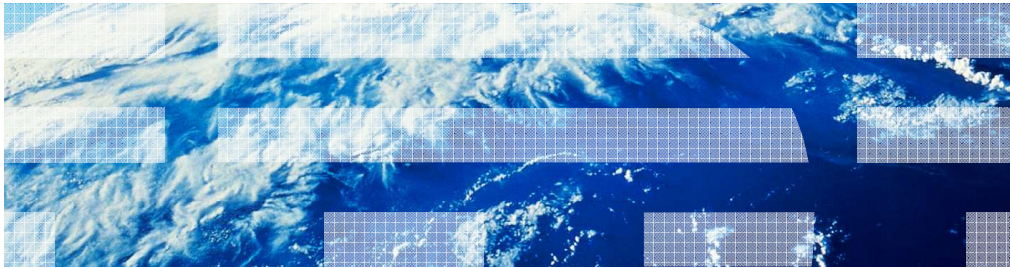

IBM Business Monitor

Monitor sub-models



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This presentation should provide an overview of the sub-models in a monitor model in IBM Business Monitor.

Goals

- Introduce monitor sub-models including KPI, dimensional, visual and event

This presentation will give you an overview of several sub-models in IBM Business Monitor, including KPI, dimensional, visual and event.

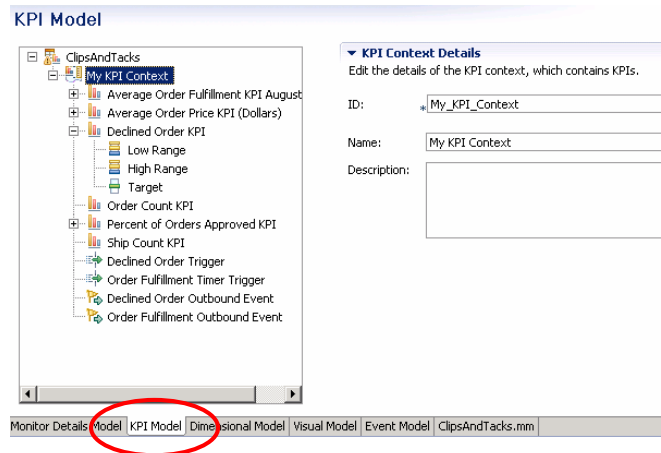
Agenda

- KPI model
- Dimensional model
- Visual model
- Event model
- XML editor
- Monitoring flow

Another presentation provides an overview of monitor models and the monitor details model. This presentation reviews the other sub-models including KPI model, dimensional model, visual model, and event model. Also, the XML editor and monitoring flow view are discussed.

KPI model

- One or more KPI context definitions can be added to the KPI model
- A KPI context is a container for your KPIs
- Right click the model
 - New > KPI Context



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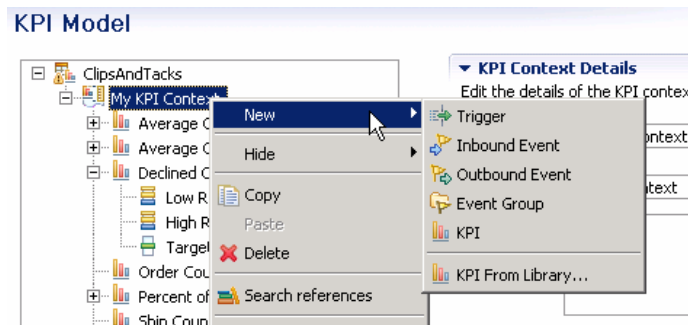
Here you see a screen capture of the KPI model tab in the monitor model editor.

You can create one or more KPI contexts (KC), which are containers for your KPIs. You can associate a separate scalable vector graphics (SVG) diagram in the visual model with each KPI context and each monitoring context in the model.

To create a new KPI context, right click the model in the tree and select 'New', then select 'KPI Context'.

KPI context

- Right click the KPI context to create new KPI elements
 - Trigger
 - Like monitoring context (MC) trigger, except cannot terminate MC and condition based on KPIs only
 - Inbound event
 - Like MC inbound event, except condition/trigger based on KPI context artifacts not MC
 - Outbound event
 - Like MC outbound event, except condition/trigger based on KPI context artifacts not MC
 - Event group
 - KPI
 - KPI from library




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In the KPI Context (KC), you can define triggers, inbound events, outbound events, event groups or KPIs. KC triggers can be evaluated based on inbound events or periodic evaluations, but they cannot terminate an MC and a KPI condition must be based on KPI values not MC values. An inbound event is used to trigger KPI calculations or outbound events in the KC. An outbound event can be used to emit business situation events or other events, based on triggers or inbound events defined in the KC. KPIs are defined in the KC. You can create them manually or you can access KPI's from a library. The KPI library is based on APQC's Process Classification Framework.

To create the elements of the KC, right click the KC in the tree and select 'New'.



KPI

- Type is decimal or duration
- Target
- Ranges with actual values or percentage of target value
- KPI value – metric aggregation or expression
- Time filter
 - Repeating – daily, monthly, yearly; last period or period in progress
 - Rolling – number of days; last period or period in progress
 - Fixed – start date, end date
- Data filter

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: Details...

Ranges:

Range name	Start value	End value	Color
Low Range	0	< 3	
High Range	3	< 10	

KPI Definition

Specify how the value of the KPI is set.

KPI Value

Choose how the KPI will get its value:

Base this KPI on a metric and an aggregation function.

Write an expression to calculate this KPI based on existing KPIs

KPI Details

Monitoring context: Browse...

Metric: Browse...

Aggregation function:

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

Time Filter

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

Metric: Browse...

Time period:

None Repeating Rolling Fixed

Data Filter

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

Metric	Operator	Values	Case-sensitive
Order Status	equals	Cancelled	<input type="checkbox"/>

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KPIs are aggregated metrics that have acceptable ranges or targets associated with them. KPIs can be defined as type decimal or duration.

On this slide you see a screen capture of a KPI definition function in the monitor model editor. You can optionally specify a target value for the KPI. For ranges, you can specify actual value or percentage of target value. For actual value, ranges will reference upper and lower bounds for the KPI range. For percentage of target value, the ranges will specify target margins as a percentage of the target where the target is 100 percent. For each range, you specify a name, start value and end value. Ranges must be contiguous so there cannot be any gaps in the ranges and ranges cannot overlap one another. Ranges and targets are visualized in the KPI widget in the dashboard.

You can specify that your KPI is based on a metric and an aggregation function. So for example, you can use a metric such as order value, and then a function such as average. This gives you a KPI which keeps track of the average order values in your process.

You can also specify that a KPI is based on an expression. This expression can reference other KPI's in the model, and it can also reference any built-in functions or any of your user defined functions.

You can filter the data values that are aggregated by using time periods. The time periods can be repeating, rolling or fixed. Repeating periods can be daily, monthly, or yearly and based on the last completed period or the period in progress. Rolling periods are specified as several days and fixed periods are specified as a specific start date and end date.

You can optionally specify a metric to be used as a filter. In the example you see that this KPI is only going to show values where the order status metric is set to 'Cancelled'.

Dimensional model

- Defines
 - Cubes
 - Dimensions
 - Measures

Dimensional Model

Order Handling

- Cancel Order and Send Notification Cube
- Check Customer Account Status Cube
- Check Order Handling Policy for Automatic Approval Cube
- Order_Handling_Cube**
 - Average Acceptable Credit Risk? No Branch Percentage
 - Average Acceptable Credit Risk? Yes Branch Percentage
 - Average Account in Good Standing? No Branch Percentage
 - Average Account in Good Standing? Yes Branch Percentage
 - Average Approve Without Review? No Branch Percentage
 - Average Approve Without Review? Yes Branch Percentage
 - Average Cancel Order and Send Notification Processing Time
 - Average Check Customer Account Status Processing Time
 - Average Check Order Handling Policy for Automatic Approval Processing Time
 - Average Order Handling Processing Time
 - Average Order Price
 - Average Review Order Processing Time
 - Average Ship Order to Customer Processing Time
 - Average Update Order Database Processing Time
 - Sum Order Price
- Location
- Order Status
- Order Handling/Receive Cube
- Review Order Cube
- Ship Order to Customer Cube
- Update Order Database Cube

Cube Details
Enter the details of the cube, which is a multidimensional representation of data use

ID:

Name:

Description:

Monitoring context:

Measures
Work with the measures for this cube. Measures are calculations based on a metric.

Measure	Source Metric	Aggregation Function
Average Acceptable Credit Risk? No Branch Percentage	Acceptable Credit Risk	Average
Average Acceptable Credit Risk? Yes Branch Percentage	Acceptable Credit Risk	Average
Average Account in Good Standing? No Branch Percentage	Account in Good Standing	Average
Average Account in Good Standing? Yes Branch Percentage	Account in Good Standing	Average
Average Approve Without Review? No Branch Percentage	Approve Without Review	Average
Average Approve Without Review? Yes Branch Percentage	Approve Without Review	Average

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

Dimension / Dimension Level	Source Metric
Order Status	

Monitor Details Model | **Monitor Model** | Dimensional Model | Views Model | Event Model | Order Handling Monitor.rim

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Here is a screen capture of the dimensional model in the monitor model editor. In the dimensional mode you will define cubes, dimensions, and measures.

The dimensional model is the part of the monitor model that contains the cubes that are used for dimensional analysis. The cubes in turn contains measures and dimensions. Using dimensional analysis you should be able to retrieve information from cubes that will answer questions such as these:

What are the total sales for each product by location?

Which products are selling best over time?

Who is your highest-performing salesperson?

Dimensions

- Contains one or more attributes
- Attribute source is metric, counter or key
- Order of attributes represents the level

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

Dimension / Dimension Level	Source Metric	
Order Status		
Order Status	Order Status	
Location		
Country	Country	
City	City	

New Dimension...
New Level...
Remove
Move Up
Move Down

Dimensions are data categories that are used to organize and select monitoring context instances for reporting and analysis. Some examples of dimensions are order status or order location. A dimension can be sourced based on one or more attributes, such as a metric, counter or a key. The order of the attributes is important and represents the level of each attribute. For example, in this screen capture, location is a dimension and country and city are attributes of location. This allows you to aggregate measures for a country, then for a specific country you can aggregate measures for specific cities in that country.

Measures

- Measures are used for aggregation
- Source can be a key, metric, counter, stopwatch
- Aggregation function is average, count, max, min, sum, standard deviation

▼ Measures

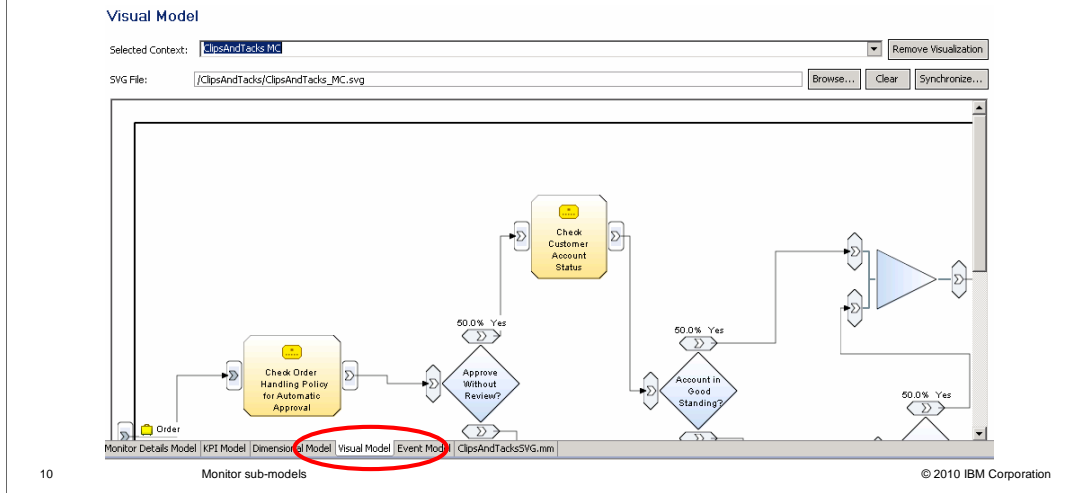
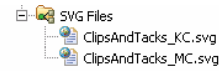
Work with the measures for this cube. Measures are calculations based on a metric, key, counter, or stopwatch.

Measure	Source Metric	Aggregation Function	
Average Review Order Processing Time	Review Order Processing Time	Average	New... Remove
Average Ship Order to Customer Pro...	Ship Order to Customer Processing Time	Average	
Average Update Order Database Pro...	Update Order Database Processing Time	Average	
Sum Order Price	Price	Sum	
Average Order Price	Price	Average	

A measure is created to perform aggregations against quantitative information. A measure points to a metric and performs a function against it. For example, it can be an average of the order price for customer orders. The source for the aggregate measure can be a key, metric, counter or stopwatch. The functions that are available for aggregation are average, count, max, min, sum or standard deviation.

Visual model

- You can associate a diagram with a monitoring context or KPI context
- Diagram is a scalable vector graphics (SVG) file
- Displayed in diagrams view on the dashboard
- SVG diagrams shown in the project tree within 'SVG Files' group



In the visual model tab in the model, you can associate one SVG diagram with each monitoring context and each KPI context. These diagrams are displayed on the diagrams widget on the dashboard. In the monitor model editor you can annotate the SVG diagrams to display metric values or KPI values or to perform other functions such as changing the color of shapes or performing inter-diagram navigation. The SVG diagrams in the model are listed in the SVG files folder in the project explorer.

Visual model validation and testing

The screenshot displays the Visual Model Editor interface. At the top, a BPM diagram is visible with callouts: 'Shows all shapes and actions in diagram' pointing to the diagram area, 'Expression result after test button is pressed' pointing to a 'Check Customer Account' activity, and 'You can provide test values for any metrics or KPI's referenced in the visual model' pointing to the 'Sample KPI Values' table.

Below the diagram are two configuration panels:

- Add and Edit Shape Set Actions:** A table for defining actions for different shape sets.
- Sample KPI Values:** A table for entering test data for KPIs.

Callouts for the configuration panels:

- 'Actions can be added for each shape' points to the 'Add and Edit Shape Set Actions' table.
- 'Test' executes all expressions using the test values provided and displays the updated diagram in a separate window' points to the 'Test' button in the 'Sample KPI Values' panel.

At the bottom left, the text '11 Monitor sub-models' is visible. At the bottom right, the copyright notice '© 2010 IBM Corporation' is present.

This screen capture shows the visual model editor. In the shape set table on the bottom left, expression editors are used to specify the actions to be associated with certain conditions. For example, the ship activity is set to green color or red color depending on the value of the ship count KPI.

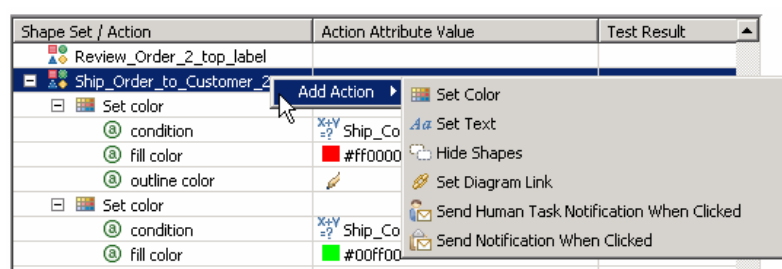
The table for sample test data on the bottom right shows all the metrics and KPIs referenced by expressions in the visual model, as specified in the shape set editor on the left.

You enter sample test data for each metric and KPI and then click the 'test' button to evaluate the results of the visual model customization using this sample data.

When the 'test' button is clicked, a new window opens which displays the customized diagram. The diagram is formatted based on the sample test data, used in conjunction with the shape set actions and associated conditions that have been defined.

Visual model actions

- For each shape in the diagram:
 - Set color
 - Set text
 - Hide shapes
 - Set diagram link
 - Send human task notification when clicked
 - Send notification when clicked



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In the visual model editor, you can assign actions to different shape sets in the diagram.

Use 'Set Color' to change the fill or outline color of the SVG element.

Use 'Set Text' to set a text value somewhere in the diagram. For example, a text box can display explanatory text or the value of a KPI or metric.

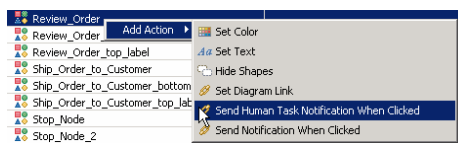
Use 'Set Diagram Link' to associate a shape set with a context ID, providing a hyperlink to another image when the SVG element is clicked. For example, clicking a state on a map of the United States can link to a diagram of that individual state.

Use 'Hide Shapes' to hide a set of diagram elements.

Use 'Send Human Task Notification When Clicked' to affect certain human task widgets on the same page in the Business Space.

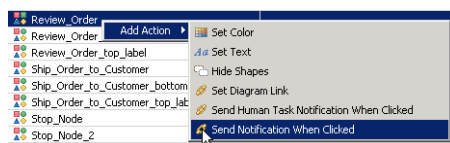
Use 'Send Notification When Clicked' to affect custom widgets on the same page in the Business Space.

Notification in the visual model



- Interacts with human tasks widget or my team's tasks widget

Review_Order	
Send Human Task Notification When Clicked	
condition	X+Y =?
human task instance ID	X+Y =?
human task name	X+Y =? 'OrderHandling_ReviewOrder'
human task namespace	X+Y =? 'http://CATOrderMgmt/Processes/OrderHandling/ReviewOrder'



- Interacts with custom widget

Review_Order	
Send Notification When Clicked	
condition	X+Y =?
event code	X+Y =? 'ReviewOrderEvent'

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In the visual model you can setup notification so that when a shape is clicked in the diagram widget, then a cooperative link is invoked to other widgets in the dashboard. This works with the human tasks widget or the my team's tasks widget. In the dashboard you need to setup wiring links between the diagram widget and the human task widgets. In the visual model, you specify the human task instance ID, name and namespace. If you import a monitor model and process model from WebSphere Business Modeler, the human task name and namespace are not automatically filled in for you. But you can get this information from the human task properties in the BPEL diagram.

If you create a custom widget, you can send information to the custom widget when you click the diagram, by using the visual action 'Send notification when clicked'. You can optionally specify a condition. The event code is any arbitrary string, but you also specify this event code in the custom widget when you create the widget. In the widget you also specify any metrics for the monitoring context that you want to send to the widget. For more information on creating and using custom widgets, see the business space information center.

Event model

- Lists the event definitions in the model
 - Common base event (CBE), XSD, WSDL
 - Same as the event definitions listed in Project Explorer for the model

Event Model

This table specifies the event definition references that are imported in the event model.

Import Location or Namespace	Event Definition Type Name
http://www.ibm.com/xmlns/prod/websphere/monitoring/6.1	
http://www.w3.org/2001/XMLSchema	
http://www.ibm.com/xmlns/prod/websphere/scdl/6.0.0:Component	
/CATOrderMgmt_Itb/businessItems/businessItems.xsd	
http://www.ibm.com/xmlns/prod/websphere/wbi/BusinessRuleGroup/6.0.0:BusinessRuleGroup	
http://www.ibm.com/xmlns/prod/websphere/scdl/business-process/6.0.0	
/CATOrderMgmt_Monitor/ActionServicesEvent.cbe	ActionServicesEvent
LateAverageOrderShippedEvent.cbe	LateAverageOrderShippedEvent

Add Remove

Monitor Details Model | KPI Model | Dimensional Model | Visual Model | **Event Model** | Order Handling Monitor.mmm

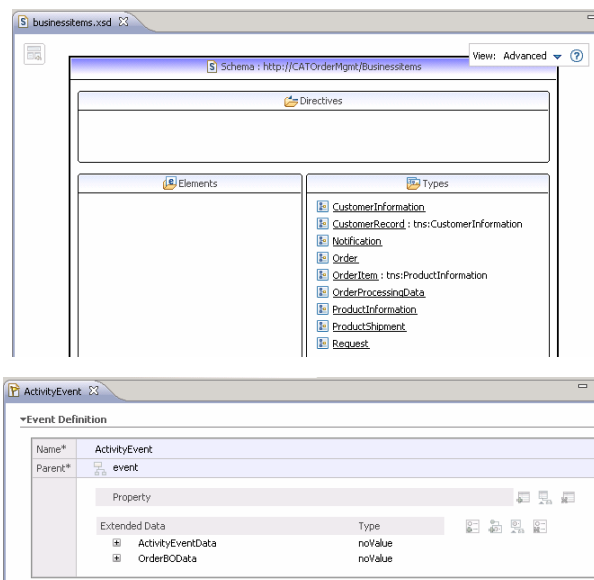
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The event model refers to all of the event definitions used in the monitor model. The event model refers to each event definition that you use as an inbound or outbound event type in the monitor details model or KPI model. It also refers to any schemas that are used to describe the structure of individual event parts.

You can use CBE (Common Base Event), XSD (XML Schema Definition), or WSDL (Web services Description Language) files, or a combination of types of files, as your event definitions. Event definition files are shown in the event definitions group in the Project Explorer view.

Event definitions

- Two editors
 - XSD event – uses XSD to define the format but still uses CBE wrapper
 - CBE event – extended data elements



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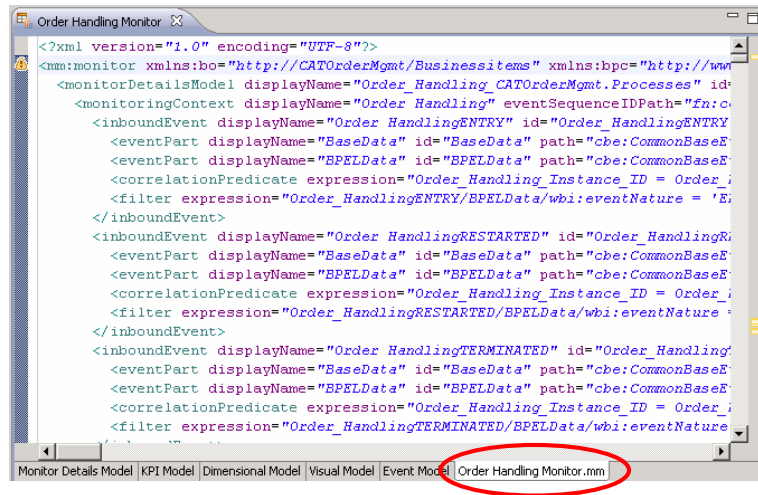
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There are two event type editors for the two different event types, XSD and CBE. The XSD event is the newer style event which uses schema definitions to describe the layout of the payload. Note that the event itself is still using the common base event envelope as a wrapper for the XSD. At runtime, XML is used to represent the business object based on the XSD for the business object. The CBE event is the older style which uses extended data elements in the CBE to define the business payload.

XML editor

- Text based view of the monitor model editors
- Updates can be made in the GUI editors or the XML editor or both
- Useful for copy and paste functions between models



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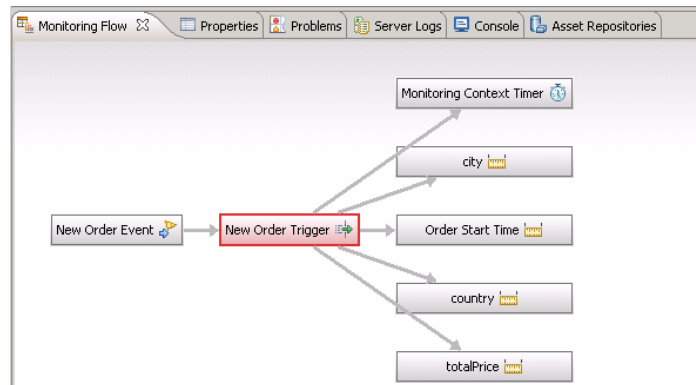
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The XML editor in the monitor model editor is an XML text editor for the monitor model file. When updating the monitor model using the graphical pages, the XML file is created for you in the background. You can use the graphical pages or the XML editor to update the model. The XML text editor is useful if you need to copy portions of another model into a new model.

Monitoring flow

- For a selected element in the monitor model navigator, this view shows other elements that are associated with it
- Double click an element to bring up its flow view
- Applies to monitoring contexts and KPI contexts



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The monitoring flow view shows the relationship that exists between elements in the model. So if you select an element in the navigation tree of the monitor details model or the KPI model, you will see that element and any other elements that it are associated with it. To see the flow view for any other element currently displayed in the view, double click an element in the flow.

The monitoring flow view applies to monitoring contexts and KPI contexts.

Summary

- Covered monitor sub-models in IBM Business Monitor

In summary, this presentation covered various sub-models in the monitor model which are used in conjunction with IBM Business Monitor.



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