. Browse to the location containing the Project Interchange file, ClipsAndTacksBPELMMPI.zip.

__ e. Type a project location for the project to be imported to, such as **C:\SampleToolkit5.**

__ f. Click **Select All**, and then click **Finish**.

____ 2. Wait for the build to be completed. If there are any errors, clean up and build the project again.

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06-07