## IBM WEBSPHERE BUSINESS MONITOR 6.1 – LAB EXERCISE

# WebSphere Business Monitor V6.1 - Clips and Tacks Business Activity Monitoring using XSD event definition

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# What this exercise is about

The objective of this lab is to show you how to build a monitor model using XSD event definitions in Rational Application Developer or WebSphere Integration Developer, deploy it to WebSphere Business Monitor and 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 are 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 significantly from the previous 6.0.2 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 V7.0 or WebSphere Integration Developer V6.1.
- WebSphere Business Monitor V6.1 Toolkit Installation including the Monitor Model editor and Monitor Server

# 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 develop and 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 **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 Java EE 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. These events are used by the Common Event Infrastructure (CEI) in WebSphere Process Server.

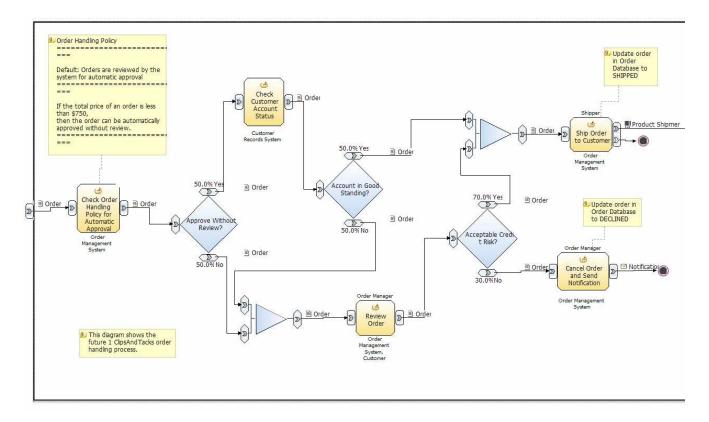
In this lab you will build a monitor model that has the same basic elements as the one that is defined in the Redbook. Namely you will create monitoring constructs in support of two KPIs:

- Average order fulfillment is 3 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 3 and if the order fulfillment time is greater than 3 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 might 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 for the order.

#### **URL Cheatsheet**

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

http://localhost:9061/ibm/console/

• Web dashboard

http://localhost:9081/BusinessDashboard/

# 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\ClipsAndTacksXSD
  - \_\_\_\_b. Close the Welcome tab
  - \_\_\_\_ c. By default, you are in the Business Integration perspective. But you need to open the Business Monitoring perspective. From the main menu, select Window → Open Perspective → Other. The 'Open Perspective' dialog opens

🚯 Open Perspective		×
Business Integration (default)		<b>_</b>
Business Monitoring		
CVS Repository Exploring		_
le Data		
₩ Debug		_
Generic Log Adapter		<b>•</b>
	ОК	Cancel

- \_\_\_\_d. Select 'Business Monitoring' from the 'Open Perspective' dialog and click OK
- 2. Create a new monitoring project. A project is a container for your monitor models and event definitions.
  - \_\_\_\_\_a. Right-click inside **Business Monitoring** project explorer (top left view in the Business Monitoring Perspective) and select **New** → **Business Monitoring Project...** from the pop-up menu. The 'New Business Monitoring Project' panel opens

h Project Explorer 🗙	🤤 🗅 🖵 E
New	Business Monitoring Project
Open	
Сору	
Paste	
⊵ Import	
🛃 Export	
🔗 Re <u>f</u> resh	
Migrate Monitor Model	
Combine Monitor Models	
References	•

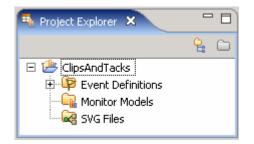
\_\_\_\_b. In the 'New Business Monitoring Project', enter the 'Project name:' as ClipsAndTacks

🤂 New Business Monitoring Project	×
Create a business monitoring project Create a new project resource.	
Project name: ClipsAndTacks	
Use default location      Location: C:/workspaces/ClipsAndTacksXSD/ClipsAndTacks	Browse
?	Cancel

\_\_\_ c. Click the **Finish** button. A question dialog pops up asking if you want to launch the Getting Started information

🚯 Laun	nch Getting Started?	1
?	The interactive Getting Started information can help introduce you to the monitor model editor. Would you like to launch the Getting Started information?	
🗖 Rem	nember my decision	
	<u>Y</u> es <u>N</u> o	

- \_\_\_\_\_d. Click the Yes button to if you want to launch the Getting Started information
- \_\_\_\_e. A new project named **ClipsAndTacks** is created as shown below:



- \_\_\_\_ 3. Create a new XSD event definition named, ActivityEvent
  - \_\_\_\_a. In the Business Monitoring project explorer view, expand ClipsAndTacks, right-click on Event Definitions and select New → Event Definition... (xsd) from the pop-up menu

🌇 Project Explorer 🗙	<u>e</u> 🗅 🗖 🗖
ClipsAndTacks     Event Definitions	
New 🕨	Business Monitoring Project
Сору	Monitor Model
Paste	Event Definition (cbe)
🗙 Delete	Event Definition (xsd)
≧ Import	

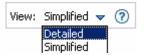
\_\_\_\_b. The 'New XSD Schema' panel opens as shown below:

🚯 New XML Schema		×
Create an XML Schema		
Create a new XML schema.		S
Enter or select the parent folder:		
ClipsAndTacks		
☆ ← ⇒ ClipsAndTacks		
File name: ActivityEvent.xsd 🖌	<u> </u>	
<u>A</u> dvanced >>		
0	Einish	Cancel

- \_\_\_ c. Enter 'ActivityEvent.xsd' as 'File name:' and click Finish
- \_\_\_\_d. The schema you created is listed under the event definitions category and the schema is opened in a simplified XSD editor view as shown below:

🖷 Project Explorer 🛛 🗖 🗖	S ActivityEvent.xsd 🛛	
ClipsAndTacks	View: Simplified 🗸	0
ActionServicesEvent.cbe	S Schema : http:///ClipsAndTacks/ActivityEvent.xsd	
	Design Source	

\_\_\_\_\_e. You can use two views to edit an XML schema file, 'Simplified' or 'Detailed' view. Use the Simplified view if you are new to XML schemas. Use the Detailed view if you are familiar with XML schemas and their more complicated constructs (for example, groups, choices, attribute references, and directives). To change the XSD editor view from 'Simplified' to 'Detailed' click on the pull down menu icon (¬) located on the top right corner



- \_\_\_\_\_f. Click **OK** to confirm switching the XSD editor from simplified to detailed view mode
- \_\_\_\_ g. The detailed view mode of the XSD editor is as shown below:

ActivityEvent.xsd 🗙	
View: Detailed 👻 🥐	
Schema : http:///ClipsAndTacks/ActivityEvent.xsd	
Directives	
🕑 Elements 📴 Types	
Attributes Groups	
Design Source	

- \_\_\_\_4. Review and update the <schema> element, which is the root element of the schema
  - \_\_\_\_a. In the XSD editor, select the schema element and then select the 'Details' tab of the 'Properties' view

Monitoring Flow	Properties 🕄 Pro	blems Servers	Console		~
General	schema				
Documentation Extensions	Prefix:	tns	<		
	Target namespace:	http:///ClipsAn	idTacks/Activit	:yEvent.xsd	Advanced

- \_ b. Update the 'Prefix:' from tns to ae (where ae stands for activity event and the prefix resembles the name of the schema)
- \_\_\_\_ c. Click the **Advanced** button to edit the schema information (attributes)

🚯 Edit Schema	a Information 🛛 🗙
Target Namesp	ace
http:///ClipsAr	ndTacks/ActivityEvent.xsd
Namespace Dec	larations
Prefix	Namespace Name Add
xsd	http://www.w3.org/2001/XMLSchema
ae ←	http:///ClipsAndTacks/ActivityEvent.xsd Edit
	Delete
Drofix qualificat	ion of local elements: qualified
Prenx qualincau	
Prefix qualificat	ion of attributes:
	OK Cancel

\_\_\_\_d. Ensure that the prefix qualification of local elements and the attributes is set to 'qualified'

**Note:** Prefix qualification indicates whether locally declared elements or attributes must be qualified by the target namespace in an instance document. If the value of this attribute is 'unqualified', then locally declared elements should not be qualified by the target namespace. If the value of this attribute is 'qualified', then locally declared elements must be qualified by the target namespace. Using 'qualified' helps to ensure that expressions written to access pieces of information within a type are unambiguous.

\_\_\_\_e. Click **OK**. The '**General**' properties view of the 'ActivityEvent' schema should look like the picture below:

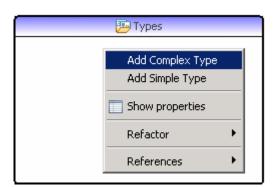
Monitoring Flow	Properties 🛛 Pro	blems Servers Console	~
General	schema		
Documentation	Prefix:	ae 🗲	
Extensions	Target namespace:	http:///ClipsAndTacks/ActivityEvent.xsd	
		>	Advanced

- \_\_\_\_f. Save the changes. File → Save or Ctrl + S
- 5. Add a complex element type named, **ActivityEventData** and this sequence of elements to the complex type

Name of the Element	Туре
businessUnit	string
processName	string
mcID	string
activityName	string
eventType	string
startTime	dateTime
endTime	dateTime

These are the elements - including the data types - that you are adding:

\_\_ a. Right click in the Types section of the XSD editor and select 'Add Complex Type' from the popup menu



\_\_\_\_b. Name the complex type as **ActivityEventData** and save the changes. You should see the new complex type element added, as shown below:

📴 Types	
🔚 ActivityEventData 🛛 🗲	

\_\_\_\_ c. Right click on the complex type 'ActivityEventData' again and select 'Add Element' from the pop-up menu. By default the new element is created with a default name 'NewElement' and xsd type 'string' as shown below:

S *ActivityEvent.xsd ×	- 8
	View: Detailed 🔻
🔚 ActivityEventData	
🚥 🥑 NewElement string	_
Design Source	

\_\_\_\_ d. Modify the element name from 'NewElement' to 'businessUnit' and accept the default xsd type as 'string'

View: Detailed 🗸	0
🔚 ActivityEventData	. 3
🚥 🥑 businessUnit string	
Design Source	

\_\_\_\_e. Repeat the above instructions to add the remaining elements mentioned in the table. The final 'ActivityEventData' complex type should look like the picture below:

S *Activity	/Ever	it.xsd 🗙			
-	_	Click here		View: Detailed 🔻 🕐	]
		🔚 ActivityEven	itData		
	Г	e businessUnit	string		
		e processName	string		
		e mcID	string		
	-00	e activityName	string		
		e eventType	string		
	-	e startTime	dateTime		
		e endTime	dateTime		
Design Sou	ırce			-	

\_\_\_\_\_f. Now click the icon ( 🔤 ) located on the left corner. This leads you back to the full schema editor view as shown below:

S ActivityE	ivent.xsd 🗙	
	View: Detailed 👻 🝞	
-	S Schema : http:///ClipsAndTacks/ActivityEvent.xsd	
	Directives	
	Elements	
	Attributes	
Design Sou	rce	

- \_\_\_\_ g. Save the changes. File  $\rightarrow$  Save or Ctrl + S
- 6. Add another complex element type named **OrderBOData** and this sequence of elements to the complex type

Name of the Element	Туре
orderNumber	string
customerNumber	string
orderState	string
City	string
Country	string
productNumber	string
Quantity	int
totalPrice	float

These are the elements - including the data types - that you are adding:

\_\_\_\_a. Right click in the **Types** section of the XSD editor and select 'Add Complex Type' from the popup menu

📴 Type	es
😰 <u>ActivityEventData</u> 😰 <u>OrderBOData</u> 🛛 🗲	

- \_\_\_\_ b. Now right click on the complex type 'OrderBOData' and select 'Add Sequence' from the pop-up menu. Note that a sequence is automatically added when you add an element to the complex type.
- \_\_\_\_ c. Right click on the complex type 'OrderBOData' again and select 'Add Element' from the pop-up menu. By default the new element is created with a default name 'NewElement' and xsd type 'string' as shown below:

S *ActivityEvent.xsd ×	
	View: Detailed 🔻 🕐
🔝 OrderBOData	
🚥 🕑 NewElement string 🗨	
Design Source	

\_\_\_\_d. Modify the element name form 'NewElement' to '**orderNumber**' and accept the default xsd type as '**string**'

S *ActivityEvent.xsd ×	- 8
	View: Detailed 🔻 🕜
🔚 OrderBOData	
🚥 🖲 orderNumber string	-
Design Source	

\_\_\_\_ e. Repeat the above instructions to add the remaining elements mentioned in the table. The final 'OrderBOData' complex type should look like the picture below:

S Activity	Event.xsd	×					
-		-		View:	Detailed	• ?	
		🔚 OrderBOData					
	-000-	e orderNumber	string				
		e customerNumber	string				
		e orderState	string				
		e city	string				
		e country	string				
		e productNumber	string				
		e quantiry	int				
		e totalPrice	float				
Design Sou	urce						

\_\_\_\_ f. Now click the icon ( a located on the left corner. This leads you back to the full schema editor view as shown below:

S Activity	Event.xsd 🗙	
	View: Detailed 👻 🕐	
-	S Schema : http:///ClipsAndTacks/ActivityEvent.xsd	
	Directives	
	Elements	_
	Attributes Groups	
Design Sou	irce	

\_\_\_ g. Save the changes. File → Save or Ctrl + S

\_\_\_\_\_7. The following is the source of the ActivityEvent schema you created:

S *ActivityEvent.xsd ×	- 5
xml version="1.0" encoding="UTF-8"?	*
<pre><xsd:schema <="" pre="" targetnamespace="http:///ClipsAndTacks/ActivityEvent.xsd"></xsd:schema></pre>	
xmlns:xsd="http://www.w3.org/2001/XMLSchema"	
xmlns:ae="http:///ClipsAndTacks/ActivityEvent.xsd"	
elementFormDefault="qualified" attributeFormDefault="qualified"> <xsd:complextype name="ActivityEventData"> &lt;</xsd:complextype>	
<pre><xsd:sequence></xsd:sequence></pre>	
<pre><xsd:element name="businessUnit" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="processName" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="mcID" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="activityName" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="eventType" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="startTime" type="xsd:dateTime"></xsd:element></pre>	
<pre><xsd:element name="endTime" type="xsd:dateTime"></xsd:element></pre>	
<xsd:complextype name="OrderBOData"> &lt;</xsd:complextype>	
<xsd:sequence></xsd:sequence>	
<pre><xsd:element name="orderNumber" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="customerNumber" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="orderState" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="city" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="country" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="productNumber" type="xsd:string"></xsd:element></pre>	
<pre><xsd:element name="quantiry" type="xsd:int"></xsd:element></pre>	
<pre><xsd:element name="totalPrice" type="xsd:float"></xsd:element></pre>	
Design Source <	

- 8. WebSphere Business Monitor 6.1 has support for concurrent versions of monitor models. In order to take advantage of the Monitor server's version handling capabilities, each monitoring context should have a unique event definition that is the single 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 others as 'update monitor context' semantics. Clips And Tacks is a simple sample and could use a single event definition for the process. However, to satisfy the requirement of a unique event definition for version handling, you will create a new event definition that will create new instances of the monitor model.
  - \_\_\_ a. In the project explorer, right click on Event Definitions and select New → Event Definition... (xsd) from the pop-up menu. The 'New' event definition panel opens

🀴 Project Explorer 🗙	è
ClipsAndTacks	
New	Business Monitoring Project
L	Monitor Model
🔐 💼 Paste	Event Definition (cbe)
X Delete	Event Definition (xsd)
🚵 Import	
🛃 Exp <u>o</u> rt	
🔊 Refresh	

- \_\_\_\_b. In the **New** event definition panel, select **ClipsAndTacks** as the parent folder and enter the 'File name:' as **NewOrderEvent.xsd** and click **Finish**
- \_\_\_\_ c. Click 'Yes' over the question dialog if it appears
- 9. Review and update the <schema> element, which is the root element of the schema
  - \_\_\_\_a. In the XSD editor, select the schema element and then select the 'General' tab of the 'Properties' view

Monitoring Flow	Properties 🗙 Pro	blems Servers C	onsole	~ - 8
General	schema			
Documentation	Prefix:	tns <		
Extensions	Target namespace:	http:///ClipsAndT	acks/NewOrderEver	nt.xsd
				Advanced

\_\_\_\_b. Update the 'Prefix:' from tns to noe

**Note**: The '**Target NameSpace Prefix**' namespace can be given of your choice. 'noe' is short for 'NewOrderEvent'

\_\_\_\_ c. Click the **Advanced** button to edit the schema information (attributes)

🚯 Edit Schem	a Information		×
Target Names			
http:///ClipsA	ndTacks/NewOrderEvent.xsd		
Namespace De	clarations		1
Prefix	Namespace Name		Add
xsd	http://www.w3.org/2001/XMLSchema http:///ClipsAndTacks/NewOrderEvent.xsd		
noe	http:///clipsAndracks/NewOrderEvent.xsd		Edit
			Delete
1			
·	tion of local elements: tion of attributes: qualified		<b>•</b>
		ОК	Cancel

- \_\_\_\_ d. Click the Add button to add the ActivityEvent namespace so the 'ActivityEvent' schema can be imported to the current 'NewOrderEvent' schema. The 'Add Namespace Declarations' panel opens
- \_\_\_\_e. Enter these parameters:
  - Select the radio button for 'Specify New Namespace'
  - Prefix : ae
  - Namespace Name : http:///ClipsAndTacks/ActivityEvent.xsd

🚯 Add Namespace I	Declarations	×
C Select From Regis	stered Namespaces espace	
Enter the required p	refix and namespace URI for the namespace declaration.	
Prefix:	ae 🔶	
Namespace Name:	http:///ClipsAndTacks/ActivityEvent.xsd <	
Location Hint:		Browse
	OK	Cancel

\_\_\_ f. Click **OK** 

🚯 Edit Schen	na Information 🛛 🗙
Target Names	pace
http:///Clips4	AndTacks/NewOrderEvent.xsd
Namespace De	eclarations
Prefix	Namespace Name Add
xsd	http://www.w3.org/2001/XMLSchema
noe	http:///ClipsAndTacks/NewOrderEvent.xsd <
ae	http:///ClipsAndTacks/ActivityEvent.xsd
	Delete
·	ation of local elements: qualified qualified qualified
	OK Cancel

- \_\_\_\_g. Ensure that the prefix qualification of local elements and the attributes is set to 'qualified'
- \_\_\_\_h. Click OK. The 'General' properties view of the 'ActivityEvent' schema should look like the picture below:

Monitoring Flow	Properties 🗙 Pro	blems Servers Console	~ - 8
General	schema		
Documentation	Prefix:	noe <	
Extensions	Target namespace:	http:///ClipsAndTacks/NewOrderEvent.xsd	
			Advanced

- \_\_\_\_i. Save the changes. File → Save or Ctrl + S
- \_\_\_\_\_j. If the 'NewOrderEvent.xsd' schema opens in a 'Simplified' XSD schema editor. Click on the pulldown button (¬) located on the top right corner of the XSD schema editor and select 'Detailed' from the drop down list.

S NewOr	rderEvent.xsd 🗙	- 8
	View: Detailed 👻 🕐	<b>^</b>
	Schema : http:///ClipsAndTacks/NewOrderEvent.xsd	
	Directives	
	Elements Types	
	Attributes	
		-
Design So	burce	-

\_\_\_\_k. Right click any where in the '**Directives**' section and select '**Add Import**' from the pop-up menu to import the 'ActivityEvent' schema. An empty XSD <import> element is added

🛵 Directives	

\_\_\_ I. In the XSD editor, select the empty XSD <import> element and then select the 'Properties' General panel

Monitoring Flow	Properties × Problems Servers Console	~ - 8
General	- import	
Documentation	Namespace:	
Extensions	Prefix:	$\equiv$
	Schema location:	

1) Click the button for 'Schema Location'. The 'Select XML Schema file' panel opens

🚯 Select XML schema file	×
Include Another Schema Select another schema from workbench projects or from HTTP.	S
Select schema from: • Workbench projects • HTTP	
Omega         Back         Mext >         Finish	Cancel

- 2) Ensure the radio button next to 'Workbench projects' is selected and click Next
- 3) In this panel, expand the 'ClipsAndTacks' folder and then select 'ActivityEvent.xsd'

🚯 Select XML scho	ma file			×
Select XML scl Select an XML schem	<b>ema file</b> a file from the Workben	ch projects		S
Workbench Files				<b>H</b>
ClipsAndTa				
	Import F	iles		
(?)	< <u>B</u> ack Nex	:t >	Einish	Cancel

4) Click Finish. The Properties General panel should look the picture below:

Monitoring Flow	Properties 🗙 🖡	Problems Servers	$\bigtriangledown$		
General	- import				
Documentation Extensions	Namespace:	http:///ClipsAndTacks/ActivityEvent.xsd		]	
	Prefix: Schema location:	ae ActivityEvent.xsd		]	•••]

5) Save the configuration. File → Save or Ctrl + S

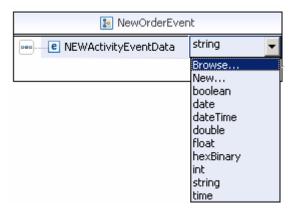
\_\_\_\_m. Now right click in the '**Types**' section and select the '**Add Complex Type**' from the pop-up menu. An XSD <complexType> element is added with a default name



- \_\_ n. In the XSD schema editor, select the empty XSD <complexType> element and then select the 'Properties' General panel.
  - 1) Rename the name of the complexType element to 'NewOrderEvent'
  - 2) Save the configuration. File → Save or Ctrl + S
- \_\_\_\_o. Now right click on the 'NewOrderEvent' complex type element and select 'Add Sequence' from the pop-up menu
- \_\_\_\_p. Right click on the '**NewOrderEvent**' complex type element again and select '**Add Element**' from the pop-up menu. A new element of type string is added with a default name as shown below:

S *NewOrderEvent.xsd ×	- 8
	View: Detailed 🗢 🍞
😰 NewOrderEvent	
e NewElement string	Select here
Design Source	

- \_\_\_ q. In the XSD schema editor, select the XSD <element> and then select the 'Properties' General panel
  - 1) Rename the name of the element to 'NEWActivityEventData'
  - 2) For the 'Type:' select 'Browse' from the drop down list. The 'Set Type' panel opens



🚯 Set Type 💦 🔰	×
Name (? = any character, * = any string):	
Types:	
🔚 ActivityEventData - http:///ClipsAndTacks/ActivityEvent.xsd	[
🖃 anySimpleType	1
🖃 anyURI	
🖃 hace648inary	l
Declaration Location:	
	]
Search Scope	1
C Workspace C Enclosing Project C Current Resource	
C Working Sets Choose	
OK Cancel	

3) Select 'ActivityEventData' from the 'Types' text area and click OK. The XSD schema diagram and the properties view of the new 'NEWActivityEventData' element should look like the picture below:

S ActivityEvent.xsc	I S NewOrderEve	nt.xsd 🗙			- 0
				View: Detailed	t 🔻 🕐
	🔚 NewOrderEvent			🖭 ActivityEven	tData
e NEWActi	ivityEventData Activit	:yEventData		e businessUnit	string
				e processName	string
				e mcID	string
				e activityName	string
				e eventType	string
			_	e startTime	dateTime
				e endTime	dateTime
Design Source					
Monitoring Flow	Properties 🛛 Proble	ems Servers Console			~ - 8
General	e element				
Documentation	Name:	NEWActivityEventData			
Extensions	Туре:	ae:ActivityEventData			•
Advanced	Minimum Occurrence:				•
	Maximum Occurrence:				<b>_</b>
	- Advintant Occurrences	L			

- 4) Save the configuration. File → Save or Ctrl + S
- \_\_\_\_r. Now right click over the '**NewOrderEvent**' complex type element and select '**Add Element**' from the pop-up menu. A new element of type string is added with a default name as shown below:

😰 NewOrderEvent			
	e NEWActivityEventData	ActivityEventData	
	e NewElement	string	

- 1) Rename the name of the element to 'NEWOrderBOData'
- 2) For the '**Type**:' select '**Browse**' from the drop down list. The '**Set Type**' panel opens

🚯 Set Type 🛛 🗙
Name (? = any character, * = any string):
Types:
🖃 nonNegativeInteger
🖃 nonPositiveInteger
🖃 normalizedString
GrderBOData - http:///ClipsAndTacks/ActivityEvent.xsd
positiveInteger
Declaration Location:
S /ClipsAndTacks/ActivityEvent.xsd
Search Scope
C Workspace C Enclosing Project  C Current Resource
C Working Sets Choose
OK Cancel

3) Select 'OrderBOData' from the 'Types' text area and click **OK**. The XSD schema diagram of '**NEWOrderBOData**' element should look like the picture below:

S *ActivityEvent.xsd NewOrderEvent.xsd X					- 8
				View: Detailed 🔻 🝞	
	🔚 NewOrderE	vent		ActivityEventData	
	NEWActivityEventData	ActivityEventData -		e businessUnit string	
	e NEWOrderBOData	OrderBOData		e processName string	
	٨	٨	-	e mcID string	
		- T		e activityName string	
	J	1		e eventType string	
				e startTime dateTime	
				e endTime dateTime	
					_
			4	🖉 OrderBOData	
				e orderNumber string	
				e customerNumber string	
				e orderState string	
				e city string	
				e country string	
				e productNumber string	
				e quantiry int	
				e totalPrice float	
Design Sou	rce				

## 4) Save the configuration. File $\rightarrow$ Save or Ctrl + S

\_\_\_\_s. The following is the source of the NewOrderEvent schema you created:

S *NewOrderEvent.xsd ×	- D
xml version="1.0" encoding="UTF-8"?	<b></b>
<pre><xsd:schema <="" pre="" targetnamespace="http://ClipsAndTacks/NewOrderEvent.xsd"></xsd:schema></pre>	
xmlns:xsd="http://www.w3.org/2001/XMLSchema"	
mins:noe="http:///ClipsAndTacks/NewOrderEvent.xsd"	
<pre>xmlns:ae="http:///ClipsAndTacks/ActivityEvent.xsd"</pre>	
elementFormDefault="qualified" attributeFormDefault="qualified">	
<pre><xsd:import <="" namespace="http:///ClipsAndTacks/ActivityEvent.xsd" pre=""></xsd:import></pre>	
<pre>schemaLocation="ActivityEvent.xsd"&gt;</pre>	
<xsd:complextype name="NewOrderEvent"> &lt;</xsd:complextype>	
<xsd:sequence></xsd:sequence>	
<pre><xsd:element <="" name="NEWActivityEventData" pre=""></xsd:element></pre>	
<pre>type="ae:ActivityEventData"&gt;</pre>	
<pre><xsd:element name="NEWOrderBOData" type="ae:OrderBOData"></xsd:element></pre>	/
	_
Design Source -	

- \_\_\_\_t. Close the XSD schema editor
- 10. Create a new monitor model ClipsAndTacks. The monitor model contains the metrics and KPIs that you want to monitor and it is the source for creating the deployment code for the monitor server.
  - \_\_\_\_a. Right click in the 'Business Monitoring' project explorer view and select **New → Monitor Model...** from the pop-up menu. The Monitor Model panel opens
    - 1) For the '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	
0	Einish Cancel

2) Click **Finish**. Click **Yes** over the question dialog if you want to launch the 'Getting Started' information center. 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.

🖷 Project Explorer 🛛 📃 🗖	🐴 ClipsAndTacks 🗙		- 0
	Monitor Details Model		
ClipsAndTacks	ClipsAndTacks	Monitor Details Edit the details of the model. The timestamp is required to identify the version of the model. ID: *ClipsAndTacks Name: ClipsAndTacks Description: Time Stamp (UTC): *2007-10-15T16:07:552 <b>Vser-Defined XPath Functions</b> Specify and assign a prefix to the user-defined function libraries	Edit
		that are available for use within this monitor model.	Edit
	Monitor Details Model KPI Model Dime	nsional Model   Visual Model   Event Model   ClipsAndTacks.mm	

- 11. 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 are processed by this model. You need to indicate which event creates a new monitoring context instance and which event terminates 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.
- 12. 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.



- \_ 13. In the model navigation view, right click on ClipsAndTacks MC, then select New → Inbound Event from the pop-up menu
  - \_\_\_\_a. For the name, type **Activity Event**. Notice that the ID will automatically be set for you to the same name with underscores (**Activity\_Event**)

🚯 Crea	ate New Inbound Event		×
Creat	e an inbound event		
🛈 Туре	e the name and ID.		
Name:	Activity Event		
ID:	Activity_Event		
101	Heariey_Evene		
	r		Caral 1
Ø	<u>.</u>	UK	Cancel

- \_\_\_\_b. Click **OK**. The inbound 'ActivityEvent' opens in an editor
- \_\_\_\_ c. In the inbound 'ActivityEvent' editor, click the '**Add**' button for '**Event Parts**' to create a new event part type in the 'Event Type Details' section. The 'Create New Event part Type' panel opens
- \_\_\_\_\_d. In the 'Create New Event part Type' panel, enter the following:

#### 1) Name : My Event Part1

#### 2) ID : My\_Event\_Part1

- Click the 'Select Type' button for the 'Type' field. The 'Select Event Part Data Type' panel opens
  - a) Select the check box for 'Choose the data type from XML accessible from this monitor project'

🚯 Select Event Part I	Data Type			×
Select event part	t data typ	e		
Choose the XML schema event part.	a data type ti	hat defines the s	structure of this	
🔿 No data type spec	ified for this (	event part		
Choose the data to	ype from the	XML schemas ac	cessible from this	monitor project
- 🗔 ae		а		
C Choose from the li	st of predefir	ned XML schema	simple data types	:
Type:				~
C Choose the type fr	rom the pred	efined data type	s in the XML cata	log
Туре:				Browse,
	< <u>B</u> ack	<u>N</u> ext >	Einish	Cancel

### c) Click Finish

#### 4) Path : cbe:CommonBaseEvent/ae:ActivityEventData

**Note:** The path is an XML Path Language (XPath) expression that identifies the location in the event definition of the structure defined by the event part type. The expression is based on the structure of the actual event instance to be received at run time. It always starts with cbe:CommonBaseEvent and navigates into content that is placed in the xs:any slot of the Common Base Event. In general, if an XML Schema Definition (XSD) used to define an event structure contains an <xsd:any> or <xsd:anyType> slot, you should use an event part to specify the actual structure of the content that will fill that slot at run time. In this event part, you use cbe:CommonBaseEvent/ae:ActivityEventData as the path. Refer to 'allXSDevents.xml' located in the Labfiles61.zip file, to see how the XSD based events are being sent during runtime.

🚯 Create New Event Part Type 🛛 🗙
Create an event part type
Specify the details of the event part. Together, all the event parts describe the structure of the event at run time.
Name: My Event Part1
ID: My_Event_Part1
Type: ae:ActivityEventData Select Type
Path: cbe:CommonBaseEvent/ae:ActivityEventData
< Back         Next >         Einish         Cancel

#### 5) Click Finish

- 14. In the inbound 'ActivityEvent' editor, click the 'Add' button 'Event Parts' again to create another event part type in the 'Event Type Details' section. The 'Create New Event part Type' panel opens
  - \_\_\_\_a. In the 'Create New Event part Type' panel, enter the following:
    - 1) Name : My Event Part2
    - 2) ID : My\_Event\_Part2
    - Click the 'Select Type' button for the 'Type' field. The 'Select Event Part Data Type' panel opens
      - a) Select the check box for 'Choose the data type from XML accessible from this monitor project'
      - b) Expand ClipsAndTacks -> ActivityEventData.xsd and select 'ae:OrderBOData'

🥵 Select Event Part Data Type 🛛 🗙
Select event part data type
Choose the XML schema data type that defines the structure of this event part.
O No data type specified for this event part
$\odot$ Choose the data type from the XML schemas accessible from this monitor project
ClipsAndTacks  ClipsAndTacks  ActivityEvent.xsd  ClipsAndTacks  C
$\odot$ Choose from the list of predefined XML schema simple data types
Type:
$\odot$ Choose the type from the predefined data types in the XML catalog
Type: Browse
< <u>B</u> ack <u>N</u> ext > <u>Finish</u> Cancel

c) Click Finish

### 4) Path : cbe:CommonBaseEvent/ae:OrderBOData

🚯 Creal	te New Event Part Type	×		
Create an event part type 💦 💦 🚬				
Specify t describe				
Name:	My Event Part2			
ID:	My_Event_Part2			
Туре:	ae:OrderBOData	Select Type		
Path:	cbe:CommonBaseEvent/ae:OrderBOData			
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel		

### 5) Click Finish

\_\_\_\_b. The final 'Event Type Details' section with the two 'Event parts' should look like the picture below:

#### Event Type Details

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

Extension name:				Browse
Event parts:	ID	Name	Туре	Path
	My_Event_P	My Event P	ae:ActivityEventData	cbe:CommonBaseEvent/ae:ActivityEventData
	My_Event_P	My Event P	ae:OrderBOData	cbe:CommonBaseEvent/ae:OrderBOData

- \_\_\_ c. Save the configuration. File → Save or Ctrl + S
- \_\_\_\_\_ d. To enter the Filter Condition, use Content Assist (ctrl-space), or 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.

Activity\_Event/My\_Event\_Part1/ae:businessUnit = 'Clips And Tacks' and Activity\_Event/My\_Event\_Part1/ae:processName = 'Order Handling'

\_\_\_\_ e. To enter the Correlation Expression, use Content Assist (ctrl-space), or type the expression directly into the expression window. When complete the expression should be

ClipsAndTacks\_Key =Activity\_Event/My\_Event\_Part2/ae:orderNumber

- \_\_\_\_f. For 'lf no instances are found', select 'Treat as error'
- \_\_\_\_g. For 'lf one instance is found', select 'Deliver to the instance'
- \_\_\_\_h. For 'If multiple instances are found', select 'Treat as error'
- \_\_\_\_\_i. 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/My\_Event\_Part1/ae:businessUnit = 'Clips And Tacks' and Activity\_Event/My\_Event\_Part1/ae: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/My_Event_Part2/ae: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	•	

\_\_\_\_j. Save the configuration. File → Save or Ctrl + S

- \_\_\_\_ 15. In the model navigation view, right click on ClipsAndTacks MC, then select New → Inbound Event from the pop-up menu
  - \_\_\_\_a. 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**)
  - \_\_\_\_b. Click **OK**. The inbound 'NewOrderEvent' opens in an editor
  - \_\_\_\_ c. In the inbound 'NewOrderEvent' editor, click the 'Add' button for 'Event Parts' to create a new event part type in the 'Event Type Details' section. The 'Create New Event part Type' panel opens
  - \_\_\_\_\_d. In the 'Create New Event part Type' panel, enter the following:
    - 1) Name : My Event Part
    - 2) ID : My\_Event\_Part
    - Click the 'Select Type' button for the 'Type' field. The 'Select Event Part Data Type' panel opens
      - a) Select the check box for 'Choose the data type from XML accessible from this monitor project'
      - b) Expand ClipsAndTacks → NewOrderEvent.xsd and select 'noe:NewOrderEvent'

🤂 Select Event Part Data Type 🛛 🔀
Select event part data type
Choose the XML schema data type that defines the structure of this event part.
No data type specified for this event part
$oldsymbol{eta}$ Choose the data type from the XML schemas accessible from this monitor project
ClipsAndTacks  Clips
$\odot$ Choose from the list of predefined XML schema simple data types
Type:
$\odot$ Choose the type from the predefined data types in the XML catalog
Type: Browse
< <u>Back</u> <u>N</u> ext > <u>Finish</u> Cancel

#### c) Click Finish

4) Path : cbe:CommonBaseEvent/noe:NewOrderEvent

**Note:** The path is an XML Path Language (XPath) expression that identifies the location in the event definition of the structure defined by the event part type. The expression is based on the structure of the actual event instance to be received at run time. It always starts with cbe:CommonBaseEvent and navigates into content that is placed in the xs:any slot of the Common Base Event. In general, if an XML Schema Definition (XSD) used to define an event structure contains an <xsd:any> or <xsd:anyType> slot, you should use an event part to specify the actual structure of the content that will fill that slot at run time. In this event part, you use cbe:CommonBaseEvent/ noe:NewOrderEvent as the path. Refer to 'allXSDevents.xml' part of the Labfiles61.zip to see how the XSD based events are being sent during runtime.

🚯 Create New Ever	nt Part Type	×
Create an even	t part type	
Specify the details of describe the structure		
Name: My Event P	art	
ID: My_Event_	Part	
Type: noe:NewOr	derEvent	Select Type
Path: Cbe:Commo	nBaseEvent/noe:NewOrderEvent	
0	< <u>B</u> ack <u>N</u> ext > <b><u>Finish</u></b>	Cancel

#### 5) Click Finish

\_\_\_\_e. The final 'Event Type Details' section with the 'Event part' should look like the picture below:

Event Type Details					
Specify the event type or the XML schemas that together describe the structure of this inbound event. You can specify an extension name, event parts, or both.					
Extension name: Browse Clear					
Event parts:	ID	Name	Туре	Path	
	My_Event_Part	My Event Part	noe:NewOrderEvent	cbe:CommonBaseEvent/noe:NewOrderEvent	

- \_\_\_\_\_f. Save the configuration. File → Save or Ctrl + S
- \_\_\_\_ g. To enter the Filter Condition, use Content Assist (ctrl-space), or 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.

New\_Order\_Event/My\_Event\_Part/noe:NEWActivityEventData/ae:businessUnit = 'Clips And Tacks' and New\_Order\_Event/My\_Event\_Part/noe:NEWActivityEventData/ae:processName ='Order Handling'

\_\_\_ h. To enter the Correlation Expression, use Content Assist (ctrl-space), or type the expression directly into the expression window. When complete the expression should be ClipsAndTacks\_Key = New\_Order\_Event/My\_Event\_Part/noe:NEWOrderBOData/ae:orderNumber

- \_\_\_\_\_ i. For 'If no instances are found', select 'Create new instance'
- \_\_\_\_j. For 'If one instance is found', select 'Treat as error'
- \_\_\_\_k. For 'If multiple instances are found', select 'Treat as error'
- \_\_\_\_I. 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.

New\_Order\_Event/My\_Event\_Part/noe:NEWActivityEventData/ae:businessUnit = 'Clips And Tacks' and New\_Order\_Event/My\_Event\_Part/noe:NEWActivityEventData/ae:processName = 'Order Handling'

#### Correlation Expression

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

ClipsAndTacks_Key = New_(	Order_Event/My_Event_Part/noe:NEWOrderBOData/ae:orderNumber	*
If no instances are found	Create new instance	•
If one instance is found	Treat as error	•
If multiple instances are found	Treat as error	•

- \_\_\_\_m. Save the configuration. File → Save or Ctrl + S
- \_\_\_16. In the model navigation view, double click ClipsAndTacks Key, to open the key in the editor
  - \_\_\_\_a. For Key Value Expressions, click 'Add...' Note that double clicking in the table will produce the same results.
  - b. A row is added to the table and in the expression cell it shows << No expression specified >>. Click on this cell of the table, then a button is displayed. Click on this button and the expression editor is displayed. You can use Content Assist, or type this expression directly into the window:

New\_Order\_Event/My\_Event\_Part/noe:NEWOrderBOData/ae:orderNumber

- \_\_\_ c. Click **OK**.
- \_\_\_\_ d. Here is a sample of the key:

ID:	* ClipsAndTacks_Key	Edit
Name:	ClipsAndTacks Key	
Description:		*
		<b>v</b>
Туре:	* String	•
	*' Maximum String Length: 256	
	Allocate additional space in database to accommodate Unicode string for globalization	
🗖 A value is re	equired for this metric	
Default Value:		Edit
🗖 This key car	n be used for sorting	
🔻 Key Value I	Expressions	
Specify the exp	pressions that set the value of the key.	
Expression	· ·	
New_Ord	er_Event/My_Event_Part/noe:NEWOrderBOData/ae:orderNumber	
	· · · · · · · · · · · · · · · · · · ·	
	Add	Remove

\_\_\_\_e. Save the configuration. File → Save or Ctrl + S

**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.

- 17. 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 on ClipsAndTacks MC, then select New → Trigger. Enter the following 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'
    - For Trigger Sources, click Add, then select Other source type → Activity Event and then click OK
    - 5) For Trigger Condition, enter

Activity\_Event/My\_Event\_Part1/ae:activityName = 'Ship Order to Customer' and Activity\_Event/My\_Event\_Part1/ae:eventType = 'completed'

- \_ b. Save the configuration. File → Save or Ctrl + S
- \_\_\_\_ c. Here is a sample of this trigger:

<ul> <li>Trigger D</li> </ul>	▼ Trigger Details			
Edit the detai	s of the trigger, which detects ar	occurrence and initiates an action in	response.	
ID:	Ship_Order_to_Customer_Trigg	ger	Edit	
	China Cardan balan ta Cardanan Talanan			
Name:	Ship Order to Customer Trigger			
Description:			<b>A</b>	
	1			
			Ψ.	
🗖 Trigger is i	repeatable			
		_		
	monitoring context 🔫	-		
▼ Trigger S	ources			
Specify the so	ource of this trigger.			
		( course		
Source Type		Source		
Event		a Activity Event		
			Add Remove	
- Teleser C				
▼ Trigger Condition				
Specify the condition that determines whether the trigger will fire.				
Activity_Event/My_Event_Part1/ae:activityName = 'Ship Order to Customer' and				
Activity_Ev	/ent/My_Event_Part1/ae:eventTy	ype = 'completed'		
			-	

- \_\_\_\_\_d. In the model navigation view, right click on 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'
  - For Trigger Sources, click Add, then select Other source type > Activity Event, then click OK.
  - 5) For Trigger Condition, enter

Activity\_Event/My\_Event\_Part1/ae:activityName = 'Cancel Order and Send Notification' and Activity\_Event/My\_Event\_Part1/ae:eventType = 'completed'

- \_\_\_\_e. Save the configuration. File → Save or Ctrl + S
- 18. Create a KPI for Average fulfillment 3 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 the 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 on 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/My\_Event\_Part/noe:NEWActivityEventData/ae:activityName = 'Check Order Handling Policy for Automatic Approval' and New\_Order\_Event/My\_Event\_Part/noe:NEWActivityEventData/ae:eventType = 'started'

- 5) Save the configuration. File → Save or Ctrl + S
- \_\_\_\_b. In the model navigation view, right click on 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/My\_Event\_Part/noe:NEWActivityEventData/ae:startTime

- 7) Click OK.
- 8) Save the configuration. File → Save or Ctrl + S

*
•

- \_\_\_\_ c. In the model navigation view, right click on 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/My\_Event\_Part1/ae: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/My\_Event\_Part1/ae:endTime

### 11) Click OK.

# \_\_\_\_ d. Save the configuration. File $\rightarrow$ Save or Ctrl + S

<ul> <li>Metric Details</li> </ul>	
Edit the details of the metric, which is a holding spot for information used in other calculations.	
ID: * Order_End_Time	Edit
Name: Order End Time	
Description:	*
Type: * DateTime	•
A value is required for this metric	
Default Value:	Edit
This metric can be used for sorting	
<ul> <li>Metric Value Expressions</li> </ul>	

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	X+Y Activity_Event/My_Event_Part1/ae:endTime
📫 Cancel Trigger	X+Y Activity_Event/My_Event_Part1/ae:endTime

- \_\_\_\_e. In the model navigation view, right click on 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

IBM WebSphere Business Monitor 6.1 – Lab exercise

- 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.

<ul> <li>Metric Deta</li> </ul>	ails	
Edit the details	of the metric, which is a holding spot for information used in other calculations.	
ID:	* Order_Fulfillment_Duration	Edit
Name:	Order Fulfillment Duration	
Description:		*
Туре:	* Duration	-
🗖 A value is re	equired for this metric	
Default Value:	dayTimeDuration('P0DT0H0M0.000S')	Edit
This metric of	can be used for sorting	
🔻 Metric Valu	ie Expressions	
Specify the exp	pressions 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 Trig	iger x;V xs:dayTimeDuration (Order_End_Time - Order_Start_Time)	
L		
	Add	Remove

# \_\_\_\_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 on 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.

- In the navigation view of the KPI Model, right click on 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) In KPI Target and Ranges, for Target click **Details**..., then change the value to 3 Days, then click OK
  - c) In KPI Target and Ranges, for Ranges select Actual value
  - d) 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, select the cell in the Start value column and a button is displayed. Click this button, then change all values 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 Days to 1 and the other values to 0, then click OK.
  - e) 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
  - f) KPI Value select 'Base this KPI on a metric and an aggregation function'
  - g) Under KPI Details, for Monitoring context, click Browse..., then select 'ClipsAndTacks MC', then click OK
  - h) Metric click Browse..., then select Order Fulfillment Duration, then click OK
  - i) Aggregation function select Average.
  - j) Under Time Filter, for Metric, click Browse..., then select Order Start Time, then click OK

k) Specify time period - Fixed

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

m) 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	Edit
Name:	Average Order Fulfillment KPI August 2006	
Description:		<b></b>
		-
Type:	* Duration	-

### 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

 Image Day 1
 0 Milliseconds

🗮 Day 1	U 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	

✓ KPI Definition
Specify how the value of the KPI is set.
KPI Value
Choose how the KPI will get its value:
<ul> <li>Base this KPI on a metric and an aggregation function.</li> </ul>
O Write an expression to calculate this KPI based on existing KPIs
KPI Details
Monitoring context: * ClipsAndTacks MC Browse
Metric: * Order Fulfillment Duration Browse
Aggregation function: * Average
Use values from: $\odot$ All model versions $\circ$ O Only this version of the model
Time Filter
Select a time period over which the KPI should be calculated.
Metric: Order Start Time Browse
Time period:
O None O Repeating O Rolling O Fixed
Start date: 2006-08-01T00:00:00 Edit End date: 2006-08-31T23:59:59 Edit
Time zone: * GMT-06:00 V Location: V

- \_\_\_\_\_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.
- \_\_\_ I. In the Monitor Details Model navigation view, right click on ClipsAndTacks MC, then select New → Metric. Enter these values:
  - 1) Name :- Order Status
  - 2) ID :- Order\_Status
  - 3) Type :- String
  - 4) Select the check box for 'A value is required for this metric'
  - 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	Edit
Name:	Order Status	
Description:		<b></b>
		-
Туре:	* String	-
	Maximum String Length: 256	
	Allocate additional space in database to accommodate Unicode string for globalization	
🗹 A value is r	equired for this metric	
Default Value:	* New	Edit
This metric	can be used for sorting	
🕶 Metric Va	lue Expressions	
Specify the exp	pressions that set the value of the metric. If a trigger is specified, the map is evaluated when the trigger fires.	
Trigger	Expression	
🖙 Cancel Trig		
Ship Order	to Customer Trigger 20 'Sbipped'	

\_\_\_\_m. Update the order fulfillment KPI to use the order status as a filter.

- 1) Click the KPI Model tab.
- 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  $\rightarrow$  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.

Metric	Operator	Values	Case-sensitive
🗶 Order Status	equals	🙀 'Shipped'	

- 19. 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 on 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) Do not specify targets nor ranges
      - c) KPI Value select 'Base this KPI on a metric and an aggregation function'
      - d) Under KPI Details, for Monitoring context, click Browse..., then select 'ClipsAndTacks MC', then click OK
      - e) Metric click Browse..., then select ClipsAndTacks Key, then click OK
      - f) 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 on 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) Do not specify targets nor ranges

- c) KPI Value select 'Base this KPI on a metric and an aggregation function'
- d) Under KPI Details, for Monitoring context, click Browse..., then select 'ClipsAndTacks MC', then click OK
- e) Metric click Browse..., then select ClipsAndTacks Key, then click OK
- f) Aggregation function select **Count**
- g) In the Data Filter section for this KPI, click Add
- h) In the dialog, navigate to ClipsAndTacks MC → Order Status, then click OK
- i) 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.
  - In the navigation view of the KPI Model, right click on 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) In KPI Target and Ranges, for Target click Details..., then change the value to **90**, then click OK
    - c) In KPI Target and Ranges, for Ranges select Actual value
    - d) 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 90 and then click OK.
    - e) Repeat the above step to create one more range:
      - (1) High Range with start value 90 and end value 100

Add

Remove

Sort

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

g) For KPI Calculation, enter this text:

fn:round((Ship\_Count\_KPI div Order\_Count\_KPI) \* 100)

3) Press Ctrl-S to save your work.

## 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:	90			Details
Ranges: ,	Actual value			•
[	Range name	Start value	End value	
[	🗧 Low Range	0	< 90	
	🗧 High Range	90	< 100	
L				

## KPI Definition

Specify how the value of the KPI is set.

#### KPI Value

Choose how the KPI will get its value:

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

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

**KPI** Calculation

For example, you could have a Total Profit KPI that subtracts the Total Cost KPI from the Total Revenue KPI.

ph:round((Ship\_Count\_KPI div Order\_Count\_KPI) \* 100)

- 20. 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 on the **Dimensional Model tab**.
  - \_\_\_\_b. Add order status as a dimension to the Dimensional Model.
    - 1) In the navigation view, click on ClipsAndTacks MC Cube
    - 2) In the dimensions table, click New Dimension...

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- 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	New Dimension
Grder Status Dimension     Grder Status	order Status	 New Level
		Remove
		Move Up
		Move Down

#### \_\_\_\_ c. Click the Monitor Details Model tab.

- \_\_\_\_ d. In the Monitor Details Model navigation view, right click on ClipsAndTacks MC, then select New > Metric. Enter these values:
  - 1) Name :- country
  - 2) ID :- country
  - 3) Type :- String
  - 4) Select the check box for 'A value is required for this metric'
  - 5) Default value : " (Note: Empty 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:

New\_Order\_Event/My\_Event\_Part/noe:NEWOrderBOData/ae:country

9) Click OK.

- 10) Press Ctrl-S to save your work
- \_\_\_\_\_e. In the Monitor Details Model navigation view, right click on ClipsAndTacks MC, then select **New** > **Metric**. Enter these values:
  - 1) Name :- city
  - 2) ID :- city
  - 3) Type :- String
  - 4) Select the check box for 'A value is required for this metric'
  - 5) Default value : " (Note: Empty 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:
    - New\_Order\_Event/My\_Event\_Part/noe:NEWOrderBOData/ae:city
  - 9) Click OK.
  - 10) Press Ctrl-S to save your work
- \_\_\_\_\_f. In the Monitor Details Model navigation view, right click on 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:

New\_Order\_Event/My\_Event\_Part/noe:NEWOrderBOData/ae:totalPrice

- 7) Click OK.
- 8) Press Ctrl-S to save your work
- \_\_\_\_g. Click on the **Dimensional Model tab**.
- \_\_\_h. Add location as a dimension to the Dimensional Model.
  - 1) In the navigation view, click on 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	New Dimension
🖃 具 Order Status Dimension		· · · ·
📑 Order Status	🚃 Order Status	New Level
🖃 💻 Location		Remove
🖂 🚍 Country	ingi country	Romoro
City	🚃 city	Move Up
		Move Down

- \_\_\_\_\_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 on 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	New
Average Order Price	🚃 totalPrice	Average	_
			Remove

\_\_\_\_k. In the Dimensional Model, add a measure for sum of order price.

1) In the navigation view, click on 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.

\_\_\_ I. In the Dimensional Model, add a measure for order count.

1) In the navigation view, click on 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	New
Average Order Price	📟 totalPrice	Average	
📠 Sum Order Price	🚃 totalPrice	Sum	Remove
📥 Order Count	😔 ClipsAndTacks Key	Count	

- \_ 21. 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 on 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) In KPI Target and Ranges, for Target click Details..., then change the value to **300**, then click OK
      - c) In KPI Target and Ranges, for Ranges select Actual value
      - d) 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.
      - e) 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
      - f) KPI Value select 'Base this KPI on a metric and an aggregation function'
      - g) Under KPI Details, for Monitoring context, click Browse..., then select 'ClipsAndTacks MC', then click OK
      - h) Metric click Browse..., then select totalPrice, then click OK

# i) Aggregation function – select **Average**.

4) Press Ctrl-S to save your work.

KPI *	Farget and Ra	nges			
Specify a	a target, which is a	an exact value for the KPI to	achieve, or ranges against which	to track the KP	I, or both.
Target:	300				Details
Ranges:	* Actual value				•
	Range name		Start value	End value	
	🗧 Low Range		0	< 300	
	🗧 High Range		300	< 1000	
🗸 KPI I	Definition				
Specify H	now the value of th	ne KPI is set.			
KPI Va	alue				
Choos	e how the KPI will	get its value:			
_		- etric and an aggregation fun	iction.		
-		to calculate this KPI based o			
KPI D	etails				
Moni	toring context:	* ClipsAndTacks MC			Browse
		*			
Metr	ic:	* totalPrice			Browse
Aggr	egation function:	* Average			-

- \_\_\_\_22. (Optional) To demonstrate the use of a counter, you can optionally use this section to create a counter which is incremented if you ship the order (rather than canceling the order). For every monitoring context, this counter is either 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 on ClipsAndTacks MC, then select **New** > **Counter**. Enter these values:
    - 1) Name :- Ship Counter
    - 2) ID :- Ship\_Counter
    - 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

<ul> <li>Counter Details</li> </ul>
Edit the details of the counter, which counts the number of occurrences of some situation or event.
ID: * Ship_Counter Edit
Name: Ship Counter
Description:
This counter can be used for sorting
<ul> <li>Counter Controls</li> <li>Specify what causes the counter to change and what action is taken.</li> </ul>

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

- 23. (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 on ClipsAndTacks MC, then select New → Stopwatch. Enter these values:
    - 1) Name :- Monitoring Context Timer
    - 2) ID :- Monitoring\_Context\_Timer
    - For Stopwatch Controls, click Add, then select ClipsAndTacks MC → New Order Trigger and 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 and 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 on 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 and 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 on 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.

<ul> <li>Stopwatch Details</li> </ul>	
Edit the details of the stopwatch, which keeps track of elapsed time. I two or more start and stop times, the durations are added together to	
ID: * Monitoring_Context_Timer	Edit
Name: Monitoring Context Timer	
Description:	
This stopwatch is an accumulating stopwatch	
This stopwatch can be used for sorting	
<ul> <li>Stopwatch Controls</li> </ul>	
Specify what causes the stopwatch to change and what action is take	n.
Trigger / Inbound Event	Resulting Action
Provider Trigger	Start
📫 Ship Order to Customer Trigger	Stop
🖙 Cancel Trigger	Stop

- 24. 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 is used later when configuring action manager in the server administrative console. Create an new XSD event definition for declined orders
  - \_\_\_\_a. In the Business Monitoring project explorer view, expand ClipsAndTacks, right-click on Event Definitions and select New → Event Definition... (xsd) from the pop-up menu
  - \_\_\_\_b. In the **New XML Schema** panel, select **ClipsAndTacks** as the parent folder and enter the 'File name:' as **DeclinedOrderEvent.xsd** and click **Finish**
  - \_\_\_\_ c. Click 'Yes' in the question dialog if it appears
  - 25. Review and update the <schema> element, which is the root element of the schema
    - \_\_\_\_a. In the XSD editor, select the schema element and then select the 'General' tab of the 'Properties' view

Monitoring Flow	Properties 🗙 Pro	blems Servers	Console		
General	schema				
Documentation Extensions	Prefix:	tns <	-		
	Target namespace:	http:///ClipsAn	idTacks/Decl	inedOrderEvent.xsd	Advanced

- \_\_\_\_b. Update the '**Prefix:**' from **tns** to **doe** (where as **doe** stands for declined order event and the prefix resembles the name of the schema)
- \_\_\_\_ c. Click the **Advanced** button to edit the schema information (attributes)

🚯 Edit Schem	na Information	×
Target Namesp	pace	
http:///ClipsA	ndTacks/DeclinedOrderEvent.xsd	
Namespace De	clarations	
Prefix	Namespace Name Add	
xsd	http://www.w3.org/2001/XMLSchema	
doe	http:///ClipsAndTacks/DeclinedOrderEvent.xsd	
	Delete	
		1
Prefix qualifica	tion of local elements; qualified 📃 💌	1
		-
Prefix qualifica	tion of attributes: qualified	
		Ξ.
	OK Cancel	

- \_\_\_\_\_d. Ensure that the prefix qualification of local elements and the attributes is set to 'qualified'
- \_\_\_\_e. Click **OK**. The '**General**' properties view of the 'ActivityEvent' schema should look like the picture below:

Monitoring Flow	Properties 🗙 Proble	ns Servers	Console		
General	🖻 schema				
Documentation	Prefix: do	e ←	_		
Extensions	Target namespace: ht	p:///ClipsAr	ndTacks/D	eclinedOrderEvent.xsd	
					Advanced

- \_\_\_\_f. Save the changes. File → Save or Ctrl + S
- \_ 26. The 'DeclinedOrderEvent.xsd' schema opens in a 'Simplified' XSD schema editor. Click on the pulldown button (マ) located on the top right corner of the XSD schema editor to select 'Detailed' from the drop down list
- \_\_\_\_ 27. Add a complex element type named, **DeclinedOrderEvent**.
  - \_\_\_\_a. Right click in the **Types** section of the XSD editor and select 'Add Complex Type' from the popup menu

📴 Types		
Add Complex Type Add Simple Type		
Show properties		
Refactor	•	
References	•	

\_\_\_\_ b. Name the complex type as **DeclinedOrderEvent** and save the changes. You must see the new complex type element added as shown below:

🔁 Types	
E DeclinedOrderEvent	

- \_\_\_\_ c. Now, right click the **DeclinedOrderEvent**, complex type from the **Types** section and select **Add Element** from the pop-up menu. An new element named 'NewElement' of type 'string' is created
- \_\_\_\_d. Rename the element as 'BusinessSituationName' and accept 'string' as the type

🔚 DeclinedOrderEvent
BusinessSituationName string

- \_\_\_\_ e. Save the changes. File  $\rightarrow$  Save or Ctrl + S.
- \_\_\_\_\_f. The following is the source of the DeclinedOrderEvent schema you created:



\_ 28. Create a KPI for declined orders.

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

- In the navigation view of the KPI Model, right click on 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) In KPI Target and Ranges, for Target click **Details**..., then change the value to **3**, then click OK
  - c) In KPI Target and Ranges, for Ranges select Actual value
  - d) 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.
  - e) 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
  - f) KPI Value select 'Base this KPI on a metric and an aggregation function'
  - g) Under KPI Details, for Monitoring context, click Browse..., then select 'ClipsAndTacks MC', then click OK
  - h) Metric click Browse..., then select 'ClipsAndTacks Key', then click OK
  - i) Aggregation function select **Count**.
  - j) In the Data Filter section for this KPI, click Add
  - k) In the dialog, navigate to ClipsAndTacks MC → Order Status, then click OK
  - 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.

<ul> <li>KPI Definition</li> </ul>		
Specify how the value of t	ne KPI is set.	
KPI Value		
Choose how the KPI will	get its value:	
O Base this KPI on a m	etric and an aggregation function.	
O 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:	$oldsymbol{\Theta}$ All model versions $oldsymbol{O}$ 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 O Rolling O Fixed	
Data Filtar		

#### 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	
🗶 Order Status	equals	Cancelled'		

\_\_\_\_b. Create a trigger to fire the outbound situation event.

- In the navigation view of the KPI Model, right click on 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 Deta	nils		
Edit the details of	f the trigger, which detects an oc	currence and initiates an action in response.	
ID: * D	eclined_Order_Trigger		Edit
Name: D	eclined Order Trigger		
Description:			
Description			
			-
✓ Trigger is repe	astabla		
<ul> <li>Trigger Sour</li> </ul>	ces		
Specify the sourc	e of this trigger.		
Source Type		Source	
Recurring wa	ait time	🕔 0 days 0 hours 1 minutes	
			Add Remove
	•		
<ul> <li>Trigger Cond</li> </ul>			
Specify the condi	ition that determines whether the	e trigger will fire.	
Declined_Orde	r_KPI >= 3		*

\_\_\_\_ c. Create an outbound situation event for declined orders.

- In the navigation view of the KPI Model, right click on My KPI Context, then select New > Outbound Event
  - a) Name :- Declined Order Outbound Event
  - b) ID :- Declined\_Order\_Outbound\_Event
  - c) For trigger, click Browse…, then select **My KPI Context → Declined Order Trigger**, then click OK
- 2) Click the 'Add' button for 'Event Parts' to create a new event part type in the 'Event Type Details' section. The 'Create New Event part Type' panel opens
- 3) In the 'Create New Event part Type' panel, enter the following:
  - a) Name : My Event Part
  - b) ID : My\_Event\_Part
  - c) Click the 'Select Type' button for the 'Type' field. The 'Select Event Part Data Type' panel opens
    - Select the radio button for 'Choose the data type from XML accessible from this monitor project'
    - Expand ClipsAndTacks 
       → DeclinedOrderEvent.xsd and select 'doe:DeclinedOrderEventType'

🚯 Select Event Part Data Type	X
Select event part data type Choose the XML schema data type that defines the structure of this event part.	
<ul> <li>No data type specified for this event part</li> <li>Choose the data type from the XML schemas accessible from this monitor project</li> </ul>	
<ul> <li>ClipsAndTacks</li> <li>ClipsAndTacks</li> <li>S ActivityEvent.xsd</li> <li>S DeclinedOrderEvent.xsd</li> <li>S LateAverageOrderShippedEvent.xsd</li> <li>S NewOrderEvent.xsd</li> </ul>	
C Choose from the list of predefined XML schema simple data types	
Type:	]
$\bigcirc$ Choose the type from the predefined data types in the XML catalog	
Type: Browse	
< Back Next > Finish Cancel	

• Click Finish

# d) Path : cbe:CommonBaseEvent/doe:DeclinedOrderEventType

🚯 Creat	te New Event Part Type 🛛 🗙
Create	e an event part type 💦 💦 🚬
	the details of the event part. Together, all the event parts describe ture of the event at run time.
Name:	My Event Part
ID:	My_Event_Part
Type:	doe:DeclineOrderEventType Select Type
Path:	cbe:CommonBaseEvent/doe:DeclineOrderEventType
?	< <u>B</u> ack <u>N</u> ext > <u>Einish</u> Cancel

### e) Click Finish

4) In the Event Attributes Details table, expand Declined Order Trigger → My Event Part, then on the same row as **BusinessSituationName**, set Expression to (include the quotation marks):

'Too many orders have been declined'

5) Press Ctrl-S to save your work.

Add

Remove

#### 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:		<b>A</b>
		-

#### 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:					Browse	Clear
Event parts:	ID	Name	Туре	Path		
	My_Event_Part	My Event Part	doe:DeclineOrderEventType	cbe:CommonBaseEvent/doe:	DeclineOrder	Even

#### 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	Туре	Expression	
🖃 📫 Declined Order Trigger			
Property Data			
Extended Data			
🖃 🌇 My Event Part	doe:DeclineOrderEventType		
BusinessSituationNa	xs:string	*** 'Too many orders have been declined'	

- 29. 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 is 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. Create an event definition for average order processing time.
  - \_\_\_\_a. In the Business Monitoring project explorer view, expand ClipsAndTacks, right-click on Event Definitions and select New → Event Definition... (xsd) from the pop-up menu
  - \_\_\_\_ b. In the New XML Schema panel, select ClipsAndTacks as the parent folder and enter the 'File name:' as LateAverageOrderShippedEvent.xsd and click Finish
  - \_\_\_ c. Click 'Yes' in the question dialog if it appears
- 30. Review and update the <schema> element, which is the root element of the schema

\_\_\_\_a. In the XSD editor, select the schema element and then select the 'General' tab of the 'Properties' view

Monitoring Flow	Properties 🛛 Pro	blems Servers Console		- 8
General	S schema			
Documentation	Prefix:	tns <		
Extensions	Target namespace:	http:///ClipsAndTacks/LateAverageOrderShippedEvent.xsd		
		A	dvanc	ed

- \_\_\_\_b. Update the '**Prefix:**' from **tns** to **laose** (where as **laose** stands for late average order shipped event and the prefix resembles the name of the schema)
- \_\_\_\_ c. Click the **Advanced** button to edit the schema information (attributes)

🚯 Edit Schema Information	×
Target Namespace	
http:///ClipsAndTacks/LateAverageOrderShippedEvent.xsd	
Namespace Declarations	
Prefix Namespace Name	Add
xsd http://www.w3.org/2001/XMLSchema laose http:///ClipsAndTacks/LateAverageOrderShippedEvent.xsd	Edit
	Delete
Prefix qualification of local elements: qualified	<b>_</b>
Prefix qualification of attributes: qualified	•
ОК	Cancel

- \_\_\_\_d. Ensure that the prefix qualification of local elements and the attributes is set to 'qualified'
- \_\_\_\_e. Click **OK**. The '**General**' properties view of the 'ActivityEvent' schema should look like the picture below:

Monitoring Flow	Properties 🛛 Pro	blems Server	Console		
General	💲 schema				
Documentation	Prefix:	laose 🗲			
Extensions	Target namespace:	http:///ClipsA	ndTacks/La	ateAverageOrderShippedEvent.xsd	
					Advanced

\_\_\_\_ f. Save the changes. File  $\rightarrow$  Save or Ctrl + S

- 31. The 'DeclinedOrderEvent.xsd' schema opens in a 'Simplified' XSD schema editor. Click on the pulldown button (マ) located on the top right corner of the XSD schema editor to select 'Detailed' from the drop down list
- \_\_\_\_ 32. Add a complex element type named, LateAverageOrderShippedEvent
  - \_\_\_\_a. Right click in the **Types** section of the XSD editor and select 'Add Complex Type' from the popup menu

Add Complex Type
Add Simple Type
Show properties
Refactor 🕨
References

\_\_\_\_b. Name the complex type as LateAverageOrderShippedEvent and save the changes. You should see the new complex type element added as shown below:

🤁 Types	
LateAverageOrderShippedEvent	

- \_\_\_\_ c. Now, right click the LateAverageOrderShippedEvent, complex type from the Types section and select Add Element from the pop-up menu. An new element named 'NewElement' of type 'string' is created
- \_\_\_\_d. Rename the element as 'BusinessSituationName' and accept 'string' as the type

LateAverageOrderShippedEvent	
BusinessSituationName string	

- \_\_\_\_e. Right click the LateAverageOrderShippedEvent, complex type again from and select Add Element from the pop-up menu. An new element named 'NewElement' of type 'string' is created
- \_\_\_\_f. Rename the element as 'AverageOrderProcessingTime' and accept 'string' as the type

õG

🔚 LateAverageOrderShippedEvent			
BusinessSituationName string			
AverageOrderProcessingTime	string		

- \_\_\_\_ g. Save the changes. File  $\rightarrow$  Save or Ctrl + S.
- \_\_\_h. The following is the source of the DeclinedOrderEvent schema you created:



- 33. Create a trigger to fire the outbound situation event.
  - \_\_\_\_a. In the navigation view of the KPI Model, right click on My KPI Context, then select New → Trigger
    - 1) Name :- Order Fulfillment Timer Trigger
    - 2) ID :- Order\_Fulfillment\_Timer\_Trigger
  - \_\_\_\_b. 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:

Average\_Order\_Fulfillment\_KPI\_August\_2006 ge xs:dayTimeDuration ('P3DT1H')

\_\_\_\_ c. Press Ctrl-S to save your work.

<ul> <li>Trigger Details</li> </ul>	
Edit the details of the trigger, which detects an a	occurrence and initiates an action in response.
ID: * Order_Fulfillment_Timer_Trigger	Edit
Name: Order Fulfillment Timer Trigger	
Description:	
	8
✓ Trigger is repeatable	
<ul> <li>Trigger Sources</li> </ul>	
Specify the source of this trigger.	
Source Type	Source
Recurring wait time	🕔 0 days 0 hours 1 minutes
	Add Remove
<ul> <li>Trigger Condition</li> </ul>	
Specify the condition that determines whether th	be trigger will fire.
Average_Order_Fulfillment_KPI_August_2006	ge dayTimeDuration ('P3DT1H')
	-

- \_\_\_\_\_d. Create an outbound situation event for average order processing time.
  - 1) In the navigation view of the KPI Model, right click on My KPI Context, then select New > Outbound Event
    - a) Name :- Order Fulfillment Outbound Event
    - b) ID :- Order\_Fulfillment\_Outbound\_Event
    - c) For trigger, click Browse…, then select **My KPI Context → Order Fulfillment Timer Trigger**, then click OK
  - 2) Click the 'Add' button for 'Event Parts' to create a new event part type in the 'Event Type Details' section. The 'Create New Event part Type' panel opens
  - 3) In the 'Create New Event part Type' panel, enter the following:
    - a) Name : My Event Part
    - b) ID : **My\_Event\_Part**
    - c) Click the '**Select Type**' button for the 'Type' field. The 'Select Event Part Data Type' panel opens
      - Select the radio button for 'Choose the data type from XML accessible from this monitor project'
      - Expand ClipsAndTacks → LateAverageOrderShippedEvent.xsd and select 'laose: LateAverageOrderShippedEventType'

🥵 Select Event Part Data Type 🛛 🗙
Select event part data type
Choose the XML schema data type that defines the structure of this event part.
O No data type specified for this event part
Choose the data type from the XML schemas accessible from this monitor project
ClipsAndTacks  ClipsAndTacks  ActivityEvent.xsd  ClimeS DeclinedOrderEvent.xsd  ClimeS LateAverageOrderShippedEvent.xsd  ClimeS LateAverageOrderShippedEvent  ClimeS NewOrderEvent.xsd  ClimeS NewOrderEvent.xsd
C Choose from the list of predefined XML schema simple data types
Type:
C Choose the type from the predefined data types in the XML catalog
Type: Browse
< Back Next > Finish Cancel

• Click Finish

# d) Path : cbe:CommonBaseEvent/laose:LateAverageOrderShippedEventType

🚯 Creat	e New Event Part Type 🛛 🔀
Create	an event part type 💦 💦 🚬
Specify ti time.	he details of the event part. Together, all the event parts describe the structure of the event at run
Name:	My Event Part
ID:	My_Event_Part
Type:	laose:LateAverageOrderShippedEventType Select Type
Path:	cbe:CommonBaseEvent/laose:LateAverageOrderShippedEventType
?	< <u>B</u> ack <u>N</u> ext > <b>Finish</b> Cancel

# e) Click Finish

4) In the Event Attributes Details table, expand Order Fulfillment Timer Trigger → My Event Part and then on the same row as BusinessSituationName, set Expression to (include the quotation marks):

'Average shipment is too late'

5) In the Event Attributes Details table, expand Order Fulfillment Timer Trigger → My Event Part, then on the same row as **AverageOrderProcessingTime**, set Expression to (include the quotation marks):

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.

#### 6) 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:		<b>^</b>
		<b>v</b>

#### 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:				Browse	ar
Event parts:	ID	Name	Туре	Path	
	My_Event_Part	My Event Part	laose:LateAverageOrderSh	cbe:CommonBaseEvent/laose:LateAverageOrd	

# 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	Туре	Expression
🖃 📫 Order Fulfillment Timer Trigger		
Property Data		
院 Extended Data		
🖂 🌇 My Event Part	laose:LateAverageOrderShippedEv	
BusinessSituationName		*+Y 'Average shipment is too late'
AverageOrderProcessingTime	xs:string	*** xs:string(xs:decimal(Average_Order_Fulfillme

Add		Remove	
-----	--	--------	--

\_ 34. Check for any errors in the Problems view. You should resolve any errors before continuing. Warnings and informational messages may be present but these are not 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

Target project names for the generated code	1
J2EE Projects         Model Logic Project Name       ClipsAndTacksModelLogic         Moderator Project Name       ClipsAndTacksModerator         J2EE Application Project Name       ClipsAndTacksApplication	
overwrite existing projects     Einish Cancelland	el l

- 2. 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.
- \_\_\_\_ 3. If you are using the Monitor Toolkit, ensure that the correct Monitor server profile is setup in the Servers view.
  - \_\_\_\_a. Click the Servers tab.
  - \_\_\_\_b. Double click the listed server to open the server editor.
  - \_\_\_\_\_ c. If you are using Rational Application Developer, ensure WBMonSrv is selected for the WebSphere profile name. If you are using WebSphere Integration Developer, ensure WBMonSrv\_wps is selected for the WebSphere profile name.

▼ General				
a circi ai	name and other common setting:	5.		
Server name:	WebSphere Business Monitor S	erver v6.1 on WebSphere Process Serve	r	
Host name:	localhost	localhost		
Runtime:	WebSphere Process Server v6.1		<u>Edit</u>	
<ul> <li>Server</li> </ul>				
Enter settings fo	r the server.			
WebSphere profile name:		WBMonSrv_wps	-	
Undate server	status interval (in milliseconds):	5000		

\_\_\_\_d. Press Ctrl-S to save your work.

- \_\_\_\_\_4. Click the Servers tab, then right click and select the **Start** option to start the server. This may take a few minutes to complete
- 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.

🚯 Add and Remove Projects		×
Add and Remove Projects Modify the projects that are configure		
Move projects to the right to configur	e them on the server	
<u>Available projects:</u>		Configured projects:
		🗉 🛅 ClipsAndTacksApplication
	A <u>d</u> d >	
	< <u>R</u> emove	
	Add All >>	
	<< Re <u>m</u> ove All	
0	< <u>B</u> ack <u>N</u> ext >	<u>E</u> inish Cancel

- \_\_\_\_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 **Run administrative console**. Enter the user name as **admin** and password as **admin** when prompted. You should see it open in a separate tab:

	Velcome admin	rie I	elp   Logout	±37.
View: All tasks	Welcome			
Welcome	Welcome	? = 🗆	About this Integrated Solutions Console	
🗄 Guided Activities				
🛨 Servers	Integrated Solutions Cons provides a common admin		Integrated Solutions Console, 6.1.0.13 Build Number: df130745.06 Build Date: 11/13/07	
Applications	console for multiple produ table lists the product suit			
🛨 Resources	be administered through t	this	LICENSED MATERIALS PROPERTY OF IBM 5724-i63, 5724-H88, 5655-N01 (C) Copyright International Business	
🗄 Security	installation. Select a produ view more information.	uct suite to		<b>*</b>
🗄 Environment				
🗄 Integration Applications	Suite Name	Version		
	WebSphere Application Server	6.1.0.13		
🛨 Users and Groups	WebSphere Process Server	6.1.0.0		
🗄 Monitoring and Tuning	WebSphere Business	6.1.0.0		
	Monitor			

\_\_\_\_\_ 11. Click **Applications > Monitor Models**. The application should show green status if it started successfully.

View: All tasks	Monit	tor Ma	dels					
Welcome	Moni	itor Mo	odels				2	
Guided Activities     ■	м	íonitoi	Models					
⊞ Servers		Use this page to manage all versions of monitor models and their associated applications. To start or stop a						
Applications						ociated application. All models are initially additionation and the security of the security o		
Enterprise Applications	a	ssign	permission to the	models.				
Install New Application	Đ	] Pref	erences					
<ul> <li>SCA modules</li> <li>Monitor Models</li> </ul>		Start Stop Install Update						
<ul> <li>Data Movement Service</li> <li>Monitor Action Services</li> </ul>								
± Resources	s	elect	Model 🛟	Version	Deployment 🗘	Application 🗘	Status ሷ	
⊞ Security	( T		<u>ClipsAndTacks</u>	2007-12- 02T15:14:19	ок	ClipsAndTacksApplication_	€)	
🗄 Environment	ſ		<u>GlobalHTMM_</u>	<u>2007-06-</u> 18T09:54:38	ок	IBM WBM HUMAN TASK MONITOR MODEL	€)	
Integration Applications		Total :	2		1			
$oldsymbol{\mathbb{H}}$ System administration		, otal .	-					

- 12. 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.
- 13. Check the server log to ensure there are no problems. You can check this in the console view.

# 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.

- \_\_\_\_\_1. Add a template for declined order alerts.
  - \_\_\_\_a. In the administrative console, navigate to Applications > 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 should log into the dashboard with this 'User id'.

Note: The user admin is the default username configured for Monitor Test Environment profile

- \_\_\_\_g. Enter a subject.
- \_\_\_h. Enter the body.

General Properties
* Template name
AlertDeclined
Description
Declined Orders
Default action service type
💿 Dashboard Alert
C Cell phone
O Email
O Pager
'To' query type
C Federated repositories query
C LDAP query
C Email address
🖲 User id
То
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 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 should log into the dashboard with this 'User id'.

Note: The user admin is the default username configured for Monitor Test Environment profile

\_\_\_\_g. Enter a subject.

\_\_\_\_h. Enter the body, and you may 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.

General Properties	
* Template name	
AlertLate	
Description	
Order Processing time	
-	
Default action service type	
Oashboard Alert	
C Cell phone	
O Email	
O Pager	
'To' query type	
C Federated repositories query	
C LDAP query	
C Email address	
🖲 User id	
То	
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 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 Too many orders have been
Description
Declined orders
Apply OK Reset Cancel

\_\_\_\_\_d. This should match exactly the value in the BusinessSituationName field in the outbound event. You may want to copy/paste from the model. Here is a screen capture from the model showing the Declined Order Outbound Event:

🔻 Outbour	id Event Details
Edit the det	ails of the outbound event, which is sent by the monitoring context. The type must be an event definition.
ID:	$_*$ Declined_Order_Outbound_Event
Name:	Declined Order Outbound Event
Description:	

#### 🐨 Event Type Details

Event

Specify the event type or the XML schemas that together describe the structure of this inbound event.

Extension name: DeclinedOrderEvent

parts:	ID	Name	Туре	Path

#### Event Attributes Details

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

Name		Туре	Expression
🖃 📫 De	clined Order Trigger		
	Property Data		
-	Extended Data		
	BusinessSituationName	🗛 string	Y 'Too many orders have been declined'

\_\_\_\_e. Enter a description, then click **Apply**.

\_\_\_ f. Click Add.

Add template to situation event binding	
General Properties	
* Binding name	
Declined	
Category	
Template name AlertDeclined 💌	
Apply OK Reset Cancel	

\_\_\_\_g. Enter a binding name, then select the template 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.

General Properties				
* Situation event name Too many orders have been				
Descri	Description			
Decin	Declined orders			
Apply OK Reset Cancel				
🕀 Pref	erences			
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 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 should match exactly the value in the BusinessSituationName field in the outbound event. You may want to copy/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	? -		
Install	ed Situation Event Bindings			
Situati	on event bindings that are already installed.			
🕀 Pre	ferences			
New	Delete			
	ē 👯 🗐			
Select	Situation Event Name 🗘	Situation Event Description		
	Average shipment is too late Too late			
Too many orders have been declined         Declined orders				
Total 2				

## 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 \Labfiles61\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\MonServer'. If you are using the integrated monitor server in WebSphere Integration Developer, the path would be <WID\_HOME>\runtimes\bi\_v61. If you are using the integrated monitor server in Rational Application Developer, the path would be <RAD\_HOME>\runtimes\base\_v61.
- 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\MonServer\profiles\WBMon01\logs\server1\SystemOut.log. For the integrated server in WebSphere Integration Developer, the path would be <WID\_HOME>\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\_HOME>\runtimes\base\_v61\profiles\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 \Labfiles61\ClipsAndTacksXSD\BatchCBEWriter
- 4. Run commands to load the common base events to the server.
  - \_\_\_\_a. batchcbewriter61 -Dsource.filename="C:/Labfiles61/ClipsAndTacksXSD/cbe/allXSDevents.xml"
  - 5. When you run BatchCBEWriter61, you should see results such as:

🔤 C:\WINDOWS\system32\cmd.exe
C:\Labfiles61\ClipsAndTacksXSD\BatchCBEWriter>batchcbewriter61 -Dsource.filename ="C:/Labfiles61/ClipsAndTacksXSD/cbe/allXSDevents.xml"
Getting CBEs.
Getting Emitter.
Removing GlobalInstanceIds.
Setting missing values. Changing Instance Ids.
Updating timestamps.
Validating CBEs.
Sending CBEs. START=16:31:43.812
Sending cbe[10].
Sending cbe[20].
Sending cbe[30]. Sending cbe[40].
Sending che[50].
Sending cbe[60].
END=16:31:58.203 TotalTime=14391 milliseconds.
C:\Labfiles61\ClipsAndTacksXSD\BatchCBEWriter>_

## Part 5: Create a dashboard

In this section you will build a dashboard. You will add views to the dashboard and configure them.

- \_\_\_\_\_1. Open the dashboard.
  - \_\_\_\_a. In Rational Application Developer or WebSphere Integration Developer, in the servers view, right click and select **WebSphere Business Monitor Dashboard**
  - \_\_\_\_b. The dashboard should open as follows:

WebSphere	Business Monitor	IBM
-	User ID : admin	
	Password :	

\_\_\_\_ c. Enter admin as the username and admin as password and then click Login. You should use 'admin' so that you can view the alerts which were setup in action manager to be sent to this particular 'User id'.



\_\_\_\_ d. Click the **Dashboards** tab.

WebSphere Business Monitor	IBM
Welcome admin Help	Logout
Getting Started Dashboards Utilities	
New     Copy     Rename     Share     Delete     Import     Export       Select     Dashboard \$     Owner \$     Additional Additiona Additional Additional Additiona Additional Additiona Ad	ccess 🔆
📕 🚽 Page 0 of 0 🕨 🕨 Go to page: 🚺 🥐 Results 0 to 0 of 0	D

\_\_\_\_e. Click **New**, then enter a name for the dashboard for example **MyDashbaord**, then click **OK**.

WebSphere Business Monitor	IBM
Welcome admin 🛛 Layout assistance 🗹 Dashboard Layout 🗔	Help Logout
Getting Started Dashboards Utilities	
Manage MyDashbaord ×	

\_\_\_\_\_f. Click **Add to Dashboard**, then select **Instances**, then click **OK**. Note that you can also add a view by dragging the view from the palette on the right and dropping it onto the dashboard.

Instances	•
To select which instances to display, click Personal	ize.
Personalize	

### \_\_\_ g. Click Personalize

Select the columns to display. Available:	* Selected:	
city ClipsAndTacks Key COMPLETED country Monitoring Context Timer Order End Time Order Fulfillment Duration Order Start Time Order Status Ship Counter totalPrice		
* Number of rows to display: 10		

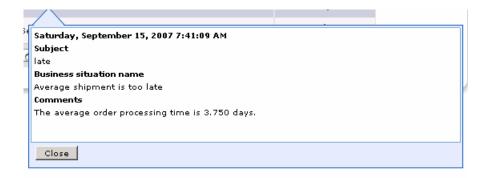
\_\_\_h. Click >> to copy all the metrics from the available list to the selected list. Then click **Save**. You should see a list of monitoring context instances for the events that you just processed.

			🛨 Search fo	or:	Reset			
city	Clips AndTacks Key	COMPLETED	coun <del>try</del>	Order End Time	Order Fullfillment Duration	Order Start Time	Order Status	totalPrice
Toronto	012	*	Canada	August 26, 2006 3:14:55 AM	3 d, 0 h, 0 m, 0 s	August 23, 2006 3:14:55 AM	Shipped	650
Toronto	o15		Canada		0 s	August 23, 2006 6:12:22 AM	New	800
Toronto	017	*	Canada	August 28, 2006 3:14:55 AM	4 d, 0 h, 0 m, 0 s	August 24, 2006 3:14:55 AM	Cancelled	900
Mexico City	018		Mexico		0 s	August 24, 2006 4:01:22 AM	New	950
Raleigh	019		USA		0 s	August 24, 2006 5:01:34 AM	New	1,000
Toronto	o20		Canada		0 s	August 24, 2006 6:12:22 AM	New	1,050

- \_\_\_\_\_ i. There are two pages of results, so if you browse through these instances, you see that there are 4 cancelled orders. Since you setup an alert if declined orders is greater than or equal to 3, then an alert should be displayed in the alert view.
- \_\_\_\_\_j. Click Add to Dashboard, then select Alerts, then click OK. The alerts view is added to your dashboard, and you should see alerts listed since the model processed 3 or more cancelled orders, and the average order processing time is greater than 3 days.

Alerts								
1	Mar	rk Read	Mark Unread					
	÷	Subject	\$				Date and Time	÷
	•	Order pro	ocessing time				December 7, 2007	4:39:05 PM
	•	Declined	Orders	December 7, 2007	4:39:05 PM			
	•	Order pro	ocessing time	December 7, 2007	4:38:03 PM			
	•	Declined	Orders	December 7, 2007	4:38:03 PM			
	•	Order pro	ocessing time		December 7, 2007	4:37:02 PM		
	•	Declined	Orders		December 7, 2007	4:37:02 PM		
	•	Order pro	ocessing time	December 7, 2007	4:36:02 PM			
	•	Declined	Orders				December 7, 2007	4:36:02 PM
	•	Order pro	ocessing time				December 7, 2007	4:35:02 PM
	•	Declined	Orders				December 7, 2007	4:35:02 PM
		Page 1	of 2 🕨 🖹 🛛 Go	to page:	1	Results 1	to 10 of 15	

\_\_\_\_k. You can click on an alert in the list and 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\ClipsAndTacksXSD
  - \_\_\_\_b. Close the Welcome tab
  - \_\_\_\_ c. By default, you are in the Business Integration perspective. You want to open the Business Monitoring perspective. Select Window → Open Perspective → Other → Show all → 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 and 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:\Labfiles61\ClipsAndTacksXSD
  - \_\_\_\_d. Select ActivityEvent.xsd
  - \_\_\_\_e. Select ClipsAndTacks.mm
  - \_\_\_\_f. Select DeclinedOrderEvent.cbe
  - \_\_\_g. Select LateAverageOrderShippedEvent.cbe
  - \_\_h. Select NewOrderEvent.xsd
  - \_\_\_\_ 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 may proceed to the section to publish the model to the server.