



WebSphere Education



Define elements and attributes

Unit 5

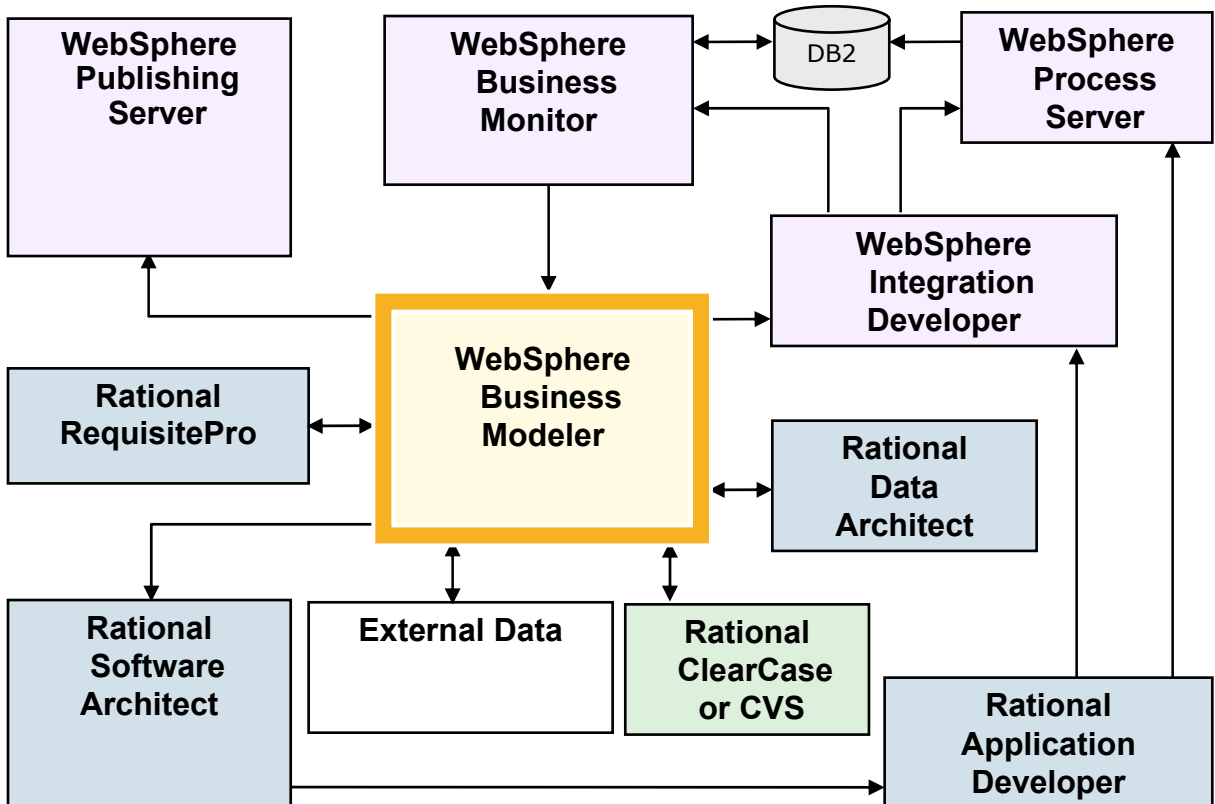


Unit objectives

After completing this unit, you should be able to:

- Explain business items, business services, business service objects, resources, organizations, and classifiers
- Describe additional modeling elements: timer, map, broadcaster, receiver, observer
- Describe advanced attributes for tasks

Adding elements and attributes to the model



Adding relevant information to the diagram

- A model includes a diagram with relevant information added
 - Information on what is received, worked on, and produced
 - Business items
 - Information about who performs the work and when:
 - Resources
 - Roles
 - Timetables
 - Information on how the company is organized:
 - Organization unit
 - Location
 - Structure
 - Information on grouping related information for analysis:
 - Classifiers
- Information elements are defined and edited using editors opened in the project tree

What is a business item?

- Business items
 - Business data, documents, work products, or physical commodities that are transformed by the process
 - Anything that is created, assembled, inspected, tested, modified, or worked on
 - Represented by an icon on the diagram

- Structure of a business item

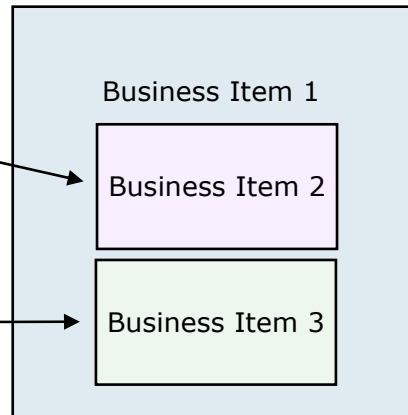
- Customer order

- Customer information

- First name
 - Last name
 - Street address
 - City
 - State
 - Zip code

- Order detail

- Item 1
 - Quantity
 - Item 2
 - Quantity

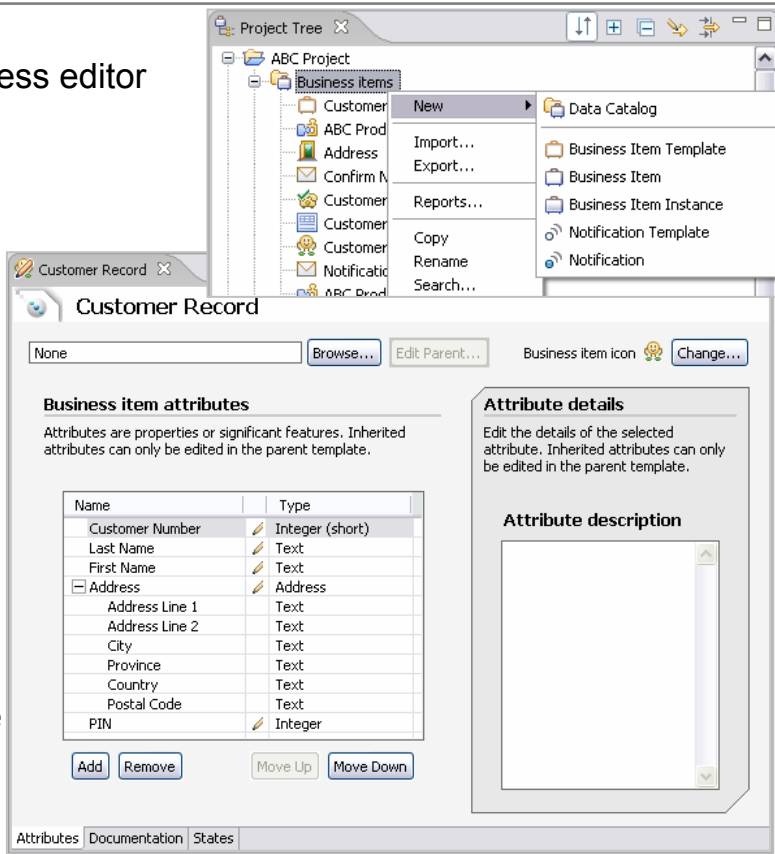


Business item information

- Business item instance
 - A particular occurrence of a business item
 - “Ticket #7” of business item “Problem Ticket”
 - Used in a simulation model to define the sample data when creating simulation values for business items
 - Based on a business item, which defines its attributes
 - The business item instance optionally has a specific value for each attribute defined by the business item.
- Business item templates
 - Used to model groups of business items that share common attributes
- Notifications
 - Occurrences in a process that can trigger actions
 - A process can use a notification to send information to one of its already-executing subprocesses, or a subprocess can use a notification to send information to its parent process.
 - Notifications can be used to model conditions of interest to be transmitted from a sender to a set of interested parties (the receivers).
 - The sender is not aware of the receivers of the notification.
- Notification templates
 - Used to model groups of notifications that share common attributes

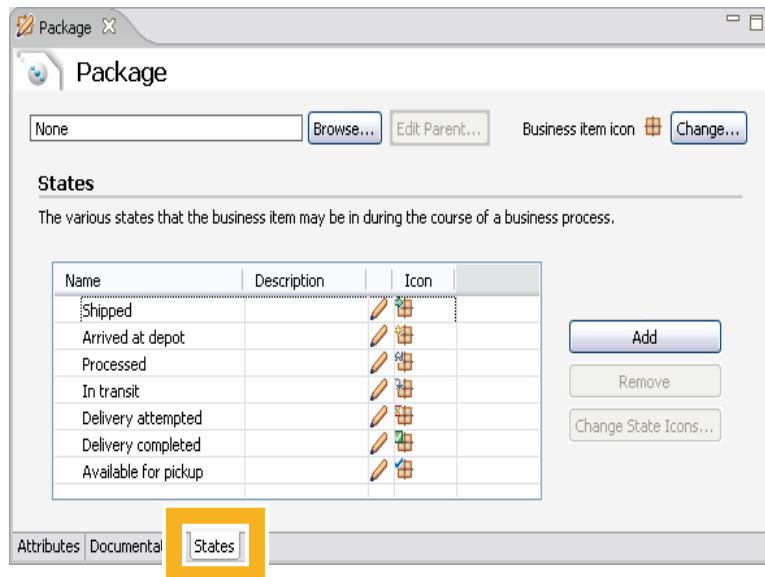
Adding business items

- Business item editor
 - Opens as tab in the process editor
- Attributes tab
 - Add one at a time
 - Based on a predefined template
- Attribute type can added
 - Basic
 - From list of data type
 - Complex
 - From list of predefined types
- Documentation tab
 - Additional documentation
 - Attachments
- Business item icon can be customized
- Notifications are similar



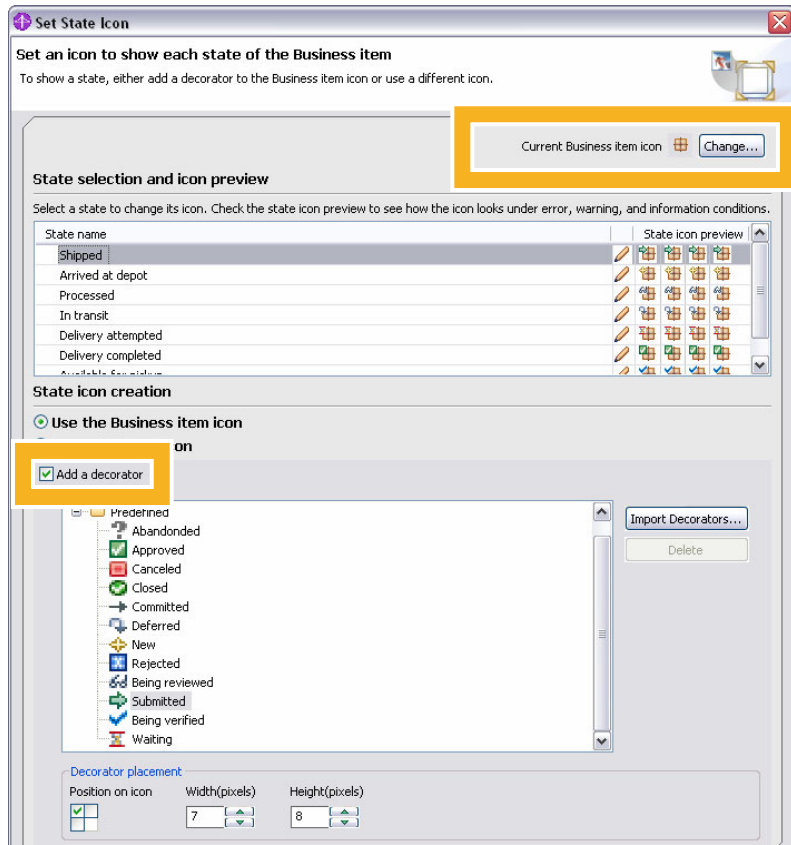
Business item states

- Representations of different stages of a business item
- Example:
 - Business item: Package
 - Business item states:
 - Shipped
 - Arrived at depot
 - Processed
 - In transit
 - Delivery attempted
 - Delivery completed
 - Available for pickup
- Can be added to each business item or business item template
- Business item instances do **not** have states
- Not used during simulation

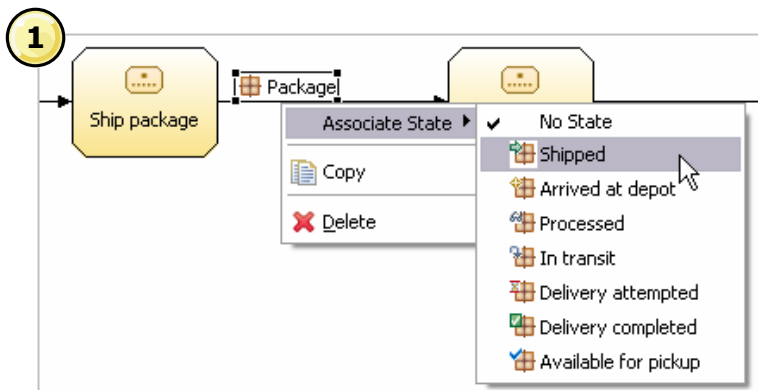


Setting state icons

- Icons for states can be customized
- Optionally add decorators



Associating business item states

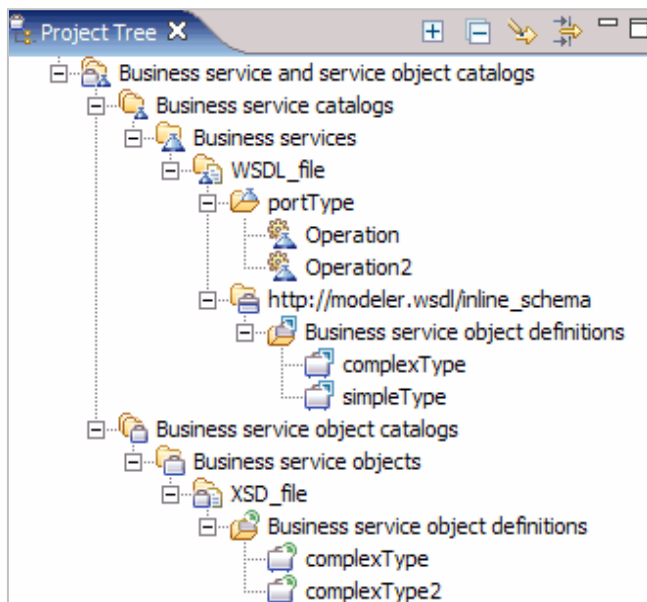


Business services and business service objects (1 of 2)

- Business services
 - Are model element representations of WSDL (Web Services Definition Language) files
- Business service objects
 - Are model element representations of XSD (XML schema) files
- Both types of files can be imported so that the information they contain can be added to the processes being modeled.
 - If the services and service objects have already been implemented, the WSDL or XSD definitions can be imported.
- When you export a process using the WebSphere Process Server export and the process refers to business services or business service objects, WebSphere Business Modeler also exports the WSDL and XSD files that were imported to create them.

Business services and business service objects (2 of 2)

- WebSphere Business Modeler uses a separate set of catalogs for elements imported from WSDL and XSD files, despite their similarities to business items and services, because changing them would affect existing applications.
 - The business services and business service objects cannot be edited except in simulations.
 - In simulations costs, durations, interrupts, and resources can be added.
 - If a business service or business service object needs to be edited, the only way to do so is to modify the WSDL or XSD file and import again.

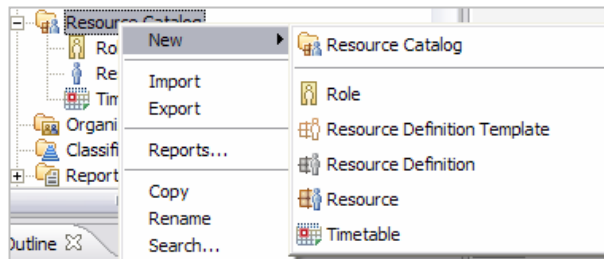



Resource information

- Roles
 - Add additional characteristics to resources.
 - An employee resource could have the role of customer service representative or manager.
 - A scope dimension can be added to a role defining additional requirements.
- Resources
 - Resources represent the people, equipment, or material used to perform a task.
 - Two types of resources: individual resources and bulk resources.
 - Individual resources are resources where a specific instance is required.
 - Bulk resources are resources where any instance of a type of resource from a pool can be used.
 - Non-consumable (such as employees, vehicles, or equipment) are used.
 - Consumable (such as fuel or printer paper) are diminished or used up.
 - Bulk resources are not uniquely identified, but whether resources need to be identifiable may depend on how they are being used.
 - In a car rental agency, bulk information is important to the executive, while individual car information is important to the rental desk.
 - Predefined resource definitions can be used to define resources.
- Timetables
 - A schedule of times that determines the availability of the roles and resources and their associated costs.

Adding a role

- Roles
 - Defined and edited in Project Tree
- Role editor
 - Opens as a tab in the process editor
- Four tabs



 **Data Entry**

Qualifications
Use this section to add qualifications. A qualification defines and measures specific qualities and requirements for a role.


Typing skills - 45 wpm

Availability
This role is available during the periods defined in the following timetables:

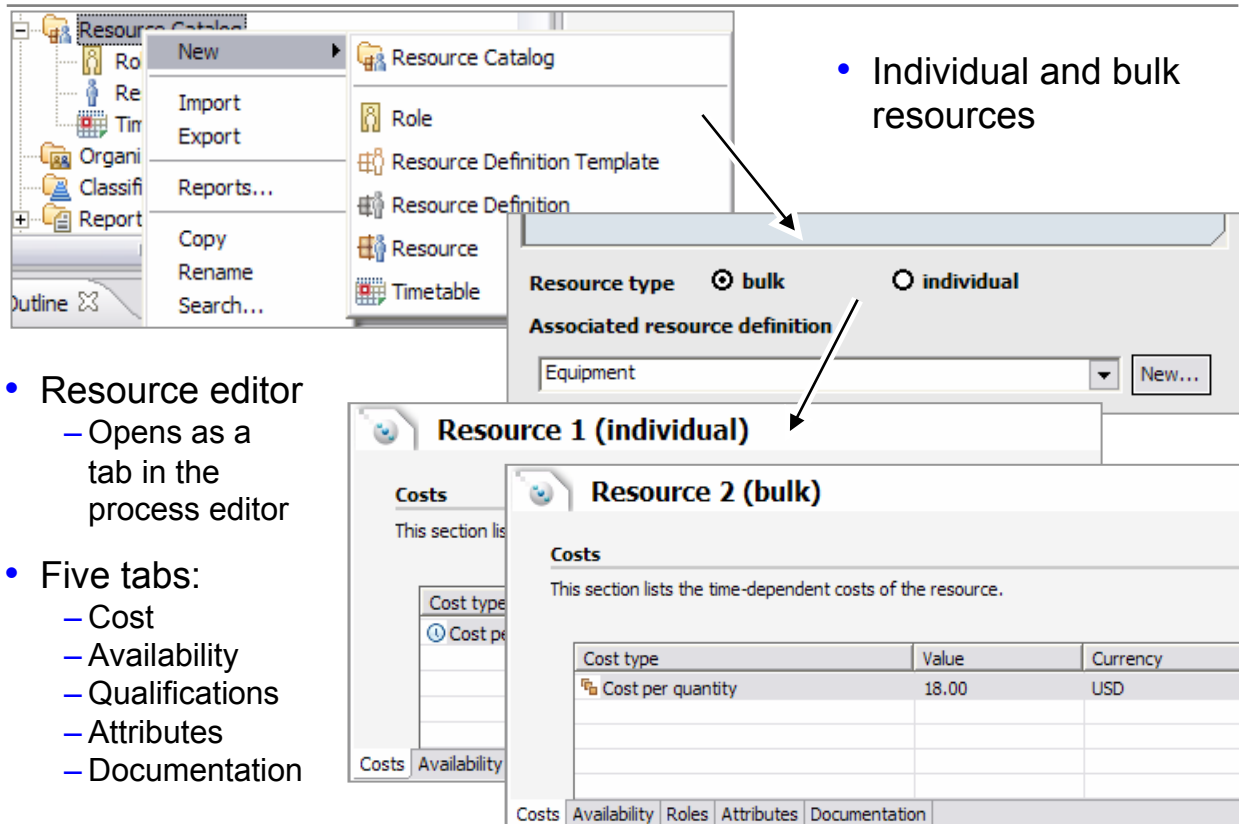
Standard Calendar

☐ No color
☒ Assigned color
Documentation
Description of this role.

Costs
List of time-dependent costs of the role.

Cost type	Value	Currency
 Cost per time unit	15.00	USD

Adding resources



The image shows a software interface for adding resources. On the left, a 'Resource Catalog' menu is open, showing options like 'New', 'Import', 'Export', 'Reports...', 'Copy', 'Rename', and 'Search...'. The 'New' option is selected, and a sub-menu is visible with options: 'Resource Catalog', 'Role', 'Resource Definition Template', 'Resource Definition', 'Resource', and 'Timetable'. An arrow points from the 'Resource' option in the sub-menu to a 'Resource type' dialog box. This dialog box has two radio buttons: 'bulk' (selected) and 'individual'. Below the radio buttons is a text field labeled 'Associated resource definition' containing the word 'Equipment', and a 'New...' button. Another arrow points from the 'New...' button to a 'Resource 1 (individual)' window. This window has a 'Costs' tab selected, showing a table of costs. Below it is a 'Resource 2 (bulk)' window, also with a 'Costs' tab selected, showing a similar table. The 'Resource 1 (individual)' window has tabs for 'Costs', 'Availability', 'Roles', 'Attributes', and 'Documentation'. The 'Resource 2 (bulk)' window has tabs for 'Costs', 'Availability', 'Roles', 'Attributes', and 'Documentation'.

- Individual and bulk resources
- Resource editor
 - Opens as a tab in the process editor
- Five tabs:
 - Cost
 - Availability
 - Qualifications
 - Attributes
 - Documentation

Cost type	Value	Currency
Cost per quantity	18.00	USD

Individual resource

Resource 1 (individual)

Costs

This section lists the time-dependent costs of the resource.

Cost type	Value	Currency
⌚ Cost per time unit	30.00	USD

Costs

Availability

Standard Schedule

Number

0

Repet

1

Costs

Availability

Roles

Roles

This resource takes part in the following roles:

Role 1

Costs

Availability

Roles

Instance of

Resource attributes

Attributes of the resource definition. If the resource definition is updated, refresh the table to synchronize this resource with the resource definition.

Name	Type	Minimum	Maximum	First
personId	String	1	1	
lastName	String	1	1	

Costs

Availability

Roles

Attributes

Documentation


Total resources available specified during analysis




Bulk resources

Resource 2 (bulk)

Costs

This section lists the time-dependent costs of the resource.

Cost type	Value	Currency
 Cost per quantity	18.00	USD

☐ Consumable **Available quantity** 1   units 

Total resources
available defined
here

Availability

This resource is available during the periods defined in the following timetables:

Availability De

Details of the se

Roles

This resource takes part in the following roles:

Standard


Costs Availability

Role 1

Instance of

Resource attributes

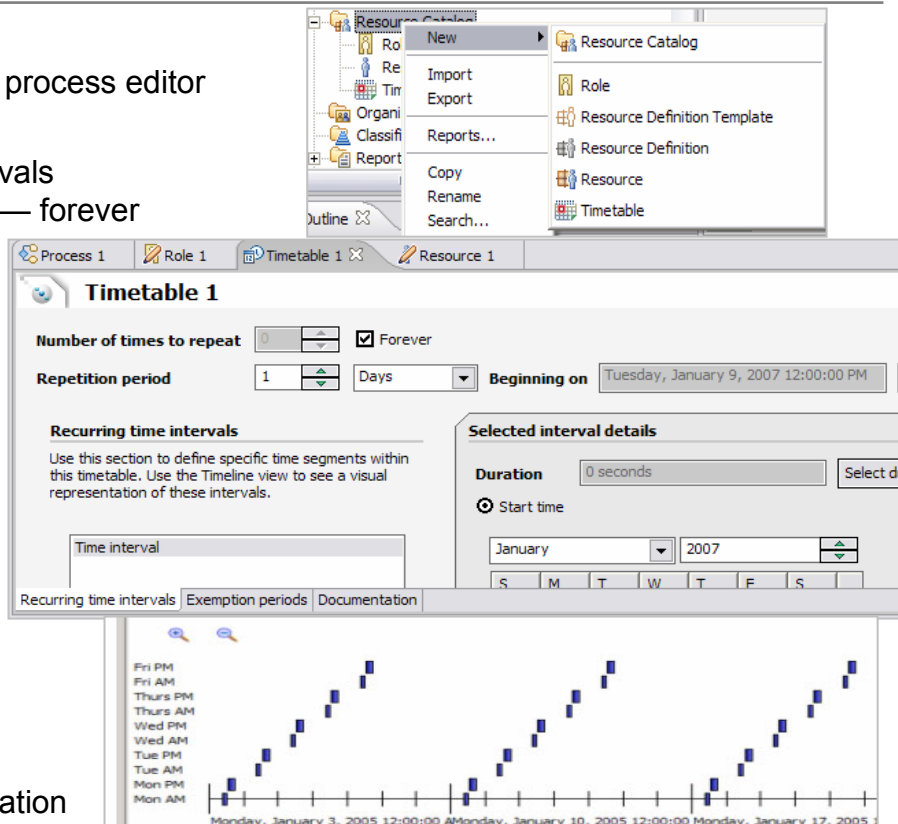
Attributes of the resource definition. If the resource definition is updated, refresh the table to synchronize this resource with the resource definition.

Name	Type	Minimum	Maximum	First va
abbreviation	String	0	1	
department	Organization	0	n	

Costs Availability Roles Attributes Documentation

Adding a timetable

- Timetable editor
 - Opens as tab in the process editor
- Three tabs
 - Recurring time intervals
 - Times to repeat — forever
 - Repetition period
 - Beginning date and time
 - Recurring available intervals
 - Exemption periods
 - When timetable does not apply
 - Documentation
 - Additional documentation
 - Attachments
 - Attributes view
 - Visual representation

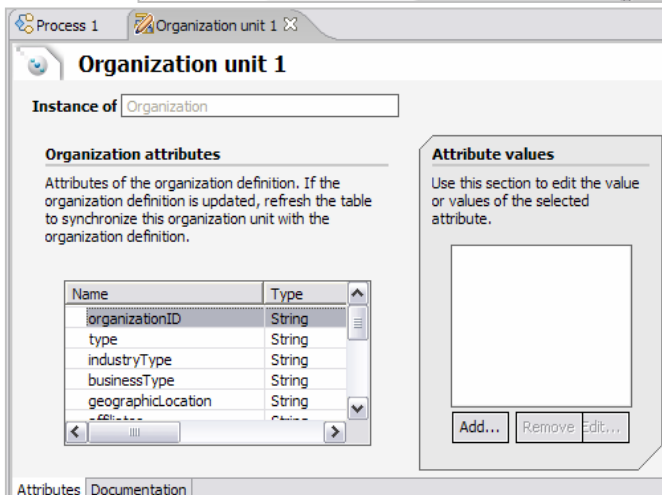
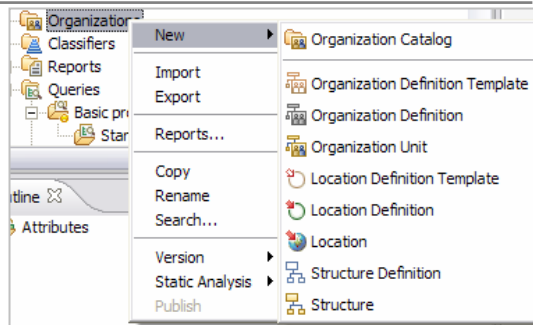


Organization information

- Organization
 - Organization unit
 - The specific organizational groups inside an organization.
 - Organization units can be enterprises, companies, departments, or teams.
 - Every organization unit is based on an organization definition, with attributes.
 - Location
 - The specific places of interest to your organization.
 - Locations can be the name of a location, headquarters, or a physical location such as New York.
 - Use the structure editor to model how the locations relate to each other.
 - Associate the locations with elements in your process model to show where each task takes place, or where a particular resource is located.
 - Structure
 - Hierarchical relationships between different organizational entities.
 - Structures model how business elements such as locations, resources, and organization units relate to one another outside the context of a process.
 - Structures are graphical representations of relationships.

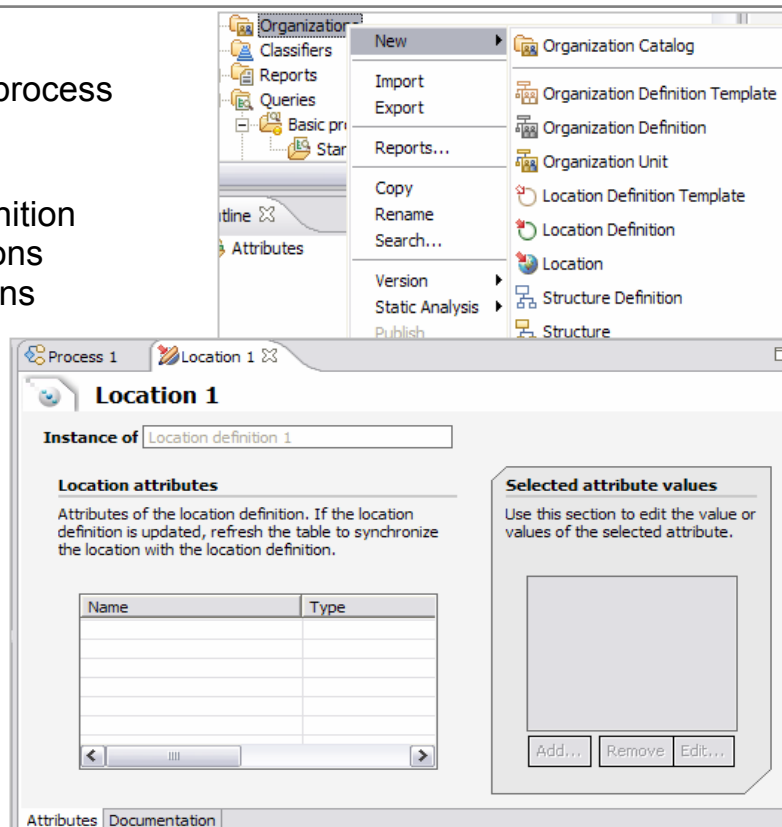
Adding an organization unit

- Organization units
 - Defined and edited in Project Tree
- Organization unit editor
 - Opens as a tab in the process editor
- Attributes tab
 - Based on organization definition
 - Create custom definitions
 - Use predefined definitions
 - Template can be created
- Attribute type can added
 - Basic
 - From list of data types
 - Complex
 - From list of predefined types
- Documentation tab
 - Additional documentation
 - Attachments



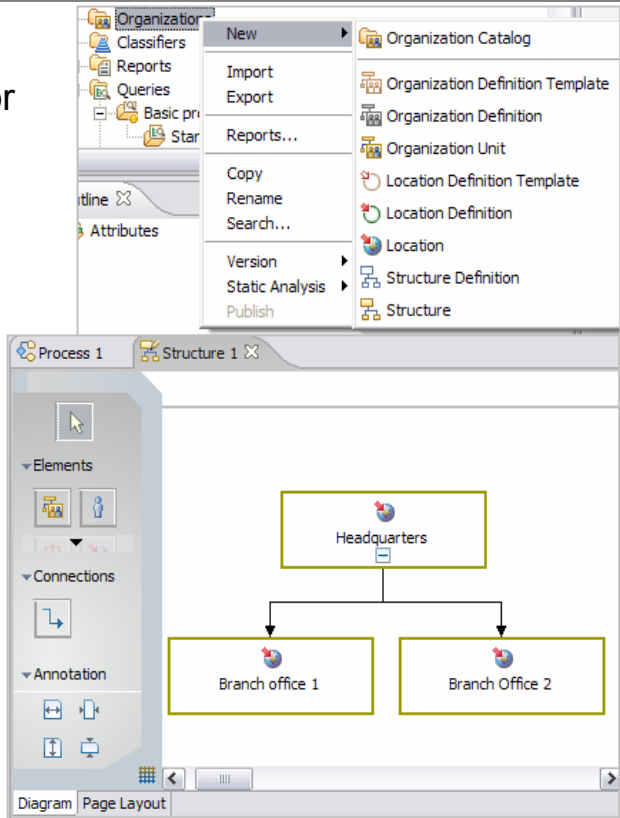
Adding a location

- Location editor
 - Opens as a tab in the process editor
- Attributes tab
 - Based on location definition
 - Create custom definitions
 - No predefined definitions
 - Template can be created
- Attribute type can added
 - Basic
 - From list of data types
 - Complex
 - From list of predefined types
- Documentation tab
 - Additional documentation
 - Attachments



Adding structure

- Structure editor
 - Opens as tab in process editor
 - Similar to process editor
 - Graphical editor
- Diagram tab
 - Based on structure definition
 - Structure types
 - Organization units
 - Individual resources
 - Bulk resources
 - Locations
 - Categories
 - Business item instances
 - Roles
- Page layout
 - Setup for printing



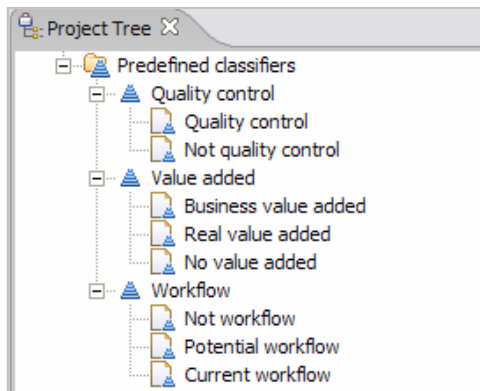
Using classifiers

- Classifiers
 - Enable you to categorize tasks and other process elements for decision-making or process optimization
 - Can be shown on the diagram for visual analysis
 - Can be shown tables for numerical analysis
- Classifier values
 - Each classifier has a number of classifier values which can be assigned
- Predefined classifiers: quality control, value added, and workflow
- Custom classifiers can be added to focus the analysis
 - Functional area
 - Values: accounting, legal, administration, sales
 - Type of work
 - Values: manual, automated, semi-automated
 - Cause-and-effect analysis
 - Values: machines, methods, materials, measurements, mother nature (environment), manpower (people)
- Multiple classifier values can be assigned to a specific element as long as each value belongs to a different classifier.

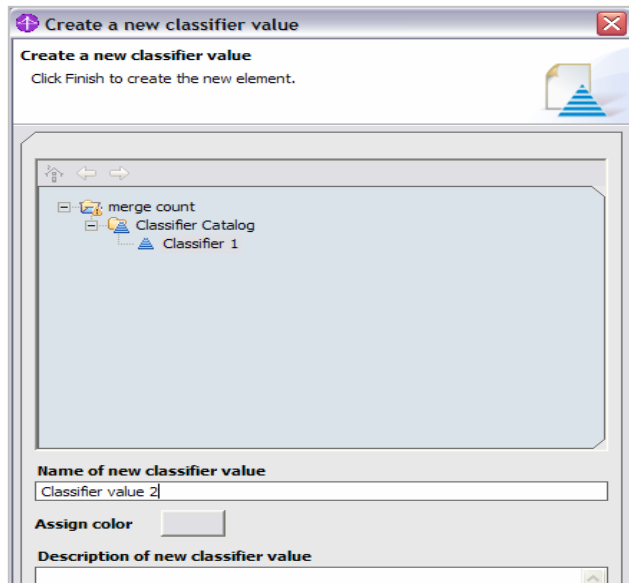
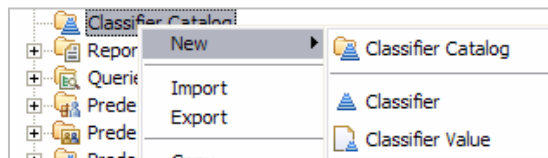
Adding classifier information

- Classifier editor
 - Pop-up window
- Classifier value editor
 - Opens as tab in the process editor
- Predefined classifiers

Predefined classifiers

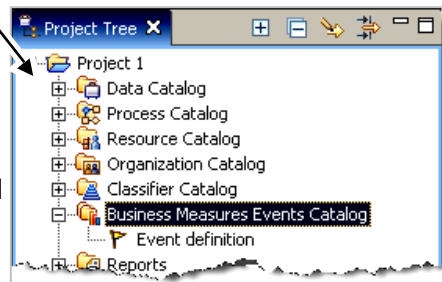
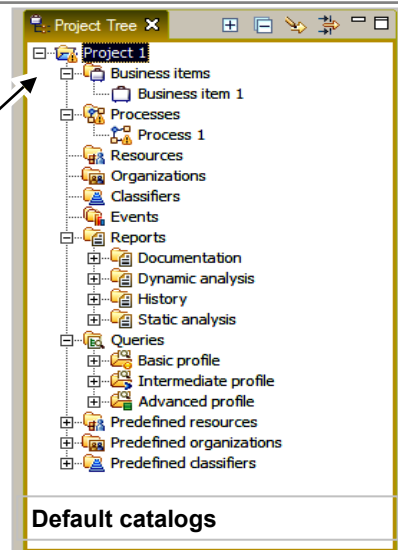


Custom classifiers



Organizing detailed model information

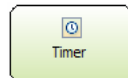
- Like items are grouped into catalogs for easy access.
- Each large catalog can be subdivided into lower level catalogs.
- Default catalogs are created:
 - (In this course, catalogs are renamed as shown in parentheses)
 - Business items (Data Catalog)
 - Processes (Process Catalog)
 - Resources (Resource Catalog)
 - Organizations (Organization Catalog)
 - Classifiers (Classifier Catalog)
- Predefined catalogs
 - Resources
 - Organizations
 - Classifiers



Additional elements

- These elements serve a specific purpose and make the model more realistic.
- Special purpose tasks
 - Timer
 - Initiates a flow at a specified point in time
 - Map
 - Transforms data from one structure to another
 - Broadcaster
 - Publishes a notification
 - Receiver
 - Listens for notifications
 - Observer
 - Watches the repository contents

Timer



- A specialized task that initiates a flow at a specified point in time
- Two kinds of timers:
 - A timer that goes off once
 - It goes off at a specific date and time and then terminates.
 - It goes off after a specified amount of time and then terminates.
 - A timer that goes off at regular time intervals
 - It goes off at specified intervals on a scheduled basis.
 - This timer is associated with a timetable that has recurring times.

Attributes - Timer Simulation Control Panel Errors (Filter matched 23 of 23 ite)

General Inputs Outputs Timer Settings Resources

▼ General information

This section provides general information about the timer.

Name
Timer

Description
Timer Description Here

▼ Timer settings

Define the date and time when this timer task will be triggered.

☒ **Based on a timetable:** _____

☐ **Constant time:** _____

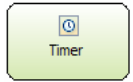
☐ **Last activation time plus:** _____

☐ **Other:**

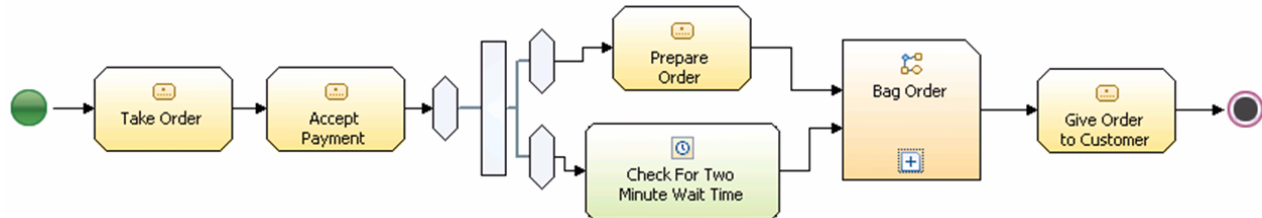
Name

Description

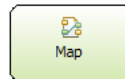
Timer: Example



- Drive-through at fast food restaurant
- If customer does not receive order within two minutes, customer receives a coupon
- Timer task starts when customer arrives
- If task duration of Prepare Order exceeds two minutes, discount coupon is included in bag



Map



- A specialized task that transforms data from one structure to another
 - A map specifies how to transform an input into output
 - Provides the same functionality as a local task
 - Provided only for diagramming purposes
- Example
 - A map could be used to represent an automated task that creates a procurement order.
 - The map (task) takes a list of requested items and a due date as input, and produces an order as output.
 - The order contains a new order number, the list of requested items, the current date.

The screenshot shows the configuration interface for a Map task in IBM Business Process Manager. The interface is divided into several tabs: General, Cost and Revenue, Duration, Inputs, Outputs, and Resources. The General tab is selected, showing the Name (Map) and Description (Map Description). The Cost and Revenue tab is also visible, showing the Processing cost (The expense incurred every time this task runs) with a Literal value of 50. The Duration tab is selected, showing the Processing time (The length of time required to finish this task) with a Literal value of 1 hour and 5 minutes. The Duration tab is highlighted with a yellow box.

Attributes - Map Simulation Control Panel Errors (Filter matched 23 of 23 items) Technical Attributes

General Cost and Revenue Duration Inputs Outputs Resources

General information

This section provides general information about this map.

Name: Map

Description: Map Description

Processing cost: The expense incurred every time this task runs. Literal value: 50

Processing time: The length of time required to finish this task. Literal value: 1 hour and 5 minutes

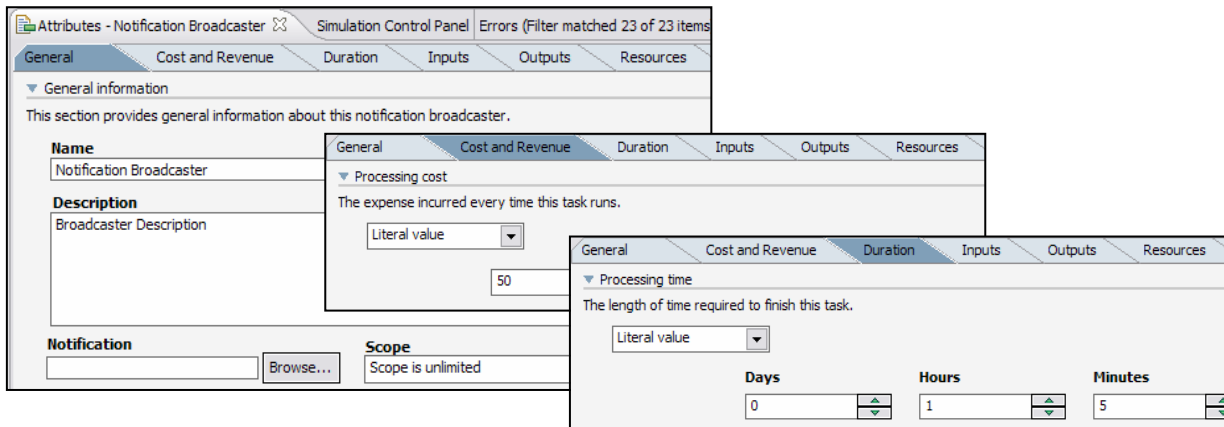
Days: 0 Hours: 1 Minutes: 5

Notification broadcasters and receivers

- Specialized tasks that enable communication while a process is running:
 - A notification broadcaster publishes notifications.
 - A notification receiver listens for notifications and produces output.
- Sends information between executing processes:
 - A process can use a notification to send information to one of its already-executing subprocesses.
 - A subprocess can use a notification to send information to its parent process.
- Notifications allow information to be transmitted from and to multiple parties without having to explicitly draw connections between the senders of the information (the broadcasters) and the receivers of the information (the receivers).
- A notification is received by any notification receiver within its scope (specified subprocesses) that is listening for that notification.
 - There is at least one receiver for each broadcaster.
 - Usually there will be one broadcaster and several receivers.
 - Or several broadcasters (sending the same notification) and several receivers.

Notification broadcaster

- A specialized task that publishes a notification
 - When broadcast, any notification receiver within its scope receives it.
 - Having a receiver within your process is not sufficient unless that receiver is listening.
 - Ensure that the notification receiver starts before the notification broadcaster.
- A notification broadcaster is associated with a previously defined notification.
 - A scope can be set for a notification. If no scope is set, it is unlimited.
 - No scope means the notification is received by any notification receiver in any process that contains the process where the notification broadcaster is located.
 - A scope can be set so notification is received only by notification receivers in the local process or subprocess.



The screenshot displays three overlapping configuration windows for a Notification Broadcaster. The top window shows the 'General' tab with fields for Name, Description, and Scope. The middle window shows the 'Cost and Revenue' tab with a 'Processing cost' section. The bottom window shows the 'Duration' tab with a 'Processing time' section.

General Information Window:

- Name:** Notification Broadcaster
- Description:** Broadcaster Description
- Notification:** [Empty field] **Browse...**
- Scope:** Scope is unlimited

Processing cost Window:


- Processing cost:** The expense incurred every time this task runs.
- Literal value:** 50

Processing time Window:

- Processing time:** The length of time required to finish this task.
- Literal value:** [Dropdown menu]
- Days:** 0
- Hours:** 1
- Minutes:** 5

Notification receiver

- A specialized task that listens for and receives notifications
 - After receiving a notification, the receiver produces an output.
- A notification receiver starts listening for notifications when it is triggered by a task or other element.
- Notifications received can be restricted by setting conditions on the receiver.
 - The condition can check the value of an attribute in the notification.

Attributes - Notification Receiver  Simulation Control Panel Errors (Filter matched 23 of 23 items) T


General	Cost and Revenue	Duration	Inputs	Outputs	Resources
<p>▼ General information</p> <p>This section provides general information about this notification receiver.</p>					
<p>Name</p> <p>Notification Receiver</p>					
<p>Description</p> <p></p>					
<p>Notification</p> <p><input type="text"/> <input type="button" value="Browse..."/></p>					

General	Cost and Revenue	Duration	Inputs	Outputs	Resources
<p>▼ Processing cost</p> <p>The expense incurred every time</p> <p>Literal value <input type="text" value="50"/></p>					

General	Cost and Revenue	Duration	Inputs	Outputs	Resources
<p>▼ Processing time</p> <p>The length of time required to finish this task.</p> <p>Literal value <input type="text"/></p>					
<p>Days <input type="text" value="0"/> <input type="button" value="▲"/> <input type="button" value="▼"/></p> <p>Hours <input type="text" value="1"/> <input type="button" value="▲"/> <input type="button" value="▼"/></p> <p>Minutes <input type="text" value="5"/> <input type="button" value="▲"/> <input type="button" value="▼"/></p>					

Observer

- A specialized task that watches a process and its associated repositories
 - Initiates a flow when a certain condition becomes true
 - An observer can start a flow when a repository exceeds a threshold value.
- Two kinds of observers:
 - An observer that initiates a flow once
 - It starts a flow when a repository is full and then terminates.
 - An observer that initiates a flow every time a specific condition occurs
 - It starts a flow each time an item out of stock task is reached.
 - Observe continuously is selected
- The observer is only responsible for observing the condition and producing an output when the condition is satisfied.
 - It cannot produce data and does no other work.

Attributes - Observer  Simulation Control Panel Errors (Filter matched 23 of 2)

General Inputs Outputs Observation Resources

▼ General information

This section provides general information about this observer.

Name

Observer

Description

☐ Observe continuously

General Inputs Outputs Observation Resources

▼ Observation

This section shows the observation condition for this observer.

Name

Observation condition

Description

Checkpoint: Define elements and attributes

Your instructor will review these questions with you as a group. If time permits, the instructor may provide you time to answer the questions on your own before the group discussion.

1. What is the definition of a business item?
2. What is the difference between a business service and a service in Modeler?
3. What is a business service object?
4. When defining timetables, how do you specify lunch break or vacation time for the resources?
5. What is the difference between roles and resources?
6. What is the function of a classifier?

Checkpoint solutions: Define elements and attributes

1. Business data, documents, work products, or physical commodities that are transformed by the process
2. Business services are model element representations of WSDL (Web Services Definition Language) files. Services are external processes executed outside the organization.
3. Business service objects are model element representations of XSD (XML schema) files.
4. Use the exemption periods to cover lunch hours, vacation time, and weekends.
5. Roles add additional characteristics to resources while resources represent the people, equipment, or material used to perform a task.
6. Classifiers enable users to categorize tasks and other process elements for decision-making or process optimization, and it can be shown on the diagram for visual analysis or on tables for numerical analysis.

Unit summary

Having completed this unit, you should be able to:

- Explain business items, business services, business service objects, resources, organizations, and classifiers
- Describe additional modeling elements: timer, map, broadcaster, receiver, observer
- Describe advanced attributes for tasks

Exercise overview

In this exercise, you will:

- Create data structures
- Define organization units
- Create roles
- Associate colors with roles
- Create timetables
- Creating resources
- Assign roles and organization units to tasks
- Assign costs and durations
- Assign classifiers