IBM WEBSPHERE BUSINESS MONITOR 6.2 – LAB EXERCISE

WebSphere Business Monitor V6.2 Clips and Tacks Business activity monitoring lab

What this exercise is about

The objective of this lab is to show you how to build a monitor model in Rational Application Developer or WebSphere Integration Developer, deploy it to WebSphere Business Monitor, then view your monitored data on the Monitor dashboards.

This lab will show you Business Activity Monitoring (BAM) which involves event based monitoring. With BAM, you can have your monitored application running anywhere, and submitting events to the Monitor server so that you can view monitored data. Typically, you identify the events that will be created by the application, and then create a monitor model that represents the monitored data that you want to collect from the events.

Changes from the previous version

This lab has been modified for the 6.2 release. This includes user interface changes to the administrative console and the business space.

This lab has been modified for the 6.1.2 release. Here are the major changes:

- Updated the dashboard section to show how to use business space.

This lab has been modified for the 6.1 release. Here are the major changes:

- In the monitor model, you can reference other KPIs when defining the calculation for a given KPI.

- KPIs are now based on a metric and aggregation function, and not based on cube measures, so the dimensional model is now simplified.

- Deploying the model has been dramatically simplified, so this is a very short process now.

- LDAP is not required, so now you can test alerts without installing LDAP.

- Portal is no longer a requirement, so configuration of a dashboard is simplified.

Lab requirements

List of system and software required for the student to complete the lab:

- Rational Application Developer V7.5 or WebSphere Integration Developer V6.2.

- WebSphere Business Monitor V6.2 – Toolkit Installation including the Monitor Model editor and Monitor Server

  - DB2 Alphablox is an optional prerequisite for the installation of the Monitor toolkit. If you choose not to install it, then you will not be able to use the report and dimension views in the dashboard.

What you should be able to do

At the end of this lab you should be able to:

- Use Rational Application Developer or WebSphere Integration Developer to create the monitor model, and deploy it to the server.

- Use a sample program to create events that represent events from your process.

- Define a dashboard to view monitored data.

Introduction

In this lab you will learn how to deploy a model from end to end using Rational Application Developer or WebSphere Integration Developer and WebSphere Business Monitor. This lab will show you the basic procedure for creating and implementing a simple model.

The model used in this lab is the **ClipsAndTacks** model which is also used in IBM Redbook **SG247148** – **Business Process Management: Modeling through Monitoring Using WebSphere V6.0.2 Products**. In the Redbook, there are several models that are referenced, but in this lab you will be using the Future 1 Process. In the Redbook, the process is implemented as a BPEL process running in WebSphere Process Server. However this lab will demonstrate **Business Activity Monitoring** which can monitor events from any source. So, the lab will simulate the running of the process, by creating events that could have been sourced from anywhere, a J2EE application or BPEL, or any other source. These events are in the form of Common Base Events, which is an OASIS standard for common event format, and these are used by the Common Event Infrastructure (CEI) in WebSphere Process Server.

In this lab you will build a monitor model that has the same basic elements as the one that is defined in the Redbook. Namely you will create monitoring constructs in support of two KPIs:

- Average order fulfillment is three days or less

- Percentage of shipped orders is greater than 90%

You will also create situation events if declined orders are greater than or equal to three and if the order fulfillment time is greater than three days.

For dimensional analysis, you will create a Location dimension which allows you to drill down on country and city. You will also add an Order Status metric, which shows orders as 'New', 'Cancelled' or 'Shipped'. And you will add measures for average order price, sum of order price for all orders, and order count.

Here is a diagram of the ClipsAndTacks process model:
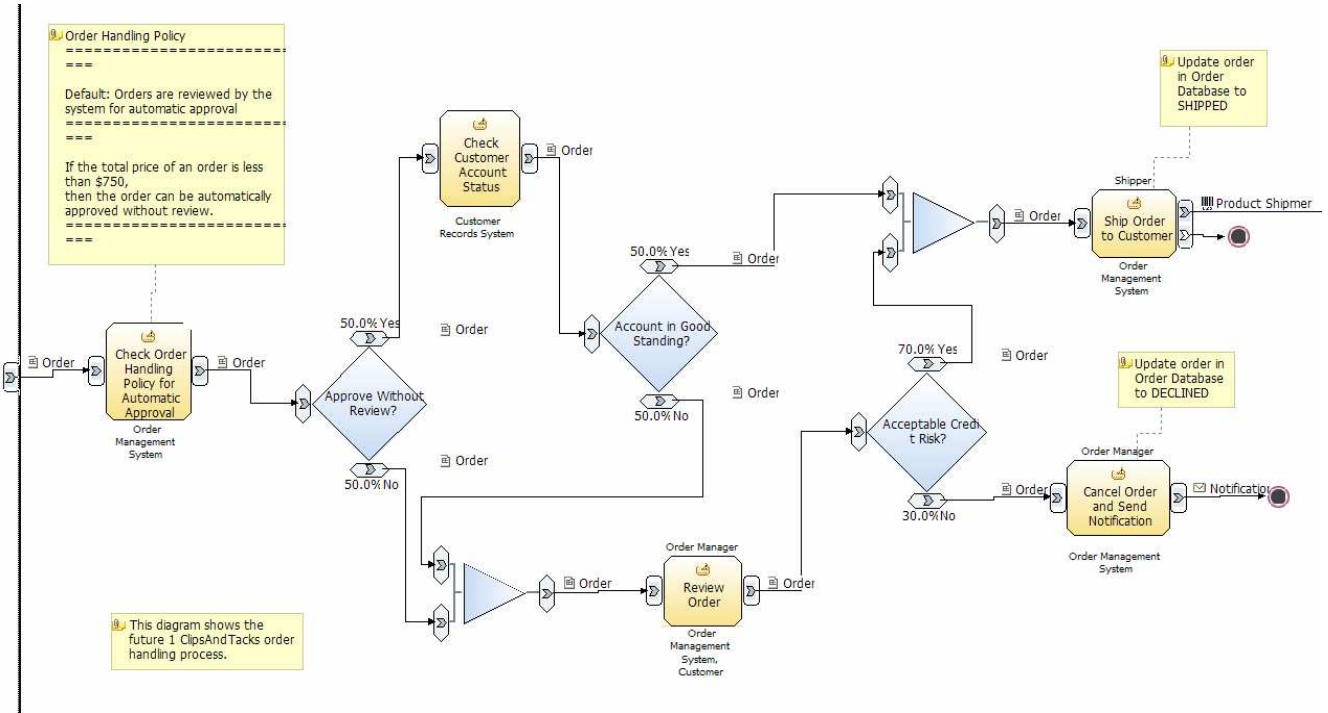
This is the ordering process for the Clips And Tacks Company. In this process, orders are received and optionally submitted to a review process. Orders which pass all checks are shipped to the customer. Other orders may be cancelled.

In the monitor model, you will create one monitoring context for each customer order. You will identify the inbound event that represents the receipt of the order, and this is marked so that it will create a new monitoring context instance for the order. You will also identify the inbound event that represents shipping the order, and this is marked so that it will trigger the termination of the monitoring context instance for the order. Since an order may also be cancelled, you will identify the inbound event that represents cancellation of the order, and this is also marked so that it will trigger the termination of the monitoring context instance.

Useful URLs

The following URLs may be helpful to you as you exercise this lab. Note that the port numbers in the URL of your installation may be different depending on your configuration.

- Server administrative console

https://localhost:9044/ibm/console

- Business space dashboard

https://localhost:9444/BusinessSpace

Part 1: Create the monitor model

To create the monitor model, you will use the monitor model editor in Rational Application Developer or WebSphere Integration Developer. Note that the screen captures in this lab are based on WebSphere Integration Developer, so they may differ slightly from yours if you are using Rational Application Developer.

Note that there is a 'Problems' tab that displays errors concerning the model. Periodically, you should check this view to see if you have any problems that need to be addressed. Normally, warnings and informational messages are not a problem, but errors should be addressed.

If you want to skip this section, then a solution has been provided. You can import the supplied monitor model into Rational Application Developer or WebSphere Integration Developer, and then proceed to the next section. Refer to Appendix 1, and then proceed to the next section.

____ 1. Start Rational Application Developer or WebSphere Integration Developer and setup the environment.

    __ a. Start Rational Application Developer or WebSphere Integration Developer, and when prompted point to a new workspace such as c:\workspaces\ClipsAndTacks

    __ b. Close the Welcome tab.

    __ c. By default, you are in the Business Integration perspective but you need to open the Business Monitoring perspective.

        1) Select **Window > Close Perspective**

        2) Select **Window > Open Perspective > Business Monitoring**.

        3) If it asks you to Confirm Enablement, then click **OK**.

    __ d. You should close the help view by clicking the 'x' in the 'Help' tab.

    __ e. You should see the Business Monitoring perspective.

____ 2. Create a new monitoring project. A project is a container for your monitor models and event definitions.

    __ a. Right click the Project Explorer, then select **New > Business Monitoring Project…**

    __ b. For Project name, enter **ClipsAndTacks**

    __ c. Click Finish. If you see the getting started prompt, click No. You will see the new project in the Project Explorer view.
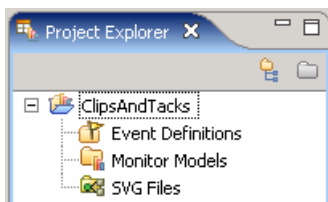

____ 3. There is a predefined Common Base Event definition for you that represents the event layout for events processed in this model. Import the supplied common base event for ActivityEvent.

__ a. From the Project Explorer view, right-click **ClipsAndTacks** and select **Import…**

__ b. Select **General** > **File system**, click **Next**

__ c. Browse to the location containing the **ActivityEvent cbe**, for example,
c:\Labfiles62\ClipsAndTacks

__ d. Select **ActivityEvent.cbe** as follows:
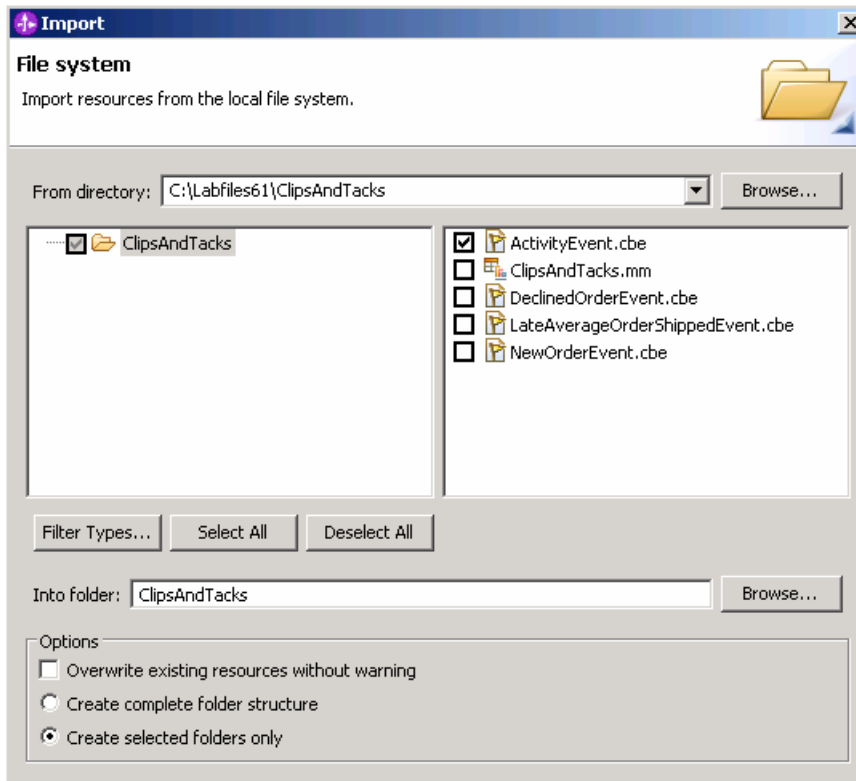
__ e. Click **Finish**.

__ f. Expand the project in the Project Explorer view, then expand the Event Definitions and you will
see the new event listed.
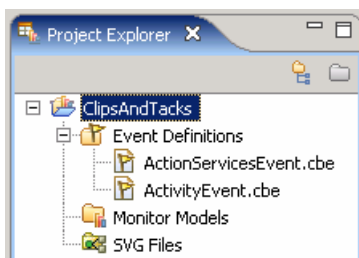
__ g. Double click **ActivityEvent.cbe** to open the event editor. Browse the extended data elements to
familiarize yourself with the event data for this model.

  1) ActivityEventData contains data elements that relate to the activities in the process. The
 fields, businessUnit and processName, are used to filter out unwanted events that do not

ClipsAndTacks

relate to this particular model. The field activityName is used to associate an event with a specific activity in the process. The field eventType is used to identify the state of the activity, either starting or completing.

2) OrderBOData contains data elements that relate to the specifics of a customer order, such as orderNumber, country, city, totalPrice, and so on.

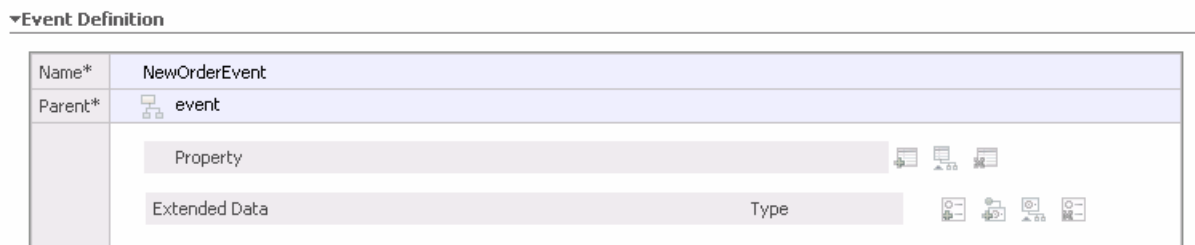| Name	ActivityEvent	
Parent	event	

Property		
Extended Data	**Type**	
⊟ ActivityEventData	noValue	
businessUnit	string	
processName	string	
mcID	string	
activityName	string	
eventType	string	
startTime	dateTime	
endTime	dateTime	
⊟ OrderBOData	noValue	
orderNumber	string	
customerNumber	string	
orderState	string	
city	string	
country	string	
productNumber	string	
quantity	int	
totalPrice	double	

__ h. WebSphere Business Monitor has support for concurrent versions of monitor models. In order to take advantage of the Monitor server's version handling capabilities, each monitoring context must have a unique inbound event that has the setting 'If no instances are found: Create new instance'. One can think of this as one inbound event carrying 'create monitor context' semantics, and all other inbound events as 'update monitor context' semantics. The inbound event for creating monitoring context instances can be identified in two ways. It can have a unique event definition name with a separate event definition, or it can use an existing event defintion but be identified by unique filter condition information. For Clips And Tacks, there is a unique inbound event name, New Order Event, that should create new monitoring context instances, so now you will create the event definition for it.

1) Right click Event Definitions and select **New > Event Definition…(cbe).**

2) Enter **NewOrderEvent.cbe** for the file name
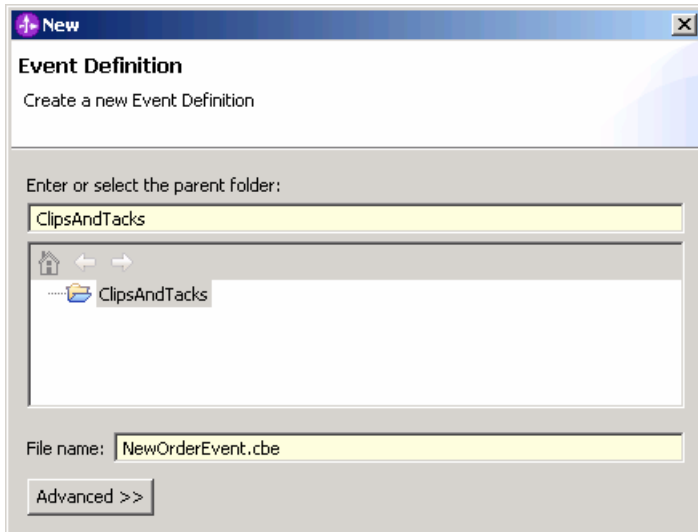
3) Click **Finish**.

4) The Event Definition Editor for NewOrderEvent opens.

5) The NewOrderEvent has the same data elements as the Activity Event, so you can just show ActivityEvent as the parent, then NewOrderEvent will inherit that data element layout. Double click the hierarchical icon next to the label **Parent**.

6) On the **Select Event Definition** Dialog double click **ActivityEvent**.
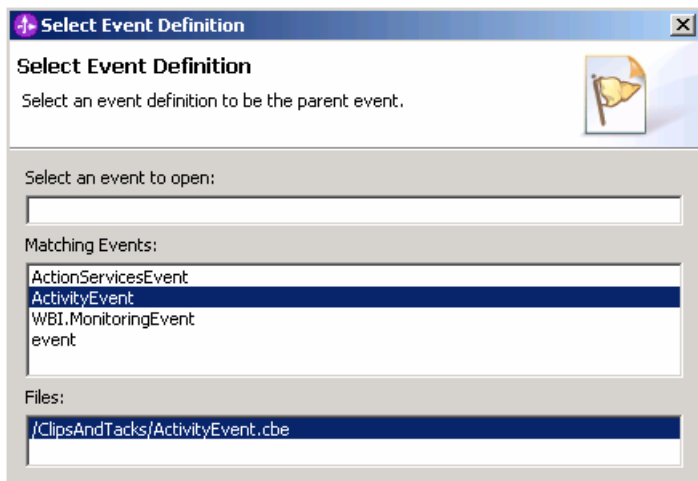
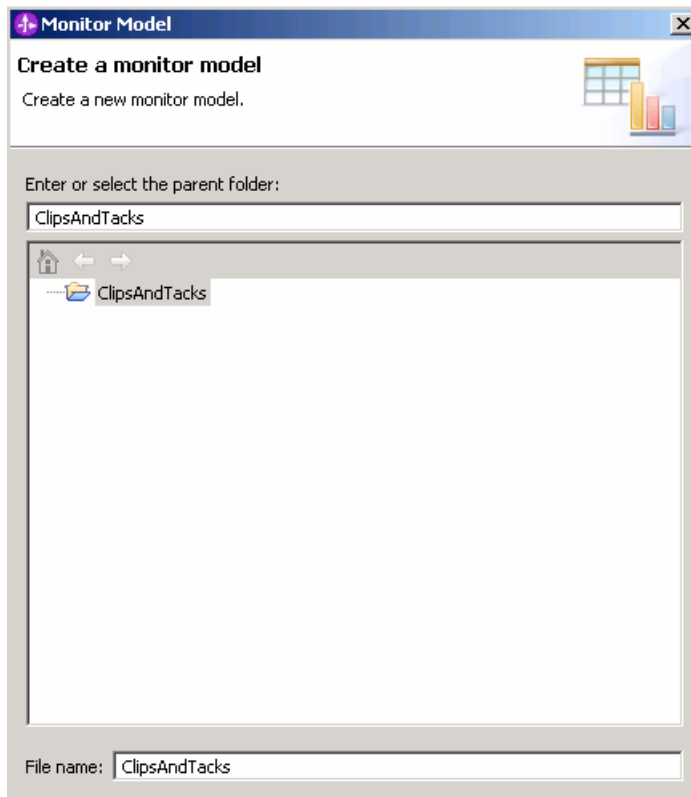7) **ActivityEvent** is now shown as the parent of **NewOrderEvent**

▾Event Definition

Name*	NewOrderEvent
Parent*	ActivityEvent
	Property
	Extended Data

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

_____ 4. Create a new monitor model ClipsAndTacks. The monitor model contains the metrics and KPIs that you want to monitor and it will be the source for creating the deployment code for the monitor server.

__ a. Right click in the Project Explorer view, then select **New > Monitor Model…**

__ b. For File name, enter **ClipsAndTacks**.

Monitor Model

Create a monitor model
Create a new monitor model.

Enter or select the parent folder:

ClipsAndTacks

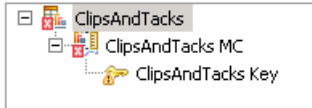📁 ClipsAndTacks

File name: ClipsAndTacks

__ c. Click **Finish**. The model editor is opened as follows:

Note: When the model editor first opens you will have errors in the model. This is normal and is signaling that required elements are missing or incomplete. Next you will complete these required elements.

_____ 5. Notice in the Monitor Details Model navigator that a new model is created (ClipsAndTacks) along with a monitoring context (ClipsAndTacks MC). Now you need to specify the inbound events that will be processed by this model. You need to indicate which event will create a new monitoring context instance and which event will terminate the monitoring context instance. You also need to identify

the correlation information for the monitoring context so that Monitor knows which monitoring context instance should receive the events. The ClipsAndTacks model uses one event definition, ActivityEvent, to represent the layout of all of the events to be processed. NewOrderEvent derives from ActivityEvent but does not add additional event elements. In ActivityEvent, ActivityName is a field used to identify specific activities in the ClipsAndTacks process. ActivityName is used to determine when to terminate the monitoring context. You will create correlation that is based on orderNumber, which is another field defined in ActivityEvent.

__ a. In the Monitor Details Model, expand ClipsAndTacks in the navigation view. Then expand ClipsAndTacks MC. You will see that a key has been created for you automatically when you created the model.

__ b. In the model navigation view, right click ClipsAndTacks MC, then select **New > Inbound Event.**

__ c. For the name, type **Activity Event**. Notice that the ID will automatically be set for you to the same name with underscores (**Activity_Event**).
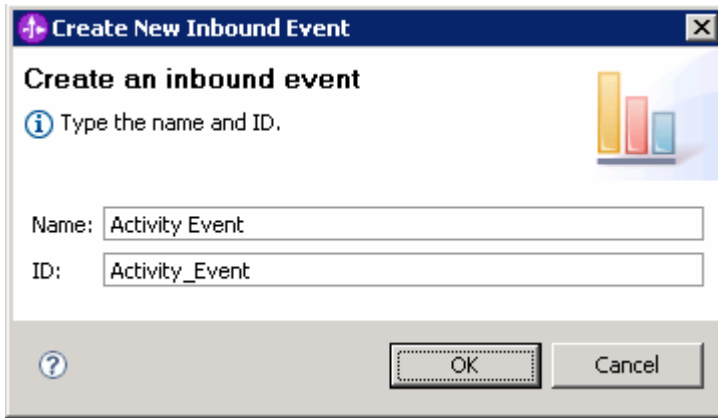
__ d. Click **OK**.

__ e. On the window for **Event Type Details**, you need to enter the extension name, so click **Browse…** and navigate to ClipsAndTacks > ActivityEvent.cbe > ActivityEvent

__ f. To enter the **Filter Condition**, you can use Content Assist with the keys Ctrl-Space, or you can type the expression directly into the expression window. When completed the expression should be as follows. Note the single quotation marks used for string handling. You should be careful that you enter uppercase and lowercase exactly as shown.

Activity_Event/extendedData/ActivityEventData/businessUnit = 'Clips And Tacks' and Activity_Event/extendedData/ActivityEventData/processName = 'Order Handling'

__ g. To enter the **Correlation Expression**, you can use Content Assist, or you can type the expression directly into the expression window. When complete, the expression should be:

ClipsAndTacks_Key=Activity_Event/extendedData/OrderBOData/orderNumber

__ h. For 'If no instances are found', select 'Treat as error'

__ i. For 'If one instance is found', select 'Deliver to the instance'

___ j. For 'If multiple instances are found', select 'Treat as error'

___ k. Here is a sample of a portion of the definition:

▼ **Filter Condition**
Define a condition based on the event attributes to identify whether to accept an event of this type.

Activity_Event/extendedData/ActivityEventData/businessUnit = 'Clips And Tacks' and
Activity_Event/extendedData/ActivityEventData/processName = 'Order Handling'

▼ **Correlation Expression**
Define an expression to identify the monitoring context instance or instances that receive the event at runtime.

ClipsAndTacks_Key = Activity_Event/extendedData/OrderBOData/orderNumber

If no instances are found	Treat as error
If one instance is found	Deliver to the instance
If multiple instances are found	Treat as error

___ l. Press **Ctrl-S** to save your work.

___ m. In the model navigation view, right click ClipsAndTacks MC, then select **New > Inbound Event.** Note that you can also right click any child element within the monitoring context and you will have access to the same menu.

___ n. For the name, type **New Order Event**. Notice that the ID will automatically be set for you to the same name with underscores (**New_Order_Event**).

___ o. Click **OK**.

___ p. For Event Type Details, navigate to ClipsAndTacks > NewOrderEvent.cbe > NewOrderEvent

___ q. To enter the Filter Condition, you can use Content Assist, or you can type the expression directly into the expression window. When complete, the expression should be as follows. Note the single quotation marks used for string handling. You should be careful that you enter uppercase and lowercase exactly as shown.

New_Order_Event/extendedData/ActivityEventData/businessUnit='Clips And Tacks' and
New_Order_Event/extendedData/ActivityEventData/processName='Order Handling'

___ r. To enter the Correlation Expression, you can use Content Assist, or you can type the expression directly into the expression window. When complete, the expression should be:

ClipsAndTacks_Key=New_Order_Event/extendedData/OrderBOData/orderNumber

___ s. For 'If no instances are found', select 'Create new instance'

___ t. For 'If one instance is found', select 'Treat as error'

___ u. For 'If multiple instances are found', select 'Treat as error'

___ v. Press **Ctrl-S** to save your work.

__ w. In the model navigation view, double click **ClipsAndTacks Key**, to open the key in the editor.

__ x. For Key Value Expressions, click 'Add…'. Note that double clicking in the table will produce the same results.

__ y. A row is added to the table and in the expression cell it shows << No expression specified >>. Click this cell of the table, then a button is displayed. Click this button and the expression editor is displayed. You can use Content Assist, or type this expression directly into the window:

New_Order_Event/extendedData/OrderBOData/orderNumber

__ z. Click **OK**.

__ aa. Here is a sample of the key:

▼ **Key Details**
Edit the details of the key. Each monitoring context requires at least one key.

ID:	* ClipsAndTacks_Key
Name:	ClipsAndTacks Key
Description:	
Type:	* String

Maximum String Length: 256

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

☐ A value is required for this key

Default Value: _____

☐ This key can be used for sorting

▼ **Key Value Expressions**
Specify the expressions that set the value of the key.

Expression	
X+Y=? New_Order_Event/extendedData/OrderBOData/orderNumber	

__ bb. Press **Ctrl-S** to save your work.

Note: At this point there should not be any errors remaining in the model. The errors shown initially were the result of the monitoring context key not being complete.

____ 6.   Create triggers that indicate the end of the monitoring context. The first trigger is based on an order being shipped, and the second trigger is based on an order being cancelled.

__ a. In the model navigation view, right click **ClipsAndTacks MC**, then select **New > Trigger**. Enter these values:

1) Name - Ship Order to Customer Trigger

2) ID - Ship_Order_to_Customer_Trigger

3) Select the check box next to 'Terminate monitoring context'

4) For Trigger Sources, click Add, then select Other source type > Activity Event, then click OK.

5) For Trigger Condition, enter
Activity_Event/extendedData/ActivityEventData/activityName='Ship Order to Customer' and
Activity_Event/extendedData/ActivityEventData/eventType='completed'

__ b. Press **Ctrl-S** to save your work.

__ c. Here is a sample of this trigger:

▼ **Trigger Details**
Edit the details of the trigger, which detects an occurrence and initiates an action in response.

ID: *Ship_Order_to_Customer_Trigger

Name: Ship Order to Customer Trigger

Description:

☐ Trigger is repeatable

☑ Terminate monitoring context

▼ **Trigger Sources**
Specify the source of this trigger.

Source Type	Source
Event	Activity Event

▼ **Trigger Condition**
Specify the condition that determines whether the trigger will fire.

Activity_Event/extendedData/ActivityEventData/activityName='Ship Order to Customer' and
Activity_Event/extendedData/ActivityEventData/eventType='completed'

__ d. In the model navigation view, right click ClipsAndTacks MC, then select **New > Trigger**. Enter these values:

1) Name - Cancel Trigger

2) ID - Cancel_Trigger

3) Select the check box next to 'Terminate monitoring context'

4) For Trigger Sources, click Add, then select Other source type > Activity Event, then click OK.

5) For Trigger Condition, enter
Activity_Event/extendedData/ActivityEventData/activityName='Cancel Order and Send
Notification' and Activity_Event/extendedData/ActivityEventData/eventType='completed'

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

____ 7. Create a KPI for Average fulfillment three days or less. First you will create a trigger which fires
when a new order is started. Metrics are created to hold the order start time and order end time. The
values of the metrics are set when the new order trigger fires. You create a duration metric which is
calculated based on subtracting the order end time metric from the order start time metric. You will
create a KPI context which is a container to hold your KPIs. Then you create a KPI which is based
on the duration metric and you apply an average function to it.

__ a. In the model navigation view, right click ClipsAndTacks MC, then select **New > Trigger**. Enter
these values:

1) Name – New Order Trigger

2) ID – New_Order_Trigger

3) For Trigger Sources, click Add, then select Other source type > New Order Event, then click
OK.

4) For Trigger condition, enter
New_Order_Event/extendedData/ActivityEventData/activityName='Check Order Handling
Policy for Automatic Approval' and
New_Order_Event/extendedData/ActivityEventData/eventType='started'

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

__ b. In the model navigation view, right click ClipsAndTacks MC, then select **New > Metric**. Enter
these values:

1) Name – Order Start Time

2) ID – Order_Start_Time

3) Type – DateTime

4) For Metric Value Expressions, click Add

5) In the first row of the Metric Value Expressions table, select the cell under column Trigger,
then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC
> New Order Trigger, click OK

6) In the first row of the Metric Value Expressions table, select the cell under column
Expression, then a button is shown, then click the button and enter this text:

New_Order_Event/extendedData/ActivityEventData/startTime

7) Click OK.

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

▼ Metric Details

Edit the details of the metric, which is a holding spot for information used in other calculations.

ID: * Order_Start_Time

Name: Order Start Time

Description:

Type: * DateTime

☐ A value is required for this metric

Default Value:

☐ This metric can be used for sorting

▼ Metric Value Expressions

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

Trigger	Expression
New Order Trigger	New_Order_Event/extendedData/ActivityEventData/startTime

__ c. In the model navigation view, right click ClipsAndTacks MC, then select **New > Metric**. Enter these values:

      1) Name – Order End Time

      2) ID – Order_End_Time

      3) Type - DateTime

      4) For Metric Value Expressions, click Add

      5) In the first row of the Metric Value Expressions table, select the cell under column Trigger, then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC > Ship Order to Customer Trigger, click OK

      6) In the first row of the Metric Value Expressions table, select the cell under column Expression, then a button is shown, then click the button and enter this text:

            Activity_Event/extendedData/ActivityEventData/endTime

      7) Click OK.

      8) For Metric Value Expressions, click Add

      9) In the second row of the Metric Value Expressions table, select the cell under column Trigger, then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC > Cancel Trigger, click OK

      10) In the second row of the Metric Value Expressions table, select the cell under column Expression, then a button is shown, then click the button and enter this text:

            Activity_Event/extendedData/ActivityEventData/endTime

11) Click OK.

__ d. Press **Ctrl-S** to save your work.

▼ **Metric Details**

Edit the details of the metric, which is a holding spot for information used in other calculations.

ID: *Order_End_Time

Name: Order End Time

Description:

Type: *DateTime

☐ A value is required for this metric

Default Value:

☐ This metric can be used for sorting

▼ **Metric Value Expressions**

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

Trigger	Expression
Ship Order to Customer Trigger	Activity_Event/extendedData/ActivityEventData/endTime
Cancel Trigger	Activity_Event/extendedData/ActivityEventData/endTime

__ e. In the model navigation view, right click ClipsAndTacks MC, then select **New > Metric**. Enter these values:

1) Name – Order Fulfillment Duration

2) ID – Order_Fulfillment_Duration

3) Type - Duration

4) For Default Value, click Edit…

5) On the Select Duration dialog, click OK, and this will set the default duration to zero.

6) For Metric Value Expressions, click Add

7) In the first row of the Metric Value Expressions table, select the cell under column Trigger, then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC > Ship Order to Customer Trigger, click OK

8) In the first row of the Metric Value Expressions table, select the cell under column Expression, then a button is shown, then click the button and enter this text:

xs:dayTimeDuration (Order_End_Time - Order_Start_Time)

9) Click OK.

10) For Metric Value Expressions, click Add

11) In the second row of the Metric Value Expressions table, select the cell under column Trigger, then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC > Cancel Trigger, click OK

12) In the second row of the Metric Value Expressions table, select the cell under column Expression, then a button is shown, then click the button and enter this text:

xs:dayTimeDuration (Order_End_Time - Order_Start_Time)

13) Click OK.

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

▼ Metric Details
Edit the details of the metric, which is a holding spot for information used in other calculations.

ID:	* Order_Fulfillment_Duration
Name:	Order Fulfillment Duration
Description:	
Type:	* Duration

☐ A value is required for this metric

Default Value: dayTimeDuration('P0DT0H0M0.000S')

☐ This metric can be used for sorting

▼ Metric Value Expressions
Specify the expressions that set the value of the metric. If a trigger is specified, the map is evaluated when the trigger fires.

Trigger	Expression
Ship Order to Customer Trigger	xs:dayTimeDuration(Order_End_Time - Order_Start_Time)
Cancel Trigger	xs:dayTimeDuration(Order_End_Time - Order_Start_Time)

__ g. Click the **KPI Model tab**.

__ h. Create a KPI context to store the KPIs.

1) In the navigation view of the KPI Model, right click ClipsAndTacks, then select **New > KPI Context**

a) Name – My KPI Context

b) ID - My_KPI_Context

__ i. Create the average order fulfillment KPI.

Note that you will create the KPI based on events for August 2006. This will work for you no matter what month or year that you run this lab because the timestamps in the test data are based on August 2006, so your results will be the same as in these lab instructions.

---

1) In the navigation view of the KPI Model, right click **My KPI Context**, then select **New > KPI**

    a) Name – Average Order Fulfillment KPI August 2006

    b) ID - Average_Order_Fulfillment_KPI_August_2006

2) Enter these values:

    a) Type – Duration

    b) Select 'Keep track of historical values for this KPI'

    c) In KPI Target and Ranges, for Target click Details…, then change the value to 3 Days, then click OK

    d) In KPI Target and Ranges, for Ranges select Actual value

    e) In the Range table,

        (1) Click Add, or double click anywhere in the table

        (2) Change the Name to Day 1, and the ID to Day_1

        (3) A row is created in the Range table with a range name Day 1.

        (4) For this row, the default in the Start column is 0 milliseconds, which is what you want.

        (5) For this row, select the cell in the End value column and a button is displayed. Click this button, then change Days to 1 and the other values to 0, then click OK.

    f) Now you have created one range called Day 1. Repeat the above step to create four more ranges:

        (1) Day 2 with start values 1 Days and end value 2 Days

        (2) Day 3 with start values 2 Days and end value 3 Days

        (3) Day 4 with start values 3 Days and end value 4 Days

        (4) Day 5 with start values 4 Days and end value 5 Days

    g) KPI Value – select 'Base this KPI on a metric and an aggregation function.'

    h) Under KPI Details, for Monitoring context, click Browse…, then select 'ClipsAndTacks MC', then click OK

    i) Metric – click Browse…, then select Order Fulfillment Duration, then click OK

    j) Aggregation function – select Average.

    k) Under Time Filter, for Metric, click Browse…, then select Order Start Time, then click OK

    l) Specify time period – Fixed

    m) Start date – click Edit... then select date 2006-08-01, time 00:00:00, click OK

n) End date – click Edit…, then select 2006-08-31, time 23:59:59, click OK

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

▼ **KPI Details**
Edit the details of the KPI, which is a performance measurement used to track business objectives.

ID:	Average_Order_Fulfillment_KPI_August_2006

Name: Average Order Fulfillment KPI August 2006

Description:

Type: Duration

☑ Keep track of historical values for this KPI

▼ **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	
Day 1	0 Milliseconds	< 1 Days	
Day 2	1 Days	< 2 Days	
Day 3	2 Days	< 3 Days	
Day 4	3 Days	< 4 Days	
Day 5	4 Days	< 5 Days	

ClipsAndTacks

KPI Definition
Specify how the value of the KPI is set.

KPI Value

Choose how the KPI will get its value:

⦿ Base this KPI on a metric and an aggregation function.

◯ Write an expression to calculate this KPI based on existing KPIs

KPI Details

Monitoring context: * ClipsAndTacks MC

Metric: * Order Fulfillment Duration

Aggregation function: * Average

Use values from: ⦿ All model versions ◯ Only this version of the model

Time Filter
Select a time period over which the KPI should be calculated.

Metric: Order Start Time

Time period:

◯ None ◯ Repeating ◯ Rolling ⦿ Fixed

Start date: 2006-08-01T00:00:00 [Edit...]   End date: 2006-08-31T23:59:59 [Edit...]

Time zone: * GMT-06:00 ▾   Location: ▾

__ j. Note that this KPI as it stands averages order fulfillment time for shipped orders and cancelled orders, but you probably are not interested in the cancelled orders to be included in this KPI. So update the average order fulfillment KPI to show the values for shipped orders only. First you will create a new metric to hold the order status. Then you will add this metric as a data filter on the KPI.

__ k. Click the **Monitor Details Model tab**.

__ l. In the Monitor Details Model navigation view, right click ClipsAndTacks MC, then select **New > Metric**. Enter these values:

1) Name – Order Status

2) ID – Order_Status

3) Type – String

4) 4) Select 'A value is required for this metric'. The editor requires that you select this whenever you use a metric as a source for a dimension in the dimensional model.

5) Default Value (enter this text with single quotation marks) – 'New'

6) For Metric Value Expressions, click Add

7) In the first row of the Metric Value Expressions table, select the cell under column Trigger, then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC > Cancel Trigger, click OK

8) In the first row of the Metric Value Expressions table, select the cell under column Expression, then a button is shown, then click the button and enter this text with the quotation marks:

'Cancelled'

9) Click OK.

10) For Metric Value Expressions, click Add

11) In the second row of the Metric Value Expressions table, select the cell under column Trigger, then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC > Ship Order to Customer Trigger, click OK

12) In the second row of the Metric Value Expressions table, select the cell under column Expression, then a button is shown, then click the button and enter this text with the quotation marks:

'Shipped'

13) Press **Ctrl-S** to save your work

▼ Metric Details
Edit the details of the metric, which is a holding spot for information used in other calculations.

ID:	* Order_Status
Name:	Order Status
Description:	
Type:	* String

Maximum String Length: 256

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

☑ A value is required for this metric

Default Value: 'New'

☐ This metric can be used for sorting

▼ Metric Value Expressions
Specify the expressions that set the value of the metric. If a trigger is specified, the map is evaluated when the trigger fires.

Trigger	Expression
⇨ Cancel Trigger	ˣ⁺ʸ₌? 'Cancelled'
⇨ Ship Order to Customer Trigger	ˣ⁺ʸ₌? 'Shipped'

__ m. Update the order fulfillment KPI to use the order status as a filter.

1) Click the **KPI Model tab**.

2) In the KPI Model navigation view, navigate to ClipsAndTacks > My KPI Context > Average Order Fulfillment KPI August 2006

3) In the Data Filter section for this KPI, click Add

4) In the dialog, navigate to ClipsAndTacks MC > Order Status, then click OK

5) In the row containing metric Order Status, make sure the operation defaults to 'equals'. Also, click the cell in the column Values, then enter this text (with quotation marks):

'Shipped'

6) Press **Ctrl-S** to save your work.

Data Filter

Select the metrics that you want to use to determine what values to use in the calculation. For example, if you have a KPI called Average Price in London, you only want to use monitoring contexts where the value of the City metric is London.

Metric	Operator	Values	Case-sensitive	
A⁻Order Status	equals	ˣ⁺ʸ=? 'Shipped'	☐	

_____ 8.   Create a KPI for number of approved orders greater than 90%. First you will create a KPI to count the number of total orders. Then you will create a KPI to count the number of shipped orders. Finally, you will create a KPI that calculates the approval percentage as this formula: (ship count / order count) * 100.

__ a. Click the **KPI Model tab** then create the order count KPI.

1) In the navigation view of the KPI Model, right click My KPI Context, then select **New > KPI**

a) Name – Order Count KPI

b) ID - Order_Count_KPI

2) Enter these values:

a) Type – Decimal

b) Select 'Keep track of historical values for this KPI'

c) Do not specify targets nor ranges

d) KPI Value – select 'Base this KPI on a metric and an aggregation function.'

e) Under KPI Details, for Monitoring context, click Browse…, then select 'ClipsAndTacks MC', then click OK

f) Metric – click Browse…, then select ClipsAndTacks Key, then click OK

g) Aggregation function – select Count.

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

__ b. Create the ship count KPI.

1) In the navigation view of the KPI Model, right click My KPI Context, then select **New > KPI**

a) Name – Ship Count KPI

b) ID - Ship_Count_KPI

2) Enter these values:

a) Type – Decimal

b) Select 'Keep track of historical values for this KPI'

c) Do not specify targets nor ranges

d) KPI Value – select 'Base this KPI on a metric and an aggregation function.'

e) Under KPI Details, for Monitoring context, click Browse…, then select 'ClipsAndTacks MC', then click OK

f) Metric – click Browse…, then select ClipsAndTacks Key, then click OK

g) Aggregation function – select Count.

h) In the Data Filter section for this KPI, click Add

i) In the dialog, navigate to ClipsAndTacks MC > Order Status, then click OK

j) In the row containing metric Order Status, make sure the operation defaults to 'equals'. Also, click the cell in the column Values, then enter this text (with quotation marks):

'Shipped'

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

__ c. Create the percent of orders approved KPI.

1) In the navigation view of the KPI Model, right click My KPI Context, then select **New > KPI**

a) Name – Percent of Orders Approved KPI

b) ID - Percent_of_Orders_Approved_KPI

2) Enter these values:

a) Type – Decimal

b) Select 'Keep track of historical values for this KPI'

c) In KPI Target and Ranges, for Target click Details…, then change the value to 90, then click OK

d) In KPI Target and Ranges, for Ranges select Actual value

e) In the Range table,

(1) Click Add

(2) Change the Name to Low Range, and the ID to Low_Range

(3) A row is created in the Range table with a range name Low Range.

(4) For this row, select the cell in the Start value column and a button is displayed. Click this button, then change the value to 0, then click OK.

(5) For this row, select the cell in the End value column and a button is displayed. Click this button, then change the value to 90, then click OK.

f) Repeat the above step to create one more range:

(1) High Range with start value 90 and end value 100

g) KPI Value – select 'Write an expression to calculate this KPI based on existing KPIs'

h) For KPI Calculation, enter this text:

fn:round((Ship_Count_KPI div Order_Count_KPI) * 100)

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

____ 9. In the dashboards, you might like to see the total order price, the average order price, and the total number of orders. And you might be interested in seeing this information by country and city, and by order status. So now you will create dimensions and measures that allow you to see this information. For aggregated numeric information like total order price, you will create a measure in the dimensional model. For textual attributes like order status, you will create a dimension in the dimensional model. In order to see the country and city information, you will create a multi-level location dimension containing country as the first level and city as the second level. Each measure and dimension needs a metric as a source, so you will also need to create metrics for country, city and total price.

__ a. Click the **Dimensional Model tab**.

__ b. Add order status as a dimension to the Dimensional Model.

1) In the navigation view, click ClipsAndTacks MC Cube

2) In the dimensions table, click **New Dimension…**

a) Name – Order Status Dimension

b) ID – Order_Status_Dimension

c) Click OK

3) Click **New Level…**

a) Name – Order Status

b) ID – Order_Status

c) Source metric – Click Browse…, then select ClipsAndTacks MC > Order Status. Then click OK.

d) Click OK.

4) Press **Ctrl-S** to save your work.

▼ **Dimensions**
Work with the dimensions and dimension levels of this cube. Dimensions are data categories made up of hierarchical dimension levels.

Dimension / Dimension Level	Source Metric	
▣ ⬚ Order Status Dimension		
⬚ Order Status	▦ Order Status	

__ c. Click the **Monitor Details Model tab**.

__ d. In the Monitor Details Model navigation view, right click ClipsAndTacks MC, then select **New > Metric**. Enter these values:

1) Name – country

2) ID – country

3) Type – String

4) Select 'A value is required for this metric'. The editor requires that you select this whenever you use a metric as a source for a dimension in the dimensional model.

5) For default value, enter an empty string (two single quotation marks)

6) For Metric Value Expressions, click Add

7) In the first row of the Metric Value Expressions table, select the cell under column Trigger, then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC > New Order Trigger, click OK

8) In the first row of the Metric Value Expressions table, select the cell under column Expression, then a button is shown, then click the button and enter this text:

a) New_Order_Event/extendedData/OrderBOData/country

9) Click OK.

10) Press **Ctrl-S** to save your work

__ e. In the Monitor Details Model navigation view, right click ClipsAndTacks MC, then select **New > Metric**. Enter these values:

    1) Name – city

    2) ID – city

    3) Type – String

    4) Select 'A value is required for this metric'. The editor requires that you select this whenever you use a metric as a source for a dimension in the dimensional model.

    5) For default value, enter an empty string (two single quotation marks)

    6) For Metric Value Expressions, click Add

    7) In the first row of the Metric Value Expressions table, select the cell under column Trigger, then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC > New Order Trigger, click OK

    8) In the first row of the Metric Value Expressions table, select the cell under column Expression, then a button is shown, then click the button and enter this text:

        a) New_Order_Event/extendedData/OrderBOData/city

    9) Click OK.

    10) Press **Ctrl-S** to save your work

__ f. In the Monitor Details Model navigation view, right click ClipsAndTacks MC, then select **New > Metric**. Enter these values:

    1) Name – totalPrice

    2) ID – totalPrice

    3) Type – Decimal

    4) For Metric Value Expressions, click Add

    5) In the first row of the Metric Value Expressions table, select the cell under column Trigger, then a button is shown, then click the button and select Trigger type > ClipsAndTacks MC > New Order Trigger, click OK

    6) In the first row of the Metric Value Expressions table, select the cell under column Expression, then a button is shown, then click the button and enter this text:

        a) New_Order_Event/extendedData/OrderBOData/totalPrice

    7) Click OK.

    8) Press **Ctrl-S** to save your work

__ g. Click the **Dimensional Model tab**.

__ h. Add location as a dimension to the Dimensional Model.

    1) In the navigation view, click ClipsAndTacks MC Cube

2) In the dimensions table, click **New Dimension…**

     a) Name – Location

     b) ID – Location

     c) Click OK

3) Click **New Level…**

     a) Name – Country

     b) ID – Country

     c) Source metric – Click Browse…, then select ClipsAndTacks MC > country. Then click OK.

     d) Click OK.

4) Click **New Level…**

     a) Name – City

     b) ID – City

     c) Source metric – Click Browse…, then select ClipsAndTacks MC > city. Then click OK.

     d) Click OK.

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

▼ Dimensions

Work with the dimensions and dimension levels of this cube. Dimensions are data categories made up of hierarchical dimension levels.

Dimension / Dimension Level	Source Metric	
☐ Order Status Dimension		
Order Status	Order Status	
☐ Location		
☐ Country	country	
City	city	

__ i. Ensure that the **Dimensional Model tab** is selected.

__ j. In the Dimensional Model, add a measure for average order price.

    1) In the navigation view, click ClipsAndTacks MC Cube

    2) In the Measures table, click **New …**

       a) Name – Average Order Price

       b) ID – Average_Order_Price

       c) Source metric - Click Browse…, then select ClipsAndTacks MC > totalPrice.

       d) Aggregation function – select Average.

       e) Then click OK.

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

▼ **Measures**
Work with the measures for this cube. Measures are calculations based on a metric, key, counter, or stopwatch.

Measure	Source Metric	Aggregation Function	
Average Order Price	totalPrice	Average	

__ k. In the Dimensional Model, add a measure for sum of order price.

1) In the navigation view, click ClipsAndTacks MC Cube

2) In the Measures table, click **New …**

a) Name – Sum Order Price

b) ID – Sum_Order_Price

c) Source metric - Click Browse…, then select ClipsAndTacks MC > totalPrice.

d) Aggregation function – select Sum.

e) Then click OK.

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

__ l. In the Dimensional Model, add a measure for order count.

1) In the navigation view, click ClipsAndTacks MC Cube

2) In the Measures table, click **New …**

a) Name – Order Count

b) ID – Order_Count

c) Source metric - Click Browse…, then select ClipsAndTacks MC > ClipsAndTacks Key.

d) Aggregation function – select Count.

e) Then click OK.

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

▼ **Measures**
Work with the measures for this cube. Measures are calculations based on a metric, key, counter, or stopwatch.

Measure	Source Metric	Aggregation Function	
Average Order Price	totalPrice	Average	
Sum Order Price	totalPrice	Sum	
Order Count	ClipsAndTacks Key	Count	

____ 10. In the dashboards you might like to see the average order price and track that relative to a target.

__ a. Create a KPI for the average order price.

1) Click the **KPI Model tab**.

2) In the navigation view of the KPI Model, right click My KPI Context, then select **New > KPI**

a) Name – Average Order Price KPI (Dollars)

b) ID - Average_Order_Price_KPI__x0028_Dollars_x0029_

3) Enter these values:

a) Type – Decimal

b) Select 'Keep track of historical values for this KPI'

c) In KPI Target and Ranges, for Target click Details…, then change the value to 300, then click OK

d) In KPI Target and Ranges, for Ranges select Actual value

e) In the Range table,

(1) Click Add

(2) Change the Name to Low Range, and the ID to Low_Range

(3) A row is created in the Range table with a range name Low Range.

(4) For this row, select the cell in the Start value column and a button is displayed. Click this button, then change the value to 0, and then click OK.

(5) For this row, select the cell in the End value column and a button is displayed. Click this button, then change the value to 300, and then click OK.

f) Now you have created one range called Low Range. Repeat the above step to create one more range:

(1) High Range with start value 300 and end value 1000

g) KPI Value – select 'Base this KPI on a metric and an aggregation function.'

h) Under KPI Details, for Monitoring context, click Browse…, then select 'ClipsAndTacks MC', then click OK

i) Metric – click Browse…, then select totalPrice, then click OK

j) Aggregation function – select Average.

4) Press **Ctrl-S** to save your work.

ClipsAndTacks

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: 300

Ranges: Actual value

Range name	Start value	End value
Low Range	0	< 300
High Range	300	< 1000

KPI Definition

Specify how the value of the KPI is set.

KPI Value

Choose how the KPI will get its value:

⦿ Base this KPI on a metric and an aggregation function.

◯ Write an expression to calculate this KPI based on existing KPIs

KPI Details

Monitoring context: ClipsAndTacks MC

Metric: totalPrice

Aggregation function: Average

Use values from: ⦿ All model versions ◯ Only this version of the model

____ 11. **(Optional)** To demonstrate the use of a counter, you can optionally use this section to create a counter which will be incremented if you ship the order (versus canceling the order). For every monitoring context, this counter will either be zero or one depending on whether the order is cancelled or shipped. Counters would be more useful in other scenarios – perhaps to count the number of times an iterated activity is executed.

__ a. In the Monitor Details Model navigation view, right click ClipsAndTacks MC, then select **New > Counter**. Enter these values:

    1) Name – Ship Counter

    2) ID – Ship_Counter

    3) For Counter Controls, click Add, then select ClipsAndTacks MC > Ship Order to Customer Trigger, click OK

    4) Note that the Resulting Action defaults to Add One, which is correct.

__ b. Press **Ctrl-S** to save your work

▼ Counter Details

Edit the details of the counter, which counts the number of occurrences of some situation or event.

ID: * Ship_Counter

Name: Ship Counter

Description:

☐ This counter can be used for sorting

▼ Counter Controls

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

Trigger / Inbound Event	Resulting Action
Ship Order to Customer Trigger	Add One

_____ 12. **(Optional))** To demonstrate the use of a stopwatch, you can optionally use this section to create a timer which will measure the duration of the monitoring context. You might find this useful in the dashboard instances view to quickly see which monitoring contexts have not been terminated.

__ a. In the model navigation view, right click ClipsAndTacks MC, then select **New > Stopwatch**. Enter these values:

1) Name – Monitoring Context Timer

2) ID – Monitoring_Context_Timer

3) For Stopwatch Controls, click Add, then select ClipsAndTacks MC > New Order Trigger, then click OK.

4) Note that the default Resulting Action is Start

5) For Stopwatch Controls, click Add, then select ClipsAndTacks MC > Ship Order to Customer Trigger, then click OK.

6) Note that the default Resulting Action is Start, but you need to change it to Stop for this trigger. So click the second row in column Resulting Action. A drop down box is shown, so pick Stop in the list.

7) For Stopwatch Controls, click Add, then select ClipsAndTacks MC > Cancel Trigger, then click OK.

8) Note that the default Resulting Action is Start, but you need to change it to Stop for this trigger. So click the second row in column Resulting Action. A drop down box is shown, so pick Stop in the list.

__ b. Press **Ctrl-S** to save your work.

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: * Monitoring_Context_Timer   [Edit...]

Name: Monitoring Context Timer

Description:

☐ 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
Ship Order to Customer Trigger	Stop
Cancel Trigger	Stop

____ 13. Create a business situation event when the number of declined orders is greater than or equal to 3. First you will create an event definition for the outbound situation event. You will create a field called BusinessSituationName which is a required field for the outbound situation event. You will create a KPI that will track the total number of declined orders. Then you will create a trigger which is fired when the number of declined orders is greater than or equal to 3. Then you will define an outbound event which is fired by the trigger. In this outbound event, you will provide a value for the field BusinessSituationName which will be used later when configuring action manager in the server administrative console.

__ a. Create an event definition for declined orders.

1) In Project Explorer, right click ClipsAndTacks and select **New > Event Definition…(cbe)**

2) For file name, enter DeclinedOrderEvent.cbe

3) Click Finish

4) The Event Definition Editor for DeclinedOrderEvent opens.

5) Double click the hierarchical icon next to the label **Parent**.

6) On the **Select Event Definition** Dialog double click **event** under Matching events.

7) **Event** is now shown as the parent of **DeclinedOrderEvent**

8) On the event definition, click the icon for Add Extended Data . This adds a row to the Extended Data table.

9) For the new data element, change the Extended Data name from 'data1' to 'BusinessSituationName' by clicking on data1 and typing the new name.

10) For the new element, change the type to string. Do this by clicking on 'noValue' and then you are given a drop down box.

11) Press **Ctrl-S** to save your work.

Name*	DeclinedOrderEvent	
Parent*	event	
	Property	
	Extended Data	Type
	BusinessSituationName	string

__ b. Create a KPI for declined orders.

    1) Click the **KPI Model tab** for the ClipsAndTacks model.

    2) In the navigation view of the KPI Model, right click My KPI Context, then select **New > KPI**

        a) Name – Declined Order KPI

        b) ID - Declined_Order_KPI

    3) Enter these values:

        a) Type – Decimal

        b) Select 'Keep track of historical values for this KPI'

        c) In KPI Target and Ranges, for Target click Details…, then change the value to 3, then click OK

        d) In KPI Target and Ranges, for Ranges select Actual value

        e) In the Range table,

            (1) Click Add

            (2) Change the Name to Low Range, and the ID to Low_Range

            (3) A row is created in the Range table with a range name Low Range.

            (4) For this row, select the cell in the Start value column and a button is displayed. Click this button, then change the value to 0, and then click OK.

            (5) For this row, select the cell in the End value column and a button is displayed. Click this button, then change the value to 3, and then click OK.

        f) Now you have created one range called Low Range. Repeat the above step to create one more range:

            (1) High Range with start value 3 and end value 10

        g) KPI Value – select 'Base this KPI on a metric and an aggregation function.'

        h) Under KPI Details, for Monitoring context, click Browse…, then select 'ClipsAndTacks MC', then click OK

        i) Metric – click Browse…, then select 'ClipsAndTacks Key', then click OK

j) Aggregation function – select Count.

k) In the Data Filter section for this KPI, click Add

l) In the dialog, navigate to ClipsAndTacks MC > Order Status, then click OK

m) In the row containing metric Order Status, make sure the operation defaults to 'equals'. Also, click the cell in the column Values, then enter this text (with quotation marks):

'Cancelled'

4) Press **Ctrl-S** to save your work.

▼ **KPI Definition**
Specify how the value of the KPI is set.

KPI Value

Choose how the KPI will get its value:
⦿ Base this KPI on a metric and an aggregation function.
◯ Write an expression to calculate this KPI based on existing KPIs

KPI Details

Monitoring context:	* ClipsAndTacks MC	Browse...
Metric:	* ClipsAndTacks Key	Browse...
Aggregation function:	* Count	▼

Use values from: ⦿ All model versions ◯ Only this version of the model

Time Filter
Select a time period over which the KPI should be calculated.

Metric: [   ] Browse...

Time period:
⦿ None   ◯ Repeating ◯ Rolling   ◯ Fixed

Data Filter
Select the metrics that you want to use to determine what values to use in the calculation. For example, if you have a KPI called Average Price in London, you only want to use monitoring contexts where the value of the City metric is London.

Metric	Operator	Values	Case-sensitive	
A▪ Order Status	equals	X+Y =? 'Cancelled'	☐	

__ c. Create a trigger to fire the outbound situation event.

1) In the navigation view of the KPI Model, right click My KPI Context, then select **New > Trigger**

a) Name – Declined Order Trigger

b) ID - Declined_Order_Trigger

2) Enter these values:

a) Under Trigger Sources, click Add.

b) Select Recurring wait time, then click OK

c) In the Source column you see the default wait time is 1 minute.

d) In Trigger Condition, enter this text:

Declined_Order_KPI >= 3

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

▼ **Trigger Details**
Edit the details of the trigger, which detects an occurrence and initiates an action in response.

ID: * Declined_Order_Trigger

Name: Declined Order Trigger

Description:

☐ Trigger is repeatable

▼ **Trigger Sources**
Specify the source of this trigger.

Source Type	Source
Recurring wait time	🕐 0 days 0 hours 1 minutes

▼ **Trigger Condition**
Specify the condition that determines whether the trigger will fire.

Declined_Order_KPI >= 3

__ d. Create an outbound situation event for declined orders.

1) In the navigation view of the KPI Model, right click My KPI Context, then select **New > Outbound Event**

a) Name – Declined Order Outbound Event

b) ID - Declined_Order_Outbound_Event

c) Select 'Configure this event to generate an alert in the dashboards'

d) For trigger, click Browse…, then select My KPI Context > Declined Order Trigger, then click OK

2) Enter these values:

a) For extension name, click Browse…, then select ClipsAndTacks > DeclinedOrderEvent.cbe > DeclinedOrderEvent, then click OK

b) Under Event Attributes Details, click Add

c) Select My KPI Context > Declined Order Trigger, then click OK

d) In the table, expand Extended Data, then on the same row as BusinessSituationName, set Expression to (include the quotation marks):

'Too many orders have been declined'

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

▼ Outbound Event Details

Edit the details of the outbound event, which is sent by the monitoring context. The type must be an event definition.

ID: ＊Declined_Order_Outbound_Event   Edit…

Name: Declined Order Outbound Event

Description:

▼ Event Type Details

Specify the event type or the XML schemas that together describe the structure of this outbound event. You can specify an extension name, event parts, or both.

Extension name: DeclinedOrderEvent   Browse…   Clear

Event parts:

ID	Name	Type	Path	

Add   Remove

▼ Event Attributes Details

Specify the triggers that cause the event to be sent. Use the Expression column to specify the value for each event attribute when the event is sent.

Name	Type	Expression
⊟ ▷ Declined Order Trigger		
📇 Property Data		
⊟ 📇 Extended Data		
📇 BusinessSituationName	A⁻ string	X+Y=? 'Too many orders have been declined'

_____ 14. Create a business situation event when the order fulfillment duration is greater than 3 days. First you will create an event definition for the outbound situation event. You will create a field called BusinessSituationName which is a required field for the outbound situation event, and you will create another field for the average order processing time which will eventually be placed into the alert body. You do not need to create a KPI since there is already a KPI containing the average processing time. You will create a trigger which is fired when the average processing time is greater than 3 days. Then you will define an outbound event which is fired by the trigger. In this outbound event, you will provide a value for the field BusinessSituationName which will be used later when

configuring action manager in the server administrative console, and you will populate the field on the event containing the average order processing time.

__ a. Create an event definition for average order processing time.

    1) In Project Explorer, right click ClipsAndTacks and select **New > Event Definition…(cbe)**

    2) For file name, enter LateAverageOrderShippedEvent.cbe

    3) Click Finish

    4) The Event Definition Editor for LateAverageOrderShippedEvent opens.

    5) Double click the hierarchical icon next to the label **Parent**.

    6) On the **Select Event Definition** Dialog double click **event**.

    7) **Event** is now shown as the parent of **LateAverageOrderShippedEvent**

    8) On the event definition, click the icon for Add Extended Data 📑 . This adds a row to the Extended Data table.

    9) For the new data element, change the Extended Data name from 'data1' to 'BusinessSituationName' by clicking on data1 and typing the new name.

    10) For the new element, change the type to string. Do this by clicking on 'noValue' and then you are given a drop down box.

    11) On the event definition, click the icon for Add Extended Data. This adds a second row to the Extended Data table.

    12) For the second data element, change the Extended Data name to AverageOrderProcessingTime

    13) For the second element, change the type to string.

    14) Press **Ctrl-S** to save your work.

Name*	LateAverageOrderShippedEvent	
Parent*	🖧 event	
	Property	
	Extended Data	Type
	BusinessSituationName	string
	AverageOrderProcessingTime	string

__ b. Create a trigger to fire the outbound situation event.

    1) In the navigation view of the KPI Model, right click My KPI Context, then select **New > Trigger**

        a) Name – Order Fulfillment Timer Trigger

        b) ID - Order_Fulfillment_Timer_Trigger

    2) Enter these values:

a) Under Trigger Sources, click Add.

b) Select Recurring wait time, then click OK

c) In the Source column you see the default wait time is one minute.

d) In Trigger Condition, enter this text:

Average_Order_Fulfillment_KPI_August_2006 ge dayTimeDuration ('P3DT1H')

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

▼ Trigger Details
Edit the details of the trigger, which detects an occurrence and initiates an action in response.

ID: ＊ Order_Fulfillment_Timer_Trigger

Name: Order Fulfillment Timer Trigger

Description:

☐ Trigger is repeatable

▼ Trigger Sources
Specify the source of this trigger.

Source Type	Source
Recurring wait time	🕐 0 days 0 hours 1 minutes

▼ Trigger Condition
Specify the condition that determines whether the trigger will fire.

Average_Order_Fulfillment_KPI_August_2006 ge dayTimeDuration('P3DT1H')

__ c. Create an outbound situation event for average order processing time.

1) In the navigation view of the KPI Model, right click My KPI Context, then select **New > Outbound Event**

a) Name – Order Fulfillment Outbound Event

b) ID - Order_Fulfillment_Outbound_Event

c) Select 'Configure this event to generate an alert in the dashboards'

d) For trigger, click Browse…, then select My KPI Context > Order Fulfillment Timer Trigger, then click OK

2) Enter these values:

  a) For extension name, click Browse…, then select ClipsAndTacks > LateAverageOrderShippedEvent.cbe > LateAverageOrderShippedEvent, then click OK

  b) Under Event Attributes Details, click Add

  c) Select My KPI Context > Order Fulfillment Timer Trigger, then click OK

  d) In the table, expand Extended Data, then on the same row as BusinessSituationName, set Expression to (include the quotation marks):

  'Average shipment is too late'

  e) In the table, expand Extended Data, then on the same row as AverageOrderProcessingTime, set Expression to:

  xs:string(xs:decimal(Average_Order_Fulfillment_KPI_August_2006) div 86400)

Note: Here the decimal function converts the duration to seconds, so then it can be divided by 86400 which will give you the number of days.

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

▼ **Outbound Event Details**

Edit the details of the outbound event, which is sent by the monitoring context. The type must be an event definition.

ID: * | Order_Fulfillment_Outbound_Event | Edit...

Name: | Order Fulfillment Outbound Event |

Description: | |

▼ **Event Type Details**

Specify the event type or the XML schemas that together describe the structure of this outbound event. You can specify an extension name, event parts, or both.

Extension name: | LateAverageOrderShippedEvent | Browse...   Clear

Event parts:

ID	Name	Type	Path	

Add   Remove

▼ **Event Attributes Details**

Specify the triggers that cause the event to be sent. Use the Expression column to specify the value for each event attribute when the event is sent.
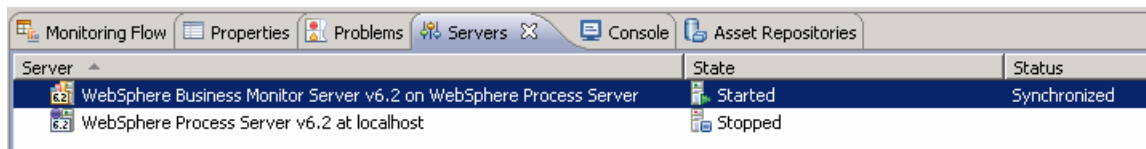
Name	Type	Expression
⊟ ⇨ Order Fulfillment Timer Trigger		
Property Data		
⊟ Extended Data		
BusinessSituationName	string	'Average shipment is too late'
AverageOrderProcessingTime	string	string(decimal(Average_Order_Fulfillment_KPI_August_2006) div 86400)

____ 15. Check for any errors in the Problems view. You should resolve any errors before continuing. Warnings and informational messages may be present but these will not be a problem.

Part 2: Publish the model to the server

In this section you will use Rational Application Developer or WebSphere Integration Developer to publish the monitor model to the monitor server.

____ 1.   In Project Explorer, expand **ClipsAndTacks → Monitor models → ClipsAndTacks.mm**. Right click over **ClipsAndTacks.mm** and then select **Generate Monitor J2EE Projects** from the pop-up menu

____ 2.   Select **Finish**.

____ 3.   A progress dialog shows the status of the operation and it closes when the operation is complete. Check for errors in the Problems view. There may be warnings, but there should not be any errors. If you see errors, then try to perform a clean to see if the errors can be removed: Project > Clean… > select 'Clean all projects', then click OK.

____ 4.   Click the Servers tab, then right click and select the **Start** option to start the server WebSphere Business Monitor v6.2. This may take a few minutes to complete.

Server ▲	State	Status
WebSphere Business Monitor Server v6.2 on WebSphere Process Server	Started	Synchronized
WebSphere Process Server v6.2 at localhost	Stopped	

(Monitoring Flow | Properties | Problems | Servers ⊠ | Console | Asset Repositories)

____ 5.   Right click in the servers view, then select **Add and Remove Projects….**

____ 6.   Click **Add** to move the ClipsAndTacksApplication from the list of available projects to the list of configured projects.
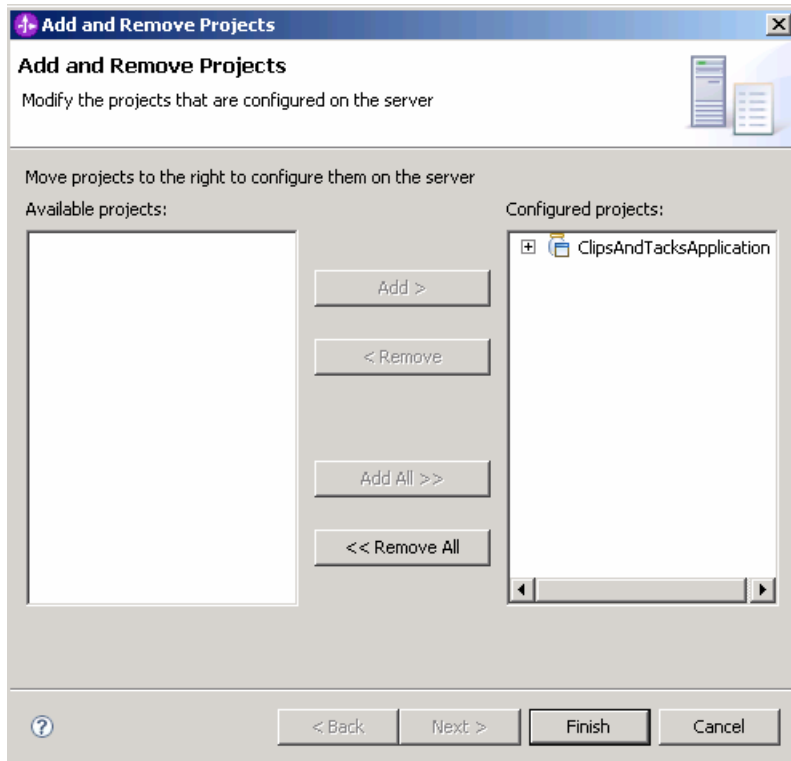
ClipsAndTacks

_____ 7.   Click **Finish**.

_____ 8.   A progress message is displayed in the lower right corner of the window.
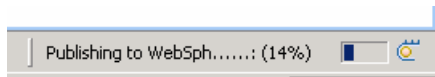
_____ 9.   Check the messages in the console view. You should see the following message when the application has been started:

> Application started: ClipsAndTacksApplication

_____ 10.   In the servers view, right click, then select **Administration > Run administrative console**. You should see it open in a separate tab.

_____ 11.   It will prompt you for user ID and password. Enter 'admin' without the quotation marks for user ID, then enter 'admin' without the quotation marks for password. Click **Log in**

_____ 12.   Click **Applications > Monitor Models**. The application should show green status if it started successfully.

____ 13.   If the model shows red (stopped), then wait a moment, then refresh by clicking on the icon to the right of Status in the last column of the table. You should see green (started) for the model. If it does not show green, be patient and keep refreshing until it does show green.

____ 14.   Check the server log to ensure there are no problems. You can check this in the console view.

____ 15.   If you are using the integrated server within WebSphere Integration Developer or Rational Application Developer, then you do not need to setup Monitor data security, since the administrative user is automatically authorized to all models. If you are using a different server, then you should open the administrative console, navigate to **Security > Monitor Data Security,** then add the model, role and user information to a resource group.

ClipsAndTacks

Part 3: Configure action manager for business situation events

This section shows you how to configure action manager to create alerts based on business situation events defined in the monitor model. The alerts will be visible in the Alert view on your dashboard.

You do not need an LDAP server to test the situation events. When you configure the notification template, you can specify a dashboard login rather than a user registry.

In this section, you will use the administrative console to configure the alerts. However, you could also create business user alerts using the Alert Manager widget in the dashboard. In a production environment, an end user could use the alert manager widget to manage the business user alerts, however, an IT administrator would manage the modeled alerts in the administrative console.

____ 1.   Add a template for declined order alerts.

    __ a. In the administrative console, navigate to **Applications > Monitor Services > Monitor Action Services > Template Definitions > Notifications.**

    __ b. Click **New.**

    __ c. Enter **AlertDeclined** as Template name and a description**.**

    __ d. Select **Dashboard Alert.**

    __ e. Select **User id.**

    __ f. For the **To** field, enter **admin.** This user ID is the one that will receive the alert, so you must log into the dashboard with this user ID.

    __ g. Enter a subject.

    __ h. Enter the body.

* Template name
AlertDeclined

Description

Default action service type
- ⦿ Dashboard Alert
- ○ Cell phone
- ○ Email
- ○ Pager

'To' query type
- ○ Federated repositories query
- ○ LDAP query
- ○ Email address
- ⦿ User id

To
admin

Query base

Subject
Declined orders

Body
Too many orders have been declined.

__ i. Click **OK**.

____ 2.   Add a template for order processing time alerts.

__ a. In the administrative console, navigate to **Applications > Monitor Services > Monitor Action Services > Template Definitions > Notifications.**

__ b. Click **New.**

__ c. Enter **AlertLate** as Template name and a description**.**

__ d. Select **Dashboard Alert.**

__ e. Select **User id.**

__ f. For the **To** field, enter **admin.** This user ID is the one that will receive the alert, so you must log into the dashboard with this user ID.

__ g. Enter a subject.

__ h. Enter the body, and you can optionally enter a substitution variable as shown below. For the actual alert that is sent, the average order processing time from the event payload will be substituted for %AverageOrderProcessingTime% in the body. For example:

The average order processing time is %AverageOrderProcessingTime% days.

```
* Template name
  AlertLate

  Description
  [                  ]

  Default action service type
  ⦿ Dashboard Alert
  ○ Cell phone
  ○ Email
  ○ Pager

  'To' query type
  ○ Federated repositories query
  ○ LDAP query
  ○ Email address
  ⦿ User id

  To
  admin

  Query base
  [                 ]

  Subject
  Order processing time

  Body
  The average order processing
  time is %
  AverageOrderProcessingTime%
  days.
```

__ i. Click **OK**.

____ 3.   Add the binding from the situation event to the action type for declined orders.

    __ a. In the administrative console, navigate to **Applications > Monitor Services > Monitor Action Services > Installed Situation Event Bindings.**

    __ b. Click **New**.

    __ c. Enter the situation event name that you defined in the model. In this lab, you created a business situation name as follows:

        Too many orders have been declined

New Situation Event Binding

General Properties

＊ Situation event name

ny orders have been declined

Description

Declined orders

__ d. This must match exactly the value in the BusinessSituationName field in the outbound event. You might want to copy and paste from the model. Here is a screen capture from the model showing the Declined Order Outbound Event attributes:

▼ **Event Attributes Details**

Specify the triggers that cause the event to be sent. Use the Expression column to specify the value for each event attribute when the event is sent.

Name	Type	Expression
⊟ Declined Order Trigger		
Property Data		
⊟ Extended Data		
BusinessSituationName	string	'Too many orders have been declined'

__ e. Enter a description, then click **Apply**.

__ f. Click **Add**.

__ g. Enter a binding name, then select the template **AlertDeclined.**

Add template to situation event binding

General Properties

＊ Binding name

Declined

Description

Category

Template name

AlertDeclined

__ h. Click **OK**.

__ i. Notice that you now have one action defined for this situation event. If you had other action templates defined then you could add more actions to this event. So then you could send a notification for this situation to multiple destinations including e-mail, alerts, and Web services.

New Situation Event Binding

General Properties

* Situation event name

Too many orders have been

Description

Declined orders

Apply | OK | Reset | Cancel

⊞ Preferences

Add | Remove

Select	Binding Name ⇅	Category Name ⇅	Template Name ⇅	Action Service Type ⇅
☐	Declined		AlertDeclined	AlertHandler

Total 1

___ j. Click **OK**.

_____ 4. Add the binding from the situation event to the action type for order processing time.

___ a. In the administrative console, navigate to **Applications > Monitor Services > Monitor Action Services > Installed Situation Event Bindings.**

___ b. Click **New**.

___ c. Enter the situation event name that you defined in the model. In this lab, you created a business situation name as follows:

Average shipment is too late

___ d. . This must match exactly the value in the BusinessSituationName field in the outbound event. You may want to copy and paste from the model

___ e. Enter a description, then click **Apply**.

___ f. Click **Add**.

___ g. Enter a binding name, then select the template **AlertLate**, then click **OK**.

___ h. Click **OK**.

_____ 5. In the administrative console, navigate to **Applications > Monitor Action Services > Installed Situation Event Bindings.** You should see two bindings as follows:

Installed Situation Event Bindings

Installed Situation Event Bindings

Situation event bindings that are already installed.

⊞ Preferences

| New | Delete |

Select	Situation Event Name ◇	Situation Event Description
☐	Average shipment is too late	Too late
☐	Too many orders have been declined	Declined orders
Total 2		

ClipsAndTacks

Part 4: Run events to exercise the model

Rather than installing a J2EE application to actually create the events that you want to monitor, you are going to use a program to simulate the submission of events from the application.

The supplied program is 'BatchCBEWriter61' and it will submit the events to the Common Event Infrastructure. Look for the program in \Labfiles62\ClipsAndTacks\BatchCBEWriter. This program reads XML files which represent the Common Base Events for the model.

_____ 1. Update BatchCBEWriter61.bat to point WAS_HOME to the monitor server home, for example 'set WAS_HOME=C:\IBM\WebSphere\AppServer'. If you are using the integrated monitor server in WebSphere Integration Developer, the path would be <WID-Install-Path>\pf\WBMonSrv_wps. If you are using the integrated monitor server in Rational Application Developer, the path would be <RAD-Install-Path>\pf\WBMonSrv.

_____ 2. Update config.properties, setting the serverName and portNumber. You can find the port number by browsing the server log and finding 'bootstrap port'. For example, check for the log at C:\IBM\WebSphere\AppServer\profiles\WBMon01\logs\server1\SystemOut.log . For the integrated server in WebSphere Integration Developer, the path would be <WID-Install-Path>\pf\WBMonSrv_wps\logs\server1\SystemOut.log and the portNumber should be 2810. For the integrated server in Rational Application Developer, the path would be <RAD-Install-Path>\pf\WBMonSrv\logs\server1\SystemOut.log and the portNumber should be 2810. Here is an example of the config.properties settings:

    __ a. `connect.serverName = localhost`

    __ b. `connect.portNumber = 2810`

_____ 3. Open a command window, then change directory to the folder containing BatchCBEWriter61, for example, type this command

    __ a. cd \Labfiles62\ClipsAndTacks\BatchCBEWriter

_____ 4. Run commands to load the common base events to the server.

    __ a. batchcbewriter61 -Dsource.filename="c:/Labfiles62/clipsandtacks/cbe/allevents.xml"

    __ b. When it prompts you for user identity and password, enter 'admin' for both (without the quotation marks)

_____ 5. When you run BatchCBEWriter61, you should see results such as:

```
C:\drivers\events>batchcbewriter61 -Dsource.filename="c:/drivers/events/clipsand
tacks/allevents.xml"
Getting CBEs.
Getting Emitter.
Removing GlobalInstanceIds.
Setting missing values.
Changing Instance Ids.
Updating timestamps.
Validating CBEs.
Sending CBEs.
START=09:14:10.875
Sending cbe[10].
Sending cbe[20].
Sending cbe[30].
Sending cbe[40].
Sending cbe[50].
Sending cbe[60].
Sending cbe[70].
Sending cbe[80].
END=09:14:24.390
TotalTime=13515 milliseconds.
CBEs/second=6.215316315205327
```

# Part 5: Create a dashboard in business space

In this section you will build a dashboard in business space. You will add widgets to the dashboard and configure them.

_____ 1. Create the dashboard.

__ a. The default browser is 'Internal Web Browser', but you should not use this one since some standard functions are not provided that you may need. Select Window > Preferences > General > Web browser > select 'Use external Web browser'. Select an external browser. Click OK.

__ b. In WebSphere Integration Developer, in the servers view, right click and select **Business Space**

__ c. When prompted, enter **admin** for the user ID and enter **admin** for the password. You must log in with 'admin' so that you can view the alerts which were setup in action manager to be sent to this particular user ID. Also, in the toolkit environment, this is the user that is automatically defined on the secured server.

__ d. Click the icon to create a new space.

__ e. Enter a name such as Dashboard, select Empty, then click **OK**.

__ f. Click the icon to create a new page in the Dashboard space.
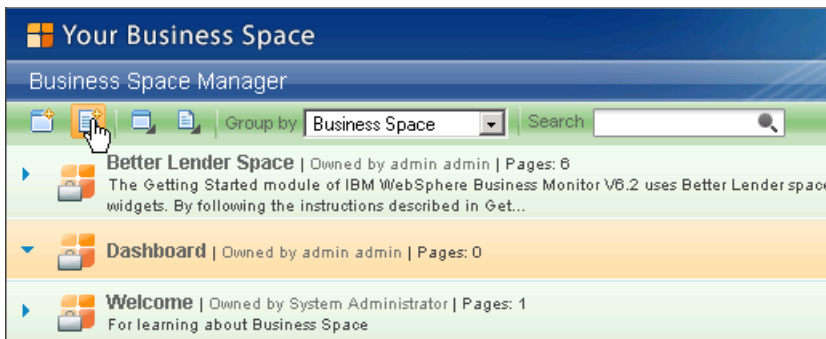
__ g. Enter a name such as Page1, select Empty, then click **OK**.
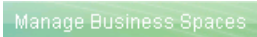
__ h. Click Page1 to open it.
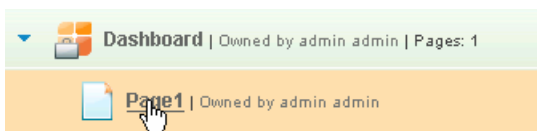
__ i. Now you can add widgets to the page by clicking on 'Add widgets' in the upper right corner

, then dragging a widget to the page. If you want to rename the page, change the layout or remove the page from display, use the icons to the right of the page name on the tab

. To return to the business space list, click 'Manage Business Spaces' in the upper

right corner .

_____ 2.   Add the instances widget to see monitored instances.

__ a. Click **Add widgets**, then select **Instances** and drag it to the page.

__ b. Click **Configure** on the widget menu.

1) To Access the menu, hover the mouse over the right corner of the widget and then click the down arrow. On this menu you can configure the widget, refresh the widget and delete the widget.
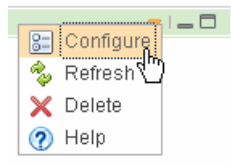
__ c. Click the **Show/Hide** tab, and select monitoring context 'ClipsAndTacks MC'.

Click button >> to move all the fields to the Selected box. Also, click button 'Set as default' which will make this the default monitoring context to display.

__ d. Then click **OK**. You should see a list of monitoring context instances for the events that you just processed.

city	ClipsAndTacks Key	COMPLETED	country	CreationTime	Monitoring Context Timer	Order End Time	Order Fulfillment Duration	Order Start Time	Order Status	Sh
Raleigh o1	★		USA	January 5, 2009 1:44:41 PM	0 s	August 9, 2006 3:20:05 AM	2 d, 0 h, 0 m, 0 s	August 7, 2006 3:20:05 AM	Shipped	1
Toronto o2	★		Canada	January 5, 2009 1:44:41 PM	0 s	August 11, 2006 4:14:55 AM	4 d, 0 h, 0 m, 0 s	August 7, 2006 4:14:55 AM	Shipped	1
Mexico City o3			Mexico	January 5, 2009 1:44:41 PM	17 m, 24 s		0 s	August 7, 2006 5:01:22 AM	New	0
Raleigh o4			USA	January 5, 2009 1:44:41 PM	17 m, 24 s		0 s	August 10, 2006 6:01:34 AM	New	0
Toronto o5			Canada	January 5, 2009 1:44:41 PM	17 m, 24 s		0 s	August 12, 2006 7:12:22 AM	New	0
Raleigh o6	★		USA	January 5, 2009 1:44:41 PM	0 s	August 26, 2006 3:20:05 AM	4 d, 0 h, 0 m, 0 s	August 22, 2006 3:20:05 AM	Cancelled	0
Toronto o7	★		Canada	January 5, 2009 1:44:41 PM	0 s	August 27, 2006 4:14:55 AM	5 d, 0 h, 0 m, 0 s	August 22, 2006 4:14:55 AM	Cancelled	0
Mexico City o8			Mexico	January 5, 2009 1:44:41 PM	17 m, 24 s		0 s	August 22, 2006 5:01:22 AM	New	0
Raleigh o9			USA	January 5, 2009 1:44:41 PM	17 m, 24 s		0 s	August 22, 2006 6:01:34 AM	New	0
Toronto o10			Canada	January 5, 2009 1:44:41 PM	17 m, 24 s		0 s	August 22, 2006 7:12:22 AM	New	0

1 - 10   20

__ e. There are two pages of results, so if you browse through these instances, you see that there are four cancelled orders. Since you setup an alert if declined orders is greater than or equal to three, then an alert should be displayed in the alert view.

__ f. Add the alerts widget to see business alerts.

      1) Click **Add widgets**, then select **Alerts** and drag it to the page. The alerts view is added to your dashboard, and you should see alerts listed since the model processed three or more cancelled orders, and the average order processing time is greater than three days.

      2) You can click an alert in the list, then you will get a pop-up showing the details of the alert.

What you did in this exercise

In the lab, you created a monitor model using Rational Application Developer or WebSphere Integration Developer.

Then you published the model to the monitor server.

You also configured action manager to create alerts based on business situation events.

You used the supplied program to simulate the submission of events from the monitored application.

You configured dashboards and viewed monitored data in several different types of views.

Appendix 1 – Import the solution into the monitor model editor

A solution has been provided so that you do not have to build the model from scratch. This section shows you how to import the monitor model into Rational Application Developer or WebSphere Integration Developer. After importing the model then you can proceed to the section to publish the model to the server.

_____ 1.	Start Rational Application Developer or WebSphere Integration Developer and setup the environment.

    __ a.	Start Rational Application Developer or WebSphere Integration Developer, and when prompted point to a new workspace such as c:\workspaces\ClipsAndTacks

    __ b.	Close the Welcome tab.

    __ c.	You want to open the Business Monitoring perspective. Select **Window > Open Perspective > Business Monitoring**.

    __ d.	If it asks you to Confirm Enablement, then click **OK**.

_____ 2.	Create a new monitoring project.

    __ a.	Right click the Project Explorer, then select **New > Business Monitoring Project…**

    __ b.	For Project name, enter **ClipsAndTacks**

    __ c.	Click Finish. You will see the new project in the Project Explorer view.

_____ 3.	Import the supplied mm and cbe files.

    __ a.	Right click in the Project Explorer view, and then select **Import…**

    __ b.	Select **General** > **File system**, click **Next**.

    __ c.	Browse to the location containing the files, for example, c:\Labfiles62\ClipsAndTacks

    __ d.	Select **ActivityEvent.cbe**

    __ e.	Select **ClipsAndTacks.mm**

    __ f.	Select **DeclinedOrderEvent.cbe**

    __ g.	Select **LateAverageOrderShippedEvent.cbe**

    __ h.	Select **NewOrderEvent.cbe**

    __ i.	Click **Finish**.

_____ 4.	Expand the project in the Project Explorer view, then expand the Event Definitions and you will see the new events listed. Expand Monitor Models and you will see the new ClipsAndTacks model listed.

_____ 5.	Now you can proceed to the section to publish the model to the server.

This page is left intentionally blank.