



Monitoreo de Procesos de Negocio en Websphere Business Monitorv7.0





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Sesion 1

Fundamentos de Business Activity Monitoring (BAM), BPM y SOA

Presentación Websphere Business Monitor

Fundamentos de arquitectura Websphere Business Monitor

Sesion 2

Websphere Business Monitor Development Toolkit

Desarrollando un Monitor Model

Laboratorio

Sesion 3

Métricas, KPIs

Laboratorio

Contadores, Cronómetros

Laboratorio

Sesion 4

Alarmas, Triggers

Laboratorio

Sesion 5

Análisis dimensional, Reportes

Laboratorio

Versionamiento de procesos

Laboratorio





Unit objectives

apada a hacer
tanto resultados.



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After completing this unit, you should be able to:

- Describe the business and IT challenges addressed by the WebSphere toolset
- Identify and describe the IBM products that support SOA
- Explain the concept of business process management (BPM)
- Identify the primary capabilities of WebSphere Business Monitor





- Refers to activities performed by organizations to manage and improve their business processes
- Describes activities and events that are performed to optimize a business process
- Uses systematic approach to improve business processes for organizations
- Aims to make business processes more effective, more efficient, and more capable of adapting to a rapidly changing environment



- Business Activity Monitoring (BAM):
 - BAM refers to the aggregation, analysis, and presentation of real-time information about activities inside organizations and activities involving customers and partners.
- Six Sigma:
 - A business improvement methodology, originally developed by Motorola to systematically improve processes by eliminating defects.
- Lean Enterprise:
 - A management philosophy focusing on reduction of the seven wastes to improve overall customer value:
 - Transportation, inventory, motion, waiting time, overproduction, processing, defective products (scrap in manufactured products).
- Lean Six Sigma:
 - Combines Lean Enterprise's focus on speed with Six Sigma's focus on quality. The result is better quality, faster.

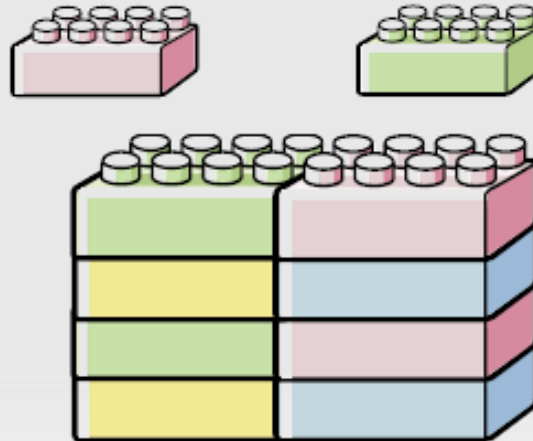


- Software tools and technologies (such as WebSphere Business Modeler) are used in business process improvement efforts to:
 - Model processes
 - Simulate processes
 - Define requirements
 - Create workflow systems
 - Develop integration applications
 - Monitor processes
 - Identify reusable business services
- Service-oriented architecture (SOA) is a driving technology behind the increased interest in process improvement



What is a service?

A **repeatable business task** —
such as check
customer credit, open
new account

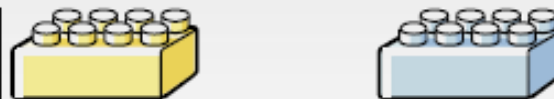


What is service oriented integration?

A way of integrating
a **business as
linked services**
and the outcomes
that they bring

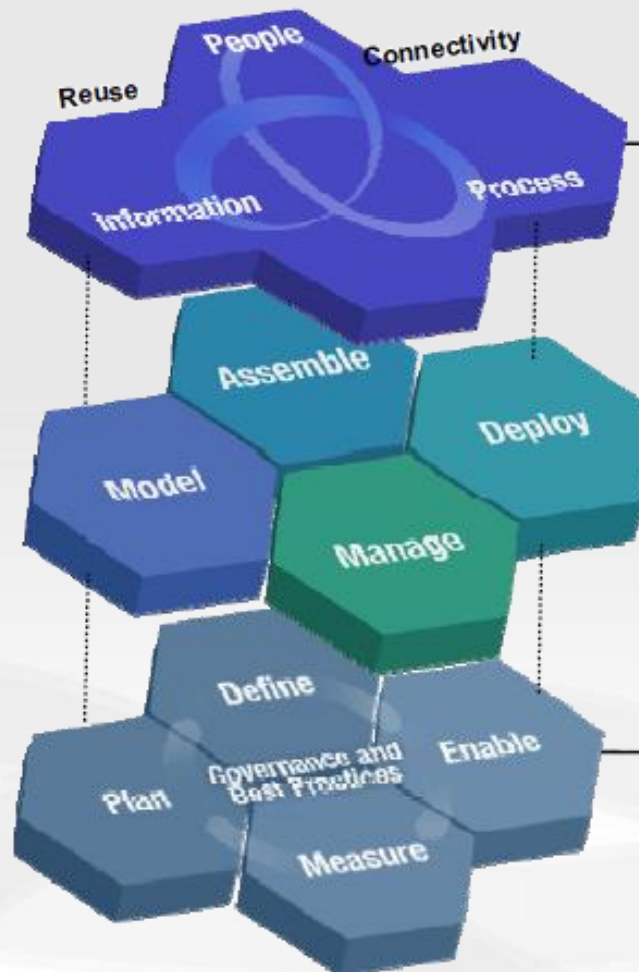
What is service-oriented architecture (SOA)?

An IT **architectural
style** that supports
service orientation



What is a composite application?

A set of **related and
integrated** services
that support a
business process built
on an SOA

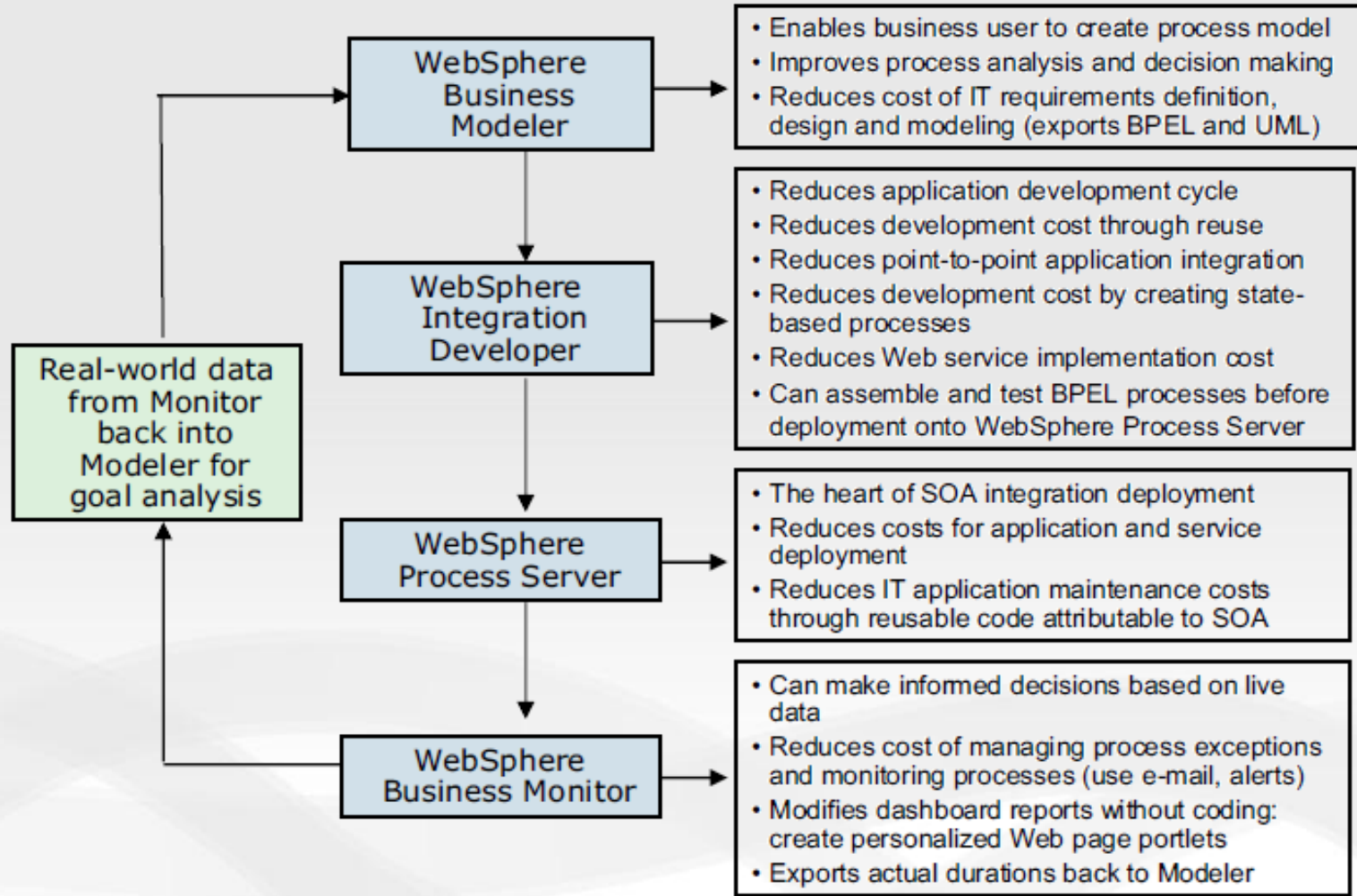


- Building upon **business-centric** entry points:
 - People, process, and information
- SOA is enabled by **IT-centric** entry points:
 - Reuse and connectivity

- **Increasing focus on business process management (BPM) enabled by SOA:**
 - Extending IT infrastructure and management for support of the **BPM** life cycle

- **SOA Governance:**
 - Oversight, best practices, and control of projects for business users and IT developers
 - An integral part of corporate governance

WebSphere products and their business advantages



What is business activity monitoring?



- Business activity monitoring (BAM) is the presentation of real-time information related to activities inside organizations and across relationships with external partners and customers
- This information is role-based, targeted, and focused to the status and results of various operations, processes, and transactions
- This information is used to make informed, quick, business decisions, and to take action to address problem areas
- BAM systems collect and process business events that are fed from applications, integration software, or from Business Process Management software



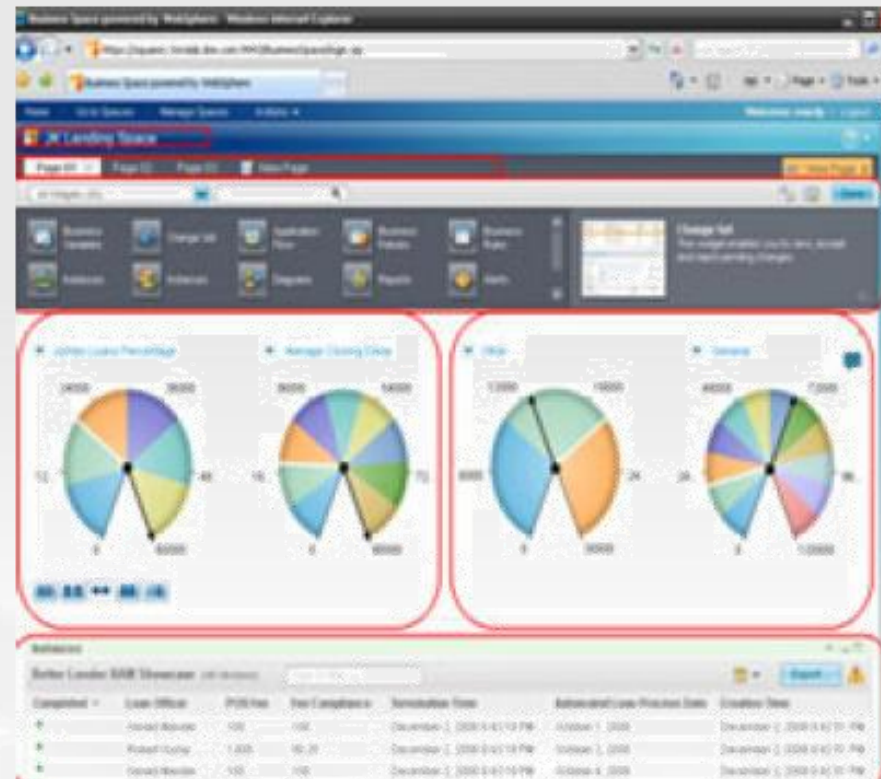
WebSphere Business Monitor:

- Captures specified business-related data from business applications based on the monitor model
- Extracts the measurement variables from the data
- Transforms the variables into metric and key performance indicator (KPI) values
- Displays the measurement values on the monitor dashboard
- Provides business intelligence insight through dimensional analysis and reporting
- Enables user to define actions when specified situations occur
- Identifies and notifies user of operation failures for inspection and analysis

WebSphere Business Monitor at a glance



- Monitor business process performance
 - In-progress processes can be monitored and bottlenecks can be eliminated
 - Track key performance indicators
- Respond to situations
 - Detect unusual situations, such as:
 - Out of threshold KPIs
 - Individual process instances that need attention
 - Take corrective action
 - before problems arise
- Enable earlier, better insight
 - Analyze KPIs over time
 - and other dimensions
 - Use business measures
 - to identify trends



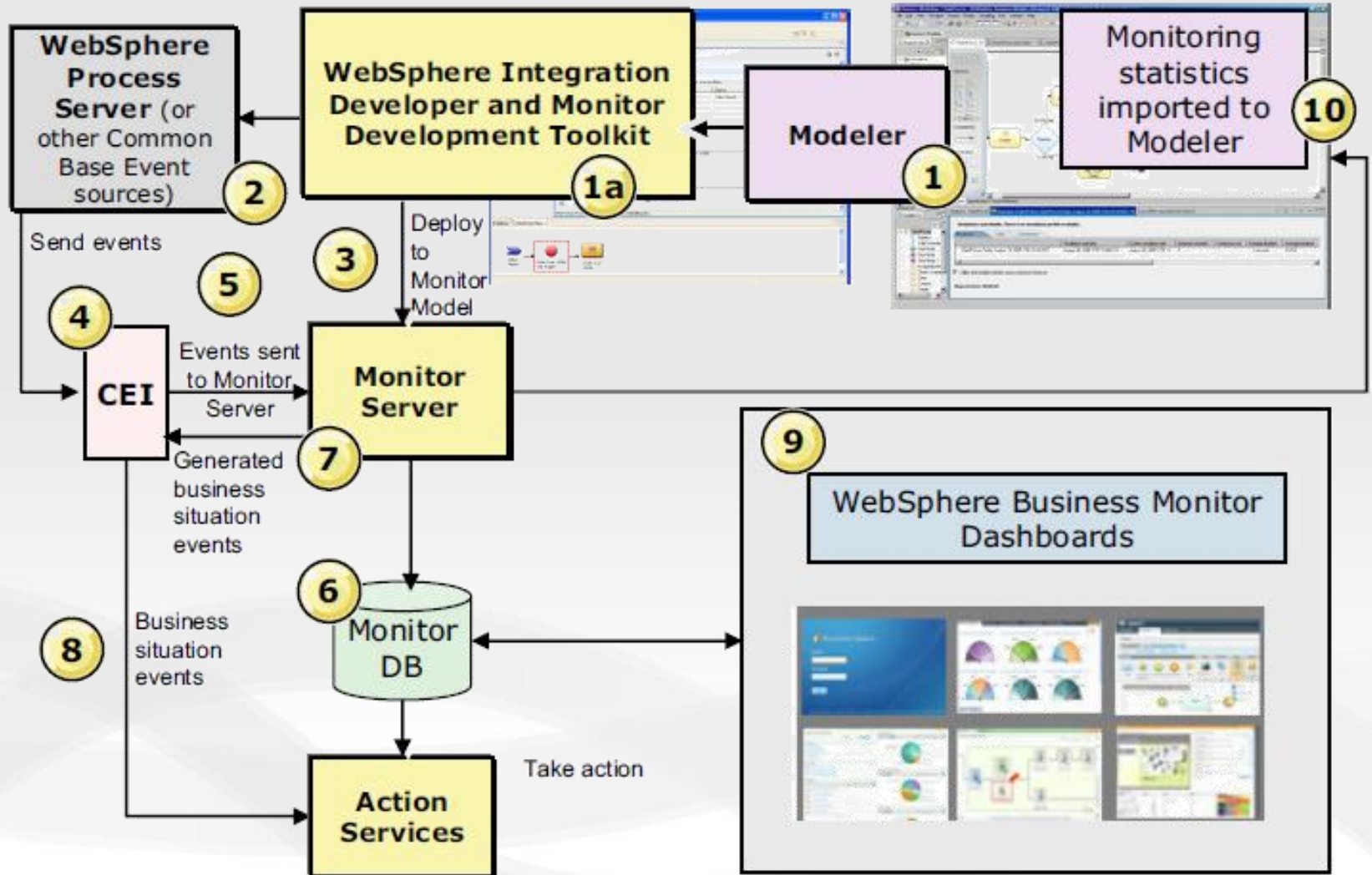


- Key concepts to model, monitor, analyze, and improve the performance of your business:
 - Business measures
 - Metrics
 - Key performance indicators
 - Business measures models
- First, determine what performance indicators give you the information you need
 - These performance indicators are called business measures

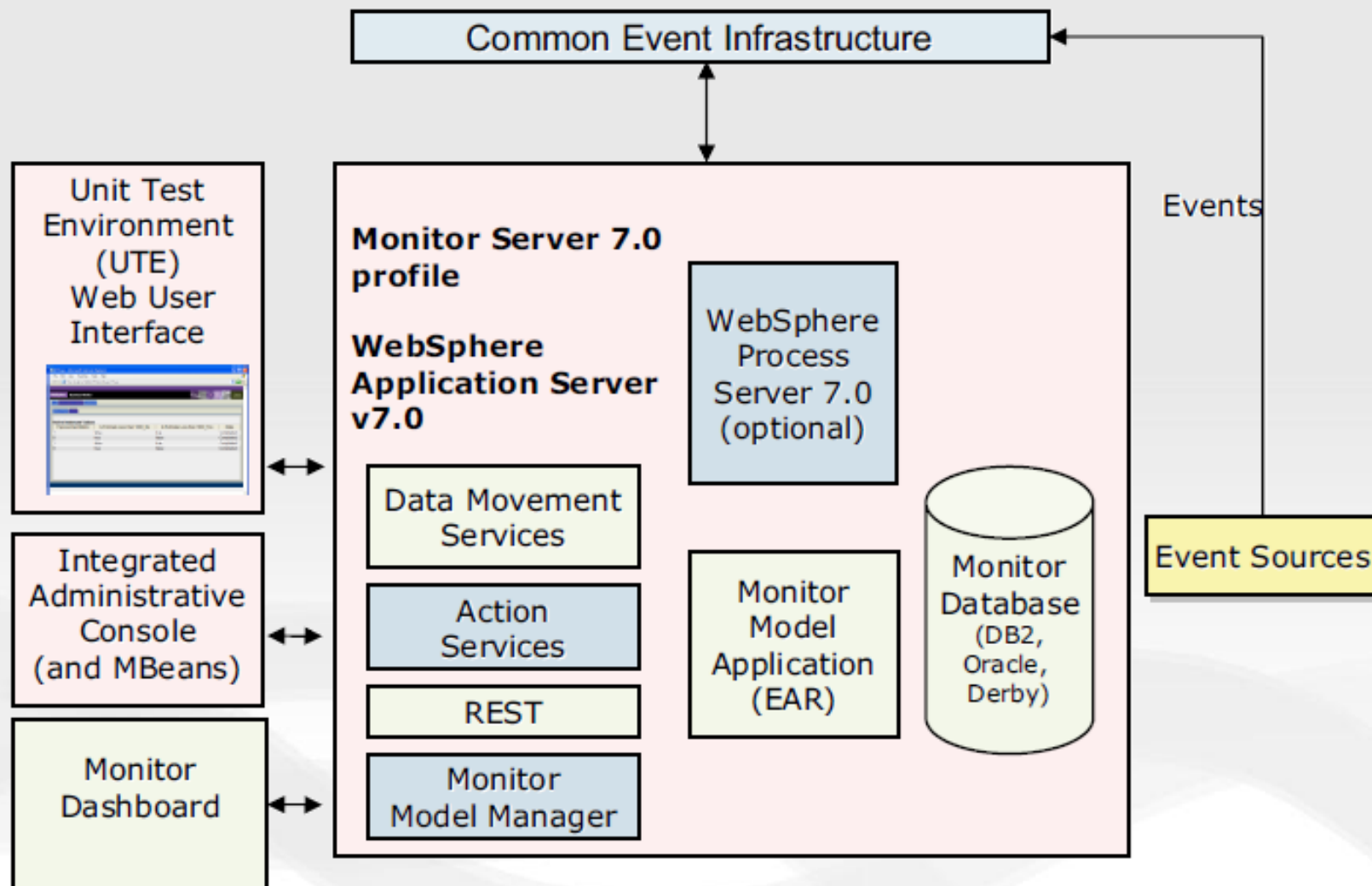


- In either WebSphere Business Modeler or WebSphere Integration Developer, create a business measures model for each process
 - A business measures model is a container that carries the information that is monitored and the business measures that are monitored in it
- Once implemented, the business measures model is then deployed to WebSphere Business Monitor
 - The model carries all defined business measures in the process
- Based on the imported business measures model, WebSphere Business Monitor provides monitoring for the process and the process instances

Logical architecture for BAM monitoring



WebSphere Business Monitor runtime architecture





Monitor Server

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- Responsible for event processing, calculating business metrics, and responding to business situations
- Runs on WebSphere Process Server, WebSphere Application Server, or WebSphere Enterprise Service Bus
- Consists of
 - Monitor model manager
 - Action services
 - Monitor data security
 - Data movement services





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Monitor model manager

- Monitor Model Manager acts as the execution engine for the monitor model
- The monitor model manager then uses the model, receives the events, and calculates the metrics to be persisted for future display on dashboards
- Handles all of the metric calculations and business situation detections that are required for business process management
- The monitor model manager consumes events from the common event infrastructure (CEI) and also sends events to the CEI





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Monitor action services

- Monitor action services is a component of WebSphere Business Monitor that invokes monitor action services when it receives defined situation events emitted by WebSphere Business Monitor and other applications
- Actions are based on user-defined action templates
- Each time the situation occurs, an event is emitted, which is detected by the monitor action services





- Business Space dashboards
- Business Space dashboards enable a business user to visualize business performance data using various widgets
- Portlet-based dashboards
 - Implemented as portal pages in WebSphere Portal
- Mobile dashboard
 - View a mobile version of the dashboard on your iPhone, iTouch or BlackBerry device
- Operates in near real-time environment to monitor business situations so that users can manage appropriate actions
- Used to view user-specified measurement data of a business
- Interacts with monitor database to retrieve required information
- Generates multidimensional analysis of data using DB2 Alphablox technology



- Stores both the State and Repository data
 - The State data consists of information about running instances
 - The Repository data consists of metadata describing deployed monitor models
- Stores information about the current state of monitoring contexts
 - Used for event processing by Monitor Server
- Stores the action services that are defined by the action services in the action catalog
- Stores definition of the deployed monitor models



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Data movement services

- Data movement service optimizes server processing and reporting in higher volume production environments
- Operational tables are optimized for inserts and updates, and the reporting tables are optimized for dashboard queries
- When enabled, runs automatically as a WebSphere application on the Monitor Server
- Configured and monitored on the WebSphere Application Server administrative console
- Data movement service works across DB2 and Oracle
- The scheduler manages the frequency and timing of the execution of the data movement service
- Data movement service is optional
- It is not recommended for development and test environments where performance is not a concern



What can be monitored? (1 of 2)



- Application generates a series of events that are carried by the Common Event Infrastructure (CEI)
- The available events contain the needed data and a monitor model can be created to describe how to monitor the application
- Monitor models contain monitoring contexts, which define the set of information to be collected at run time
- A monitoring context is created for each real-world object that is monitored
- The monitoring context receives the events that report changes in the real-world object, and updates its properties based on information extracted from these events

What can be monitored? (2 of 2)



- WebSphere Business Monitor can monitor business events from any application
- Business data from any application can be mediated into events that WebSphere Business Monitor can read, using products like :
 - WebSphere Adapters
 - WebSphere Business Events
 - Web Services Notification
 - WebSphere Enterprise Service Bus
 - WebSphere Message Broker
 - WebSphere Business Services Fabric
- WebSphere Business Monitor can also monitor events from CICS and IMS
- Also use WebSphere Business Monitor event emitter services, the REST event emitter API and the JMS event emitter to emit events from source applications



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EXERCISE



In this lab exercise, you will:

- Examine a monitor model in the WebSphere Business Monitor Toolkit for WebSphere Integration Developer
- Install a monitor model in WebSphere Business Monitor
- Generate events
- Create a Business Space dashboard to view performance-related data





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MONITOR DEVELOPMENT TOOLKIT



Presentación



Unit objectives



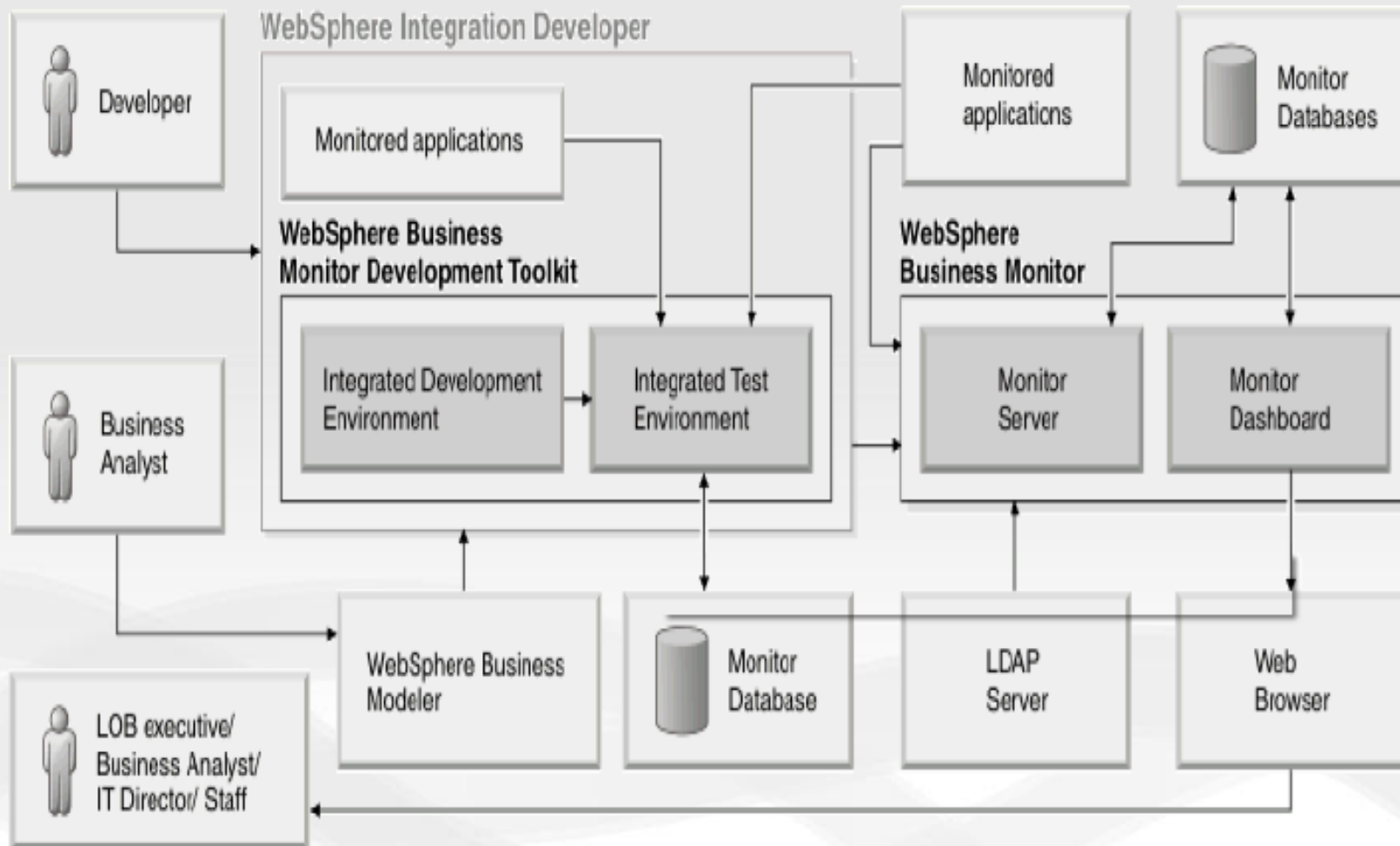
After completing this unit, you should be able to:

- Describe the components of the WebSphere Business Monitor Development Toolkit
- Explain the monitor model and monitoring concepts
- Explain the concepts of the following monitor model elements:
 - Inbound event
 - Outbound event
 - Metric
 - Map
 - Stopwatch
 - Counter
 - Trigger





- Provides the tools for creating monitor models that can be transformed into executable code for WebSphere Business Monitor
- Runs inside WebSphere Integration Developer or Rational Application Developer
- Includes the Monitor Model editor and a unit test environment
 - The Monitor Model editor is a visual editor for creating monitor models
 - The unit test environment is a lightweight environment for testing the monitor model in WebSphere Integration Developer and requires no prerequisites

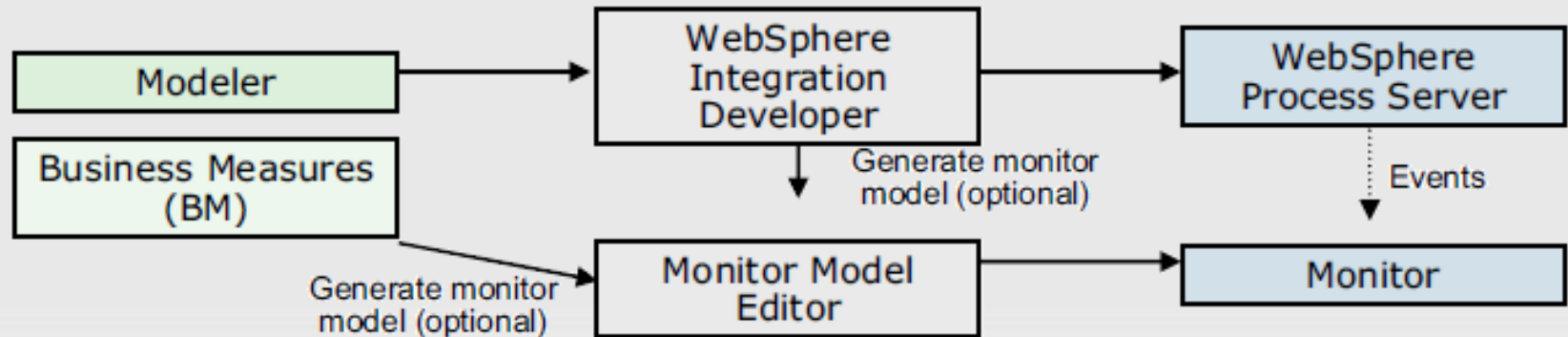




Business analyst

Integration developer

Administrator / user



1. Business analyst creates a high level Monitor Model (MM) in Modeler (optional)
2. Integration developer creates the final Monitor Model in Monitor Model Editor (MME)
3. Monitor Model editor is loosely coupled with the modeled process.
 - Allows BAM without dependency on a business process model
 - High flexibility



- Monitor Model editor (MME) consists of the following:
 - Resides in the Business Monitoring Eclipse perspective
 - Project Explorer
 - Monitor Model Editor view components:
 - Monitor details model tab
 - KPI model tab
 - Dimensional model tab
 - Visual model tab
 - Event model
 - XML-based text editor tab
 - Monitoring Flow view
 - Integrated Event Definition Editor of WebSphere Integration Developer to create custom event definitions that can be received by and emitted from Monitoring Models



Monitor model

en a hacer
la reunión.



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- Describes business measures (such as metrics and key performance indicators), their dependencies on incoming events, conditions warranting business actions (business situations), and outbound events that report such conditions and might trigger business actions
- Specifically, the monitor model describes how to:
 - Gather information from events that will be stored in a data warehouse for reporting
 - Group together events about the same monitored entity
 - Structure this information (for example, to allow dimensional analysis)
 - Combine this information (for example, to identify trends)
 - Identify business situations in near real-time, and trigger resulting actions by sending out events
- The monitor model defines these steps in enough detail to allow their execution in a runtime environment for business monitoring (which is called a *monitor*)





Monitor model

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lo contrario.



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- The monitor model defines these steps in enough detail to allow their execution in a runtime environment for business monitoring (which is called a *monitor*)
- The monitor model is the top-level container
- Monitor details model
 - Monitoring contexts, metrics, triggers, and so on
- Key performance indicator (KPI) model
 - KPI contexts and KPIs with their events and triggers
- Dimensional model
 - Cubes, dimensions, and measures
- Visual model
 - Diagrams associated with monitoring contexts and KPI contexts for display in the dashboard
- Event model
 - References to event definitions for all inbound and outbound events





Monitoring concepts

- Monitoring Context
 - Used to group a set of metrics, counter, timers, triggers, and so on, that collectively describe how to monitor an "observed instance" (for example, a Process instance)
 - One monitoring context is created in the monitor for each instance (or occurrence) of the observed entity
- Key
 - Used to correlate runtime events with the instance of the Monitoring Context
 - Is simply a Metric with the isPartOfKey attribute set to True
- Inbound Events
 - Refer to the Common Base Event Type to be received
 - Define criteria for the event to be delivered to a Monitoring Context by using the keys
 - Can optionally specify a filtering condition
- Outbound Events
 - Refer to the Common Base Event Event Type to be sent
 - As appropriate, can specify how to set the event's attribute values when the event is triggered
 - Can optionally specify a filtering condition



Monitoring concepts

- KPI Context
 - Before defining KPIs in your model, you need to create one or more KPI Contexts which act as containers for the KPIs
 - Defined at the KPI model level
- KPI
 - Driven by cubes
 - Can be qualified by time periods or other dimensions
 - Data can be aggregated prior to a monitoring context terminating
 - Can only be of the types decimal and duration (the default is decimal)



Monitor model details

- Container for monitoring contexts and their associated metrics, keys, counters, stopwatches, triggers, and events
- Elements:
 - Monitoring context (MC) definition
 - Defines structure and behavior of MC instances
 - Inbound event definition (event subscription)
 - Defines an event entry point (receiving slot) in an MC and conditions for event subscription
 - Outbound event definition
 - Defines an event exit point (sending slot) in an MC and conditions for event emission
- Metric definition
 - Counter and Stopwatch (timer) are special cases
 - Subset of metrics defines MC key
- Trigger definition
 - Defines a conditional, internal signal (not emitted to event bus)



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ELEMENTS IN A MONITOR MODEL

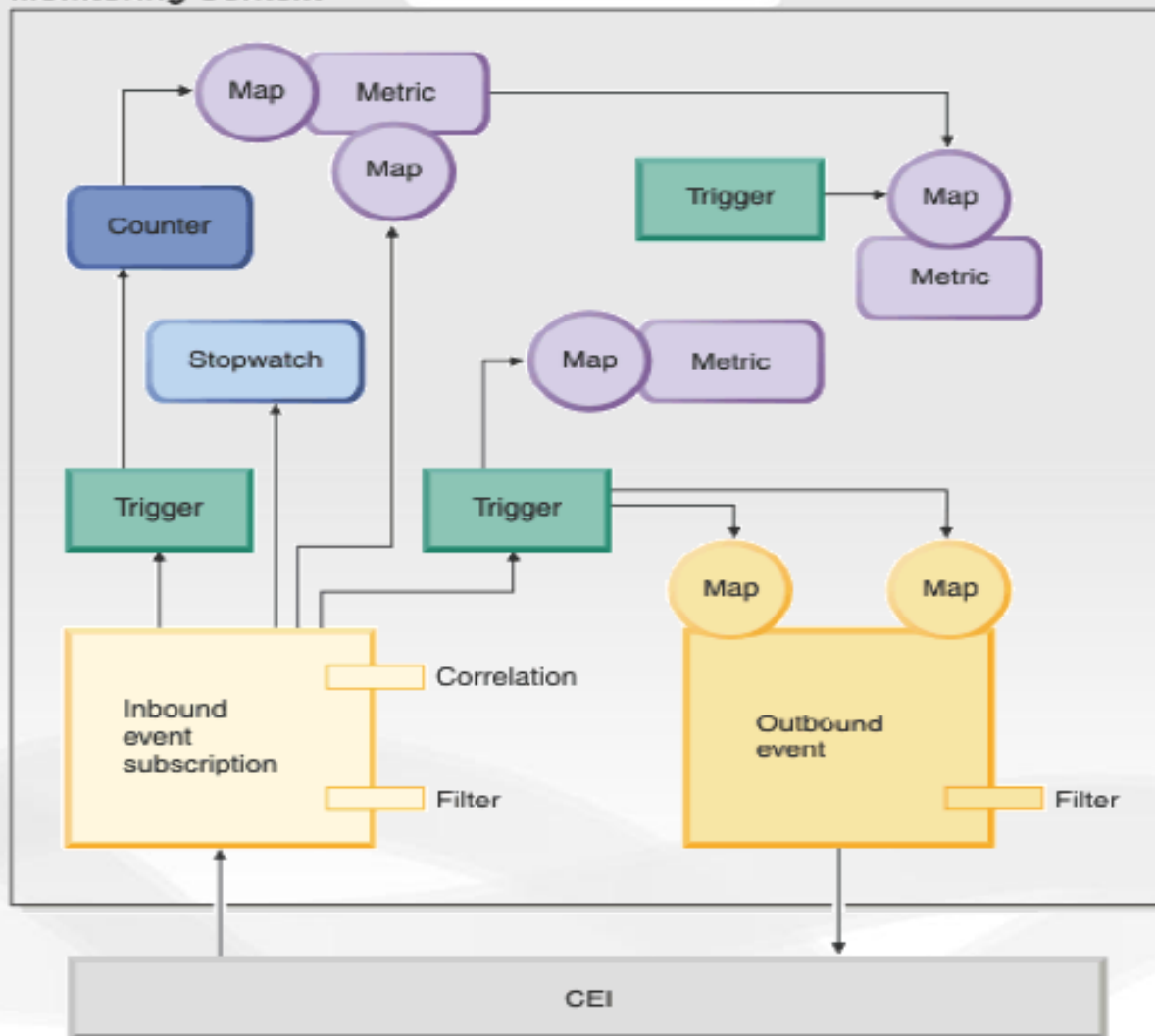


Presentación

Different elements in a monitor model



Monitoring Context





Metric

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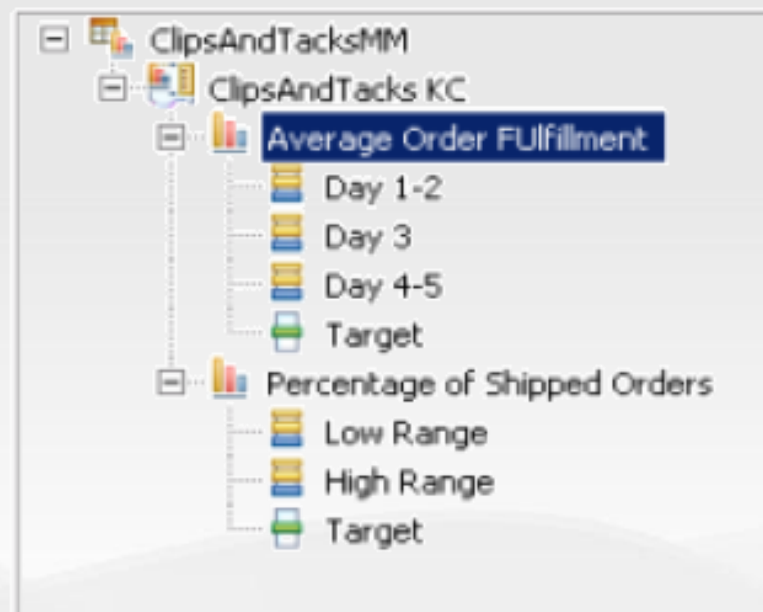
- Is a holder for information, usually a business performance measurement, in a monitoring context
- Associated with one or more maps that, when evaluated, give the metric a value
- Can be used alone or in combination with other metrics to define the calculation for a key performance indicator (KPI), which measures performance against a business objective
- Examples of metrics:
 - Working duration of a process
 - Name of the user assigned to a task
 - Supplier's response time
 - Cost of the risk assessment step in an insurance process





- Choose an existing metric or define a new one
- Validation verifies the aggregation function is supported for the metric type
- Choose which instances to include in calculation (those using the current model version only or all versions)

KPI Model



Stopwatch and counter



- Specialized metrics to keep track of elapsed time or to count occurrences
- Stopwatches can be started, stopped, and reset by inbound events or by triggers
- The primary purpose of a stopwatch is tracking the elapsed time since an event arrived, not the time between two events
- Counters can be incremented, decremented, or set to zero by inbound events or by triggers
 - Example: Tracking the number of times a task was started within a loop in the process



Trigger

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- Detects an occurrence and can cause additional processing in response
- Can be fired based on any of the following occurrences:
 - The value of a metric, counter, or key is updated (even if that does not result in a change)
 - An inbound event arrives or another trigger fires
 - A specific time interval (such as every 10 minutes) has expired
- Can cause any of the following actions:
 - Update of a metric (the value is recalculated each time the trigger is activated)
 - A change in a stopwatch (stop, start, or reset)
 - A change in a counter (increment, decrement, or set to zero)
 - Transmission of an outbound event
 - Evaluation of a secondary (cascading) trigger
 - Termination of the monitoring context



BUSINESS SITUATIONS AND ALERTS



For example, within a business process, you want to detect a particular **business situation** when it happens and be notified that it has occurred. First, you need to define the particular business situation that you want to detect, for example, when a metric exceeds its acceptable threshold. Then, you define one or more events that will be emitted when this situation occurs.

A predefined business situation for a catalog sales company, for example, could be when the average response time to process an order is exceeded. When the order processing unit exceeds the limit set for average response time, an alert notification is sent to the manager so that the manager can immediately take corrective action if needed.



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EXERCISE



In this lab exercise, you will be able to:

- Generate a monitor model
- Define monitoring contexts, metrics, triggers, counters, and stopwatches in the Monitor Details Model





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DIMENSIONAL MODELS



Presentación



Unit objectives

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nuevo contenido.



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After completing this unit, you should be able to:

- Explain dimensional and visual model support
- Explain the purpose of user-defined functions
- Describe how user-defined functions are used in the monitor model
- Explain the purpose and use of monitor model templates





Dimensions

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- Dimensions are data categories used to organize and select instances for reporting and analysis
 - Examples of dimensions: time, accounts, products, and markets
- Dimensions are composed of one or more attributes, which are hierarchical
 - Examples of Location attributes: City, Region, and Country





- Defines the cubes that are used for storing, retrieving, and analyzing the data that is gathered over time
- A dimensional model contains one cube for each monitoring context definition
 - Each cube keeps track of all the information that the monitoring context collects over time
 - The cube can combine all the instances of that monitoring context so that you can query aggregate information
 - Cubes contain facts, measures (groups of facts), and dimensions



- Facts are numeric data that can be examined and analyzed
 - A fact defines the cells in a cube data structure and associates them with metrics, counters, and stopwatches that supply the values
- Measures are calculations based on facts
 - A measure points to a fact (such as order amount) and specifies an aggregation function (such as average or sum)
- When you create a metric, key, counter, or stopwatch in the form editor, a fact is added to the fact table
 - Measures can take the instance-based values from the fact and aggregate them to produce a single value
 - They distill the instance information into something that is useful, such as the average order amount, the total order amount (using the sum function), or the total number of orders (using the count function)
 - You create key performance indicators (KPIs) based on measures, adding targets and ranges



- Each cube keeps track of all the information that the monitoring context collects over time
- The cube can combine all the instances of that monitoring context so that you can query aggregate information

▼ Cube Details

Enter the details of the cube, which is a multidimensional representation of data used in the Dimensional Viewer and Report Viewer in the dashboards.



ID:	<input type="text" value="OrderHandling_Cube"/>	<input type="button" value="Edit..."/>
Name:	<input type="text" value="OrderHandling Cube"/>	
Description:	<input type="text"/>	
Monitoring context:	<input type="text" value="OrderHandling"/>	<input type="button" value="Browse..."/>



- Cubes contain facts, measures (groups of facts), and dimensions

▼ Measures

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

Measure	Source Metric	Aggregation Function	
 Number of Shipped Or...	 Shipped Order Cou...	Sum	<div>New...</div> <div>Remove</div>

▼ 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	
 Location		<div>New Dimension...</div> <div>New Level...</div>



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EXERCISE



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VERSIONING MONITOR MODEL



Presentación



Prerrequisitos para realizar Versionamiento



1. Tener instalado el Monitor development toolkit integrado con nuestro IDE
2. Verificar que la versión de nuestro WID y Development Toolkit concuerden y sea la adecuada para el despliegue de las aplicaciones de monitoreo en el Servidor de Monitor
3. Nuevo Diagrama de proceso - quiere decir el proyecto con la nueva versión del proceso: propiedad **valid from**.
4. Realizar Backup del los proyectos a versionar (Proyecto de Procesos y Proyecto de App de Monitor)





La empresa que nos ha contratado nos ha pedido que verifiquemos que sus procesos de negocio estén bien definidos.

VERIFICACIÓN



1. Expandir el proyecto y entrar a las propiedades del Proceso (Diagrama) :

1.1. Verificar que tenga una versión actual del proceso

1.2. Verificar que el proceso y las actividades emitan eventos, para esto nos posicionamos en el proceso y en las actividades , en la pestaña de propiedades vamos a “Event Monitor” .

2. Validación de las actividades que emiten eventos en el editor xml del MME.

2.1 *Search*, búsqueda de la propiedad **validfrom** de cada activity emisor de eventos.





MODIFICACIÓN DEL MODELO



1. Modificación de la fecha del modelo.
 2. Modificación de la propiedad **validfrom** de cada activity emisor de eventos, a través de una búsqueda en el edito xml.
 3. Creación de proyectos Monitor JEE.
- * Al cambiar el ID del modelo de monitoreo, el servidor de monitor lo considera como un modelo nuevo.**





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FIN



Presentación