Enterprise Architect

User Guide Series

BPMN Models

How to model Business Activity? Use Business Process Modeling Notation (BPMN) to model behavior and information flow within an organization or system, with direct mapping to UML through BPMN Profiles integrated with Sparx Systems Enterprise Architect.

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CREATED WITH ENTERPRISE ARCHITECT

Table of Contents

BPMN Models 5
Modeling with BPMN 2.0 8
BPMN 2.0 Toolbox Pages 15
BPMN 2.0 Business Process Toolbox Pages 17
BPMN 2.0 Choreography Toolbox Pages 24
BPMN 2.0 Collaboration Toolbox Page 28
BPMN 2.0 Conversation Toolbox Pages 33
BPMN 2.0 Type Toolbox Page 37
BPMN 2.0 XML 40
BPEL Models 44
BPEL 2.0 Model 46
Create BPEL 2.0 Model Structure 51
Model a BPEL 2.0 Process 54
Start Event 56
Intermediate Event 59
Activity 63
Gateway 68
End Event 71
Data Object 74
Property 76
Sequence Flow 78
Pool 80
Assignment 82

Create BPEL 2.0 Web Service Operation 86
Generate BPEL 2.0 91
BPEL Model Validation 93
Migrate BPMN 1.1 Model to BPMN 2.0 95

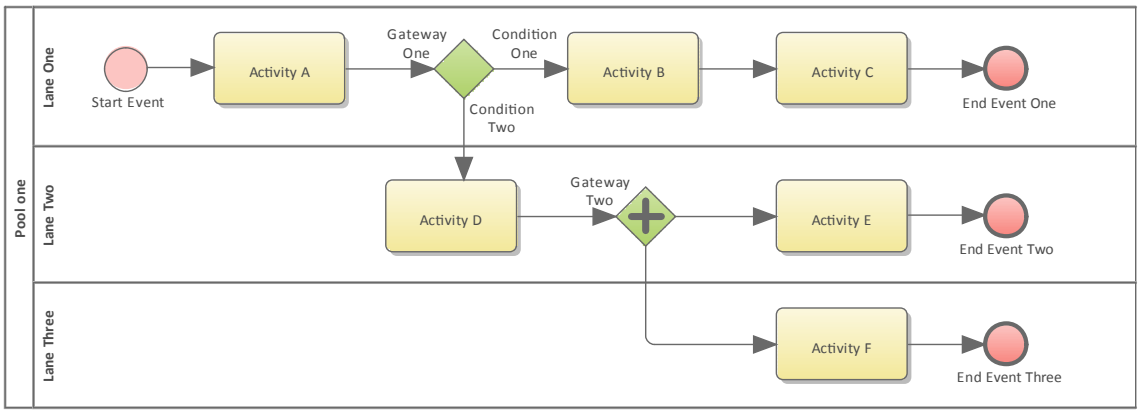
BPMN Models

What is BPMN?

Business Process Model and Notation (BPMN) is a standard for business process modeling that provides graphical notation for specifying business processes in a Business Process diagram (BPD), based on traditional flowcharting techniques. The Object Management Group (OMG) develops and maintains the BPMN specification.

BPMN represents the amalgamation of best practices within the business modeling community to define the notation and semantics of Collaboration diagrams, Process diagrams, and Choreography diagrams. It is intended to be used directly by the stakeholders who design, manage and realize business processes, but at the same time be precise enough to allow BPMN diagrams to be translated into software process components.

Business Process Modeling Notation has become the de-facto standard for business process diagrams. It has an easy-to-use flowchart-like notation that is independent of any particular implementation environment.



BPMN in Enterprise Architect

Key Features and Benefits

- Verification of the model through simulation
- Generation of documentation from the model
- Re-use of common components in other models, such as re-using a sub-process from the 'current' system when modeling the 'future' system
- Serialization to XML for exchanging model information
- The BPMN Profile can be used to model BPEL process descriptions

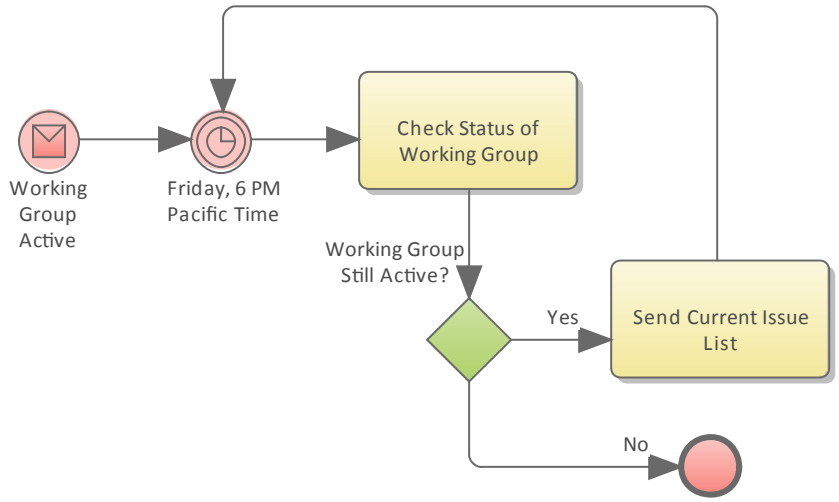
How to Access the BPMN Facilities

BPMN facilities are provided in the form of:

- A BPMN diagram type, accessed through the 'New Diagram' dialog
- BPMN pages in the Toolbox

- BPMN element and relationship entries in the 'Toolbox Shortcut' menu and Quick Linker

Specifications of BPMN elements and relationships are defined by Tagged Values; for example, to define the Message and Timer symbols in this diagram:



BPMN Toolbox Pages

You can access the BPMN Toolbox pages through the 'Design > Diagram > Toolbox : 'Hamburger" ribbon option, then select BPMN 2.0.

You can also set BPMN as the active default technology to access the Diagram Toolbox pages directly.

Modeling with BPMN 2.0

Within Enterprise Architect, modeling with BPMN 2.0 is well supported, quick and simple. Use these notes to guide you as you create your business models.

Model Structure

A Business Process can be re-used by encapsulating the Pool (see *Notes* at the end of this topic). Once the Pool is encapsulated, a Business Process is created that is referenced by the Pool's Tagged Value processRef. At this point, elements that appeared in the Pool on the diagram will be nested in the referenced Business Process.

In Enterprise Architect, a BPMN Participant is represented by the Pool element. When you export your BPMN model to another tool, in order to comply with the BPMN 2.0 specification the Pool is interpreted as a Participant in the XML. On import to Enterprise Architect, a Participant is interpreted as a Pool.

You can also use a Call Activity to reference another Business Process. As an illustration:

1. Drop an Activity element onto a diagram.
2. Open the element's 'Properties' dialog.
3. On the 'BPMN2.0' tab, click on the drop-down arrow in the Type field and select 'callProcessActivity'.
4. In the Activity Tagged Value list, click on the ... button at

the right of the calledActivityRef Tagged Value, and browse for the appropriate Business Process.

5. Click on the browser OK button and on the 'Properties' dialog OK button.

Now, whenever you move an element onto this Call Activity, it will be nested in the referencing Business Process.

BPMN 2.0 Diagram Orientation

On a BPMN 2.0 diagram, you can set the flow orientation to horizontal or vertical, or none (the default).

To set or clear the orientation, right-click on the diagram background and click on 'Set Diagram Flow Direction'. Then click on either:

- None (the default, no specific orientation set)
- Horizontal (diagram flows across the page, Pool and Lane elements occupy the full width of the diagram), or
- Vertical (diagram flows down the page, Pool and Lane elements occupy the full height of the diagram)

BPMN 2.0 Sequence Flow and Message Flow Rules

Rules concerning the use of Sequence Flows and Message

Flows, as defined in the BPMN 2.0 Specification and described here, are implemented by the MDG Technology for BPMN 2.0.

These rules apply to Sequence Flows in relation to Events (Start, Intermediate and End), Activities (Task and Sub-Process, for Processes), Choreography Activities (Choreography Task and Sub-Choreography, for Choreographies) and Gateways:

- A Sequence Flow cannot cross a Pool boundary
- An End Event cannot be the source element for a Sequence Flow
- A Start Event cannot be the target element for a Sequence Flow
- An Intermediate Event, if edge mounted on an Activity element, cannot be the source element for a Sequence Flow; it cannot have incoming Sequence Flows
- An Intermediate Event - if edge mounted on an Activity element and having the Tagged Value eventDefinition=Compensation, cannot be either the source or target element for a Sequence Flow
- Objects within a Sub-Process cannot have a Sequence Flow relationship with objects outside the Sub-Process
- A Sequence Flow cannot connect directly to a Pool

These rules apply to Message Flows in relation to Events (Start, Intermediate and End), Activities (Task and Sub-Process, for Processes), Choreography Activities (Choreography Task and Sub-Choreography, for Choreographies) and Pools:

- Message Flows can be created from objects in one Pool to objects in another Pool; Message Flows can connect directly to another Pool
- A Message Flow can connect to Events (Start, Intermediate and End) only if they have the Tagged Value eventDefinition=Message or eventDefinition=Multiple
- A Start Event cannot be the source element for a Message Flow
- An End Event cannot be the target element for a Message Flow

Generate Call Activities

If you drag a BPMN 2.0 Global Task or Business Process element from the Project Browser onto a diagram, the system creates a Call Activity element containing Tagged Values appropriate to the type of element from which the Call Activity was generated.

BPMN Validation

It is possible to validate your BPMN Model directly. To do this, select the root Package containing the BPMN model, then select the 'Design > Package > Edit > Validation > Validate Current Package' ribbon option All errors and warnings will be reported in the System Output window.

You can also validate your BPMN model through a BPSim Configuration Artifact as part of BPMN simulation, as documented in the *Business Process Simulation (BPSim)* and *The BPSim User Interface Components* Help topics.

Notes

- If a Pool element has the partnerEntity and partnerRole Tagged Values assigned, and an empty 'Name' field, the element will display the Tagged Values
- If a Lane element has the partitionElementRef Tagged Value assigned, and an empty 'Name' field, the element will display the Tagged Value
- When you create Lanes in a Pool, the first Lane will fill half the Pool and subsequent Lanes will fill the remaining space
- In the Project Browser, you can right-click on the diagram, Pool or Collaboration model and select 'Encapsulate Process', which will move all the object's nested elements to a Business Process; elements placed inside the encapsulated element (during diagramming) will be moved to the Business Process
- Encapsulating the diagram and the Collaboration/Choreography model give the same result; the action:
  - Creates a 'main Pool' that the Collaboration Model will reference via the mainPool Tagged Value

- Creates a Business Process that the 'main Pool' will reference via the processRef Tagged Value
- Moves everything nested in or added to the Collaboration (minus pools and diagrams) to the new Business Process

- When you create a BPMN 2.0 diagram, the system prompts you to select whether or not to create an encapsulating element for the diagram; that is, a:
  - Business Process for a Business Process diagram
  - Choreography Model for a Choreography diagram
  - Collaboration Model for a Collaboration or BPEL diagram
  - Conversation Model for a Conversation diagram
- When a Pool is dropped onto a BPMN diagram that is directly under a Package (and only in this circumstance), the system prompts you to select whether or not to create a Collaboration Model for the Pool (rather than always creating the Collaboration Model)
- The two prompts above each have the checkbox 'Do not show this message again' that, if checked, blocks the prompt from displaying and retains the current setting as the automatic action; you can reset the checkbox to unselected using the Reset BPMN Prompts button on the 'Diagram > Behavior' page of the 'Preferences' dialog
- Encapsulating supports the re-use of processes, in that you can create links to Pools in other Collaboration models for diagramming, and elements moved into them will be placed in the same Business Process (since the Pool represents a Process)

BPMN 2.0 Toolbox Pages

You can create BPMN elements and relationships on diagrams in BPMN 2.0 and BPEL formats using the BPMN 2.0 pages of the Diagram Toolbox.

Access

Use any of the methods outlined here to display the Diagram Toolbox, then click on to display the 'Find Toolbox Item' dialog and specify 'BPMN 2.0'.

Ribbon	Design > Diagram > Toolbox
Keyboard Shortcuts	Alt+5
Other	Click the icon on the Diagram caption bar to display the Diagram Toolbox

Diagram Type Toolboxes

Enterprise Architect provides a set of pages for each of these BPMN 2.0 diagram types:

Diagram Type
Business Process - contains the constructs needed to build Business Process models.
Choreography - contains the constructs needed to build Choreography models.
Collaboration - contains the constructs required to build Collaboration models.
Conversation - contains the constructs needed to build Conversation models.
Types - contains the constructs common to all BPMN 2.0 diagrams.

BPMN 2.0 Business Process Toolbox Pages

To create BPMN elements and relationships on Business Process diagrams in either BPMN 2.0 or BPEL formats, you can use the 'BPMN 2.0 Business Process' pages of the Diagram Toolbox.

Access

Use any of the methods outlined here to display the Diagram Toolbox, then click on to display the 'Find Toolbox Item' dialog and specify 'BPMN 2.0 Business Process'.

Ribbon	Design > Diagram > Toolbox : to display the 'Find Toolbox Item' dialog and specify 'BPMN 2.0 Business Process'
Keyboard Shortcuts	Alt+5 : | BPMN 2.0 | BPMN 2.0 Business Process
Other	Click the icon on the Diagram caption bar to display the Diagram Toolbox, then | BPMN 2.0 | BPMN 2.0 Business Process

BPMN 2.0 Business Process Elements

Item	Use to
Business Process	Extend a composite Activity that defines a business process.
BPEL	Define the behavior of an executable or abstract business process.
Activity	Represent work that is performed within a Business Process. An Activity can be modeled as a: • Sub-Process - a compound Activity that is defined as a flow of other BPMN 2.0 elements or • Task - an atomic Activity that cannot be broken down into a smaller unit As a sub-process, the Activity can be made a composite element that links to a child diagram containing the flow of other BPMN elements. A BPMN Activity is initially created on a diagram with the name centered at the top. If you drag elements onto the Activity the name can be obscured, so the

	system automatically moves the name into the top-left corner out of the way. You can also control this movement manually, by right-clicking on the element and selecting the 'Is Expanded' option to toggle the setting.
Global Task	Define a task or activity performed in the top-level process, at a higher level of execution.
Data Object	Provide or store the information for an Activity.
Data Store	Represent a mechanism for an Activity to retrieve or update stored information.
Start Event	Define the initiating event in a process. Elements of this type cannot be edge-mounted on other elements.
Intermediate Event	Define an intermediate event in a process. Elements of this type can only be edge-mounted on Activity elements.
End Event	Define the terminating event in a process. Elements of this type cannot be edge-mounted on other elements.

Gateway	Define a decision point in a business process. If a condition is true then processing continues one way; if false, then another.
Pool	Extend a Partition element to logically organize an Activity.
Lane	Extend a Partition element to subdivide a Pool.
Message	Represent the contents of a communication between two elements.
Group	Extend a Boundary element to group other elements.
Text Annotation	Create a comment.
BPMN 2.0 Business Process Connectors	Sequence Flow Use to: Extend a Control Flow relationship to define the flow of activity.
Association	Link the information and Artifacts with BPMN graphic elements.

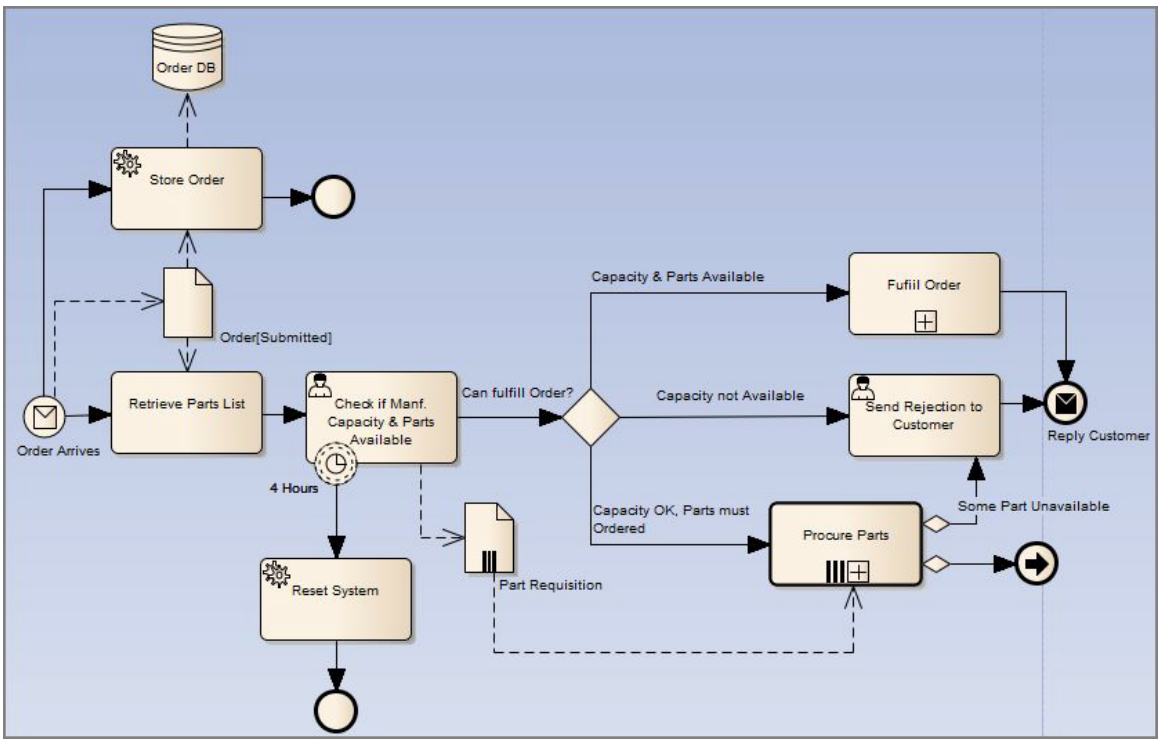
Message Flow	Extend a Control Flow relationship to define the flow of communications in the process.
Data Association	Move data between Data Objects, Data Store, Properties and Activities, Processes.
Conversation Link	Connect a Conversation Node with a Pool, in either direction.

BPMN 2.0 Business Process Connectors

Item	Use to
Sequence Flow	Sequence Flow Use to: Extend a Control Flow relationship to define the flow of activity.
Association	Link the information and Artifacts with BPMN graphic elements.
Message Flow	Extend a Control Flow relationship to define the flow of communications in the process.

Data Association	Move data between Data Objects, Data Store, Properties and Activities, Processes.
Conversation Link	Connect a Conversation Node with a Pool, in either direction.

Example BPMN 2.0 Business Process Diagram



Notes

- The appearance and specification of many elements and connectors are defined by Tagged Values

BPMN 2.0 Choreography Toolbox Pages

To create BPMN elements and relationships on Choreography diagrams in either BPMN 2.0 or BPEL formats, you can use the BPMN 2.0 Choreography pages of the Diagram Toolbox.

Access

Use any of the methods outlined here to display the Diagram Toolbox, then click on to display the 'Find Toolbox Item' dialog and specify 'BPMN 2.0 Choreography'.

Ribbon	Design > Diagram > Toolbox : to display the 'Find Toolbox Item' dialog and specify 'BPMN 2.0 Choreography'
Keyboard Shortcuts	Alt+5 : > Specify 'BPMN 2.0 Choreography' in the 'Find Toolbox Item' dialog
Other	Click the icon on the Diagram caption bar to display the Diagram Toolbox, then > Specify 'BPMN 2.0 Choreography' in the 'Find Toolbox Item' dialog.

BPMN 2.0 Chorography Elements

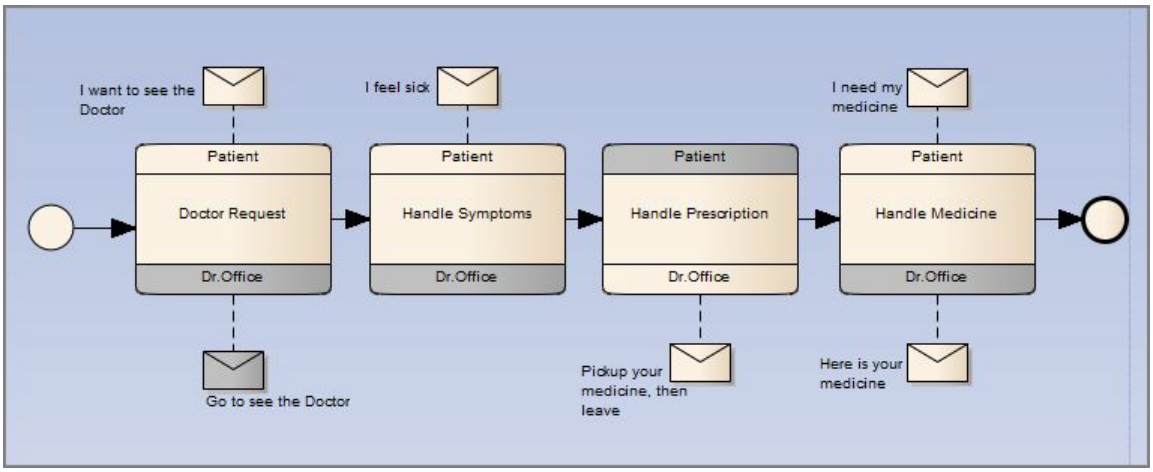
Item	Use to
Choreography Model	Extend a composite Activity that defines a Choreography process.
Choreography	Extend an Activity element to represent a process unit of information exchange between elements.
Start Event	Define the initiating event in a process. Elements of this type cannot be edge-mounted on other elements.
Intermediate Event	Define an intermediate event in a process. Elements of this type can only be edge-mounted on Activity elements.
End Event	Define the terminating event in a process. Elements of this type cannot be edge-mounted on other elements.
Gateway	Define a decision point in a business process.

	If a condition is true then processing continues one way; if false, then another.
Message	Represent the contents of a communication between two elements.
Pool	Extend a Partition element to logically organize an Activity.
Text Annotation	Create a comment.

BPMN 2.0 Chorography Connectors

Item	Use to
Sequence Flow	Define the order of activity in a Choreography.
Association	Link the information and Artifacts with BPMN graphic elements.
Message Flow	Extend a Control Flow relationship to define the flow of communications in the process.

Example BPMN 2.0 Choreography Diagram



Notes

- The appearance and specification of some elements and connectors are defined by Tagged Values

BPMN 2.0 Collaboration Toolbox Page

To create BPMN elements and relationships on Collaboration diagrams in either BPMN 2.0 or BPEL formats, you can use the 'BPMN 2.0 Collaboration' pages of the Diagram Toolbox.

Access

Use any of the methods outlined here to display the Diagram Toolbox, then click on to display the 'Find Toolbox Item' dialog and specify 'BPMN 2.0 Collaboration'.

Ribbon	Design > Diagram > Toolbox : > Specify 'BPMN 2.0 Collaboration' in the 'Find Toolbox Item' dialog
Keyboard Shortcuts	Alt+5 : > Specify 'BPMN 2.0 Collaboration' in the 'Find Toolbox Item' dialog
Other	Click the icon on the diagram caption bar to display the Diagram Toolbox, then > Specify 'BPMN 2.0 Collaboration' in the 'Find Toolbox Item' dialog

BPMN 2.0 Collaboration Elements

Item	Use to
Collaboration Model	Extend a composite Activity that defines a Collaboration process.
Pool	Extend a Partition element to logically organize an Activity.
Lane	Extend a Partition element to subdivide a Pool.
Conversation	Extend a Class element to group a set of Message Flows based on a certain concept.
Start Event	Define the initiating event in a process. Elements of this type cannot be edge-mounted on other elements.
Intermediate Event	Define an intermediate event in a process. Elements of this type can only be edge-mounted on Activity elements.
End Event	Define the terminating event in a process. Elements of this type cannot be

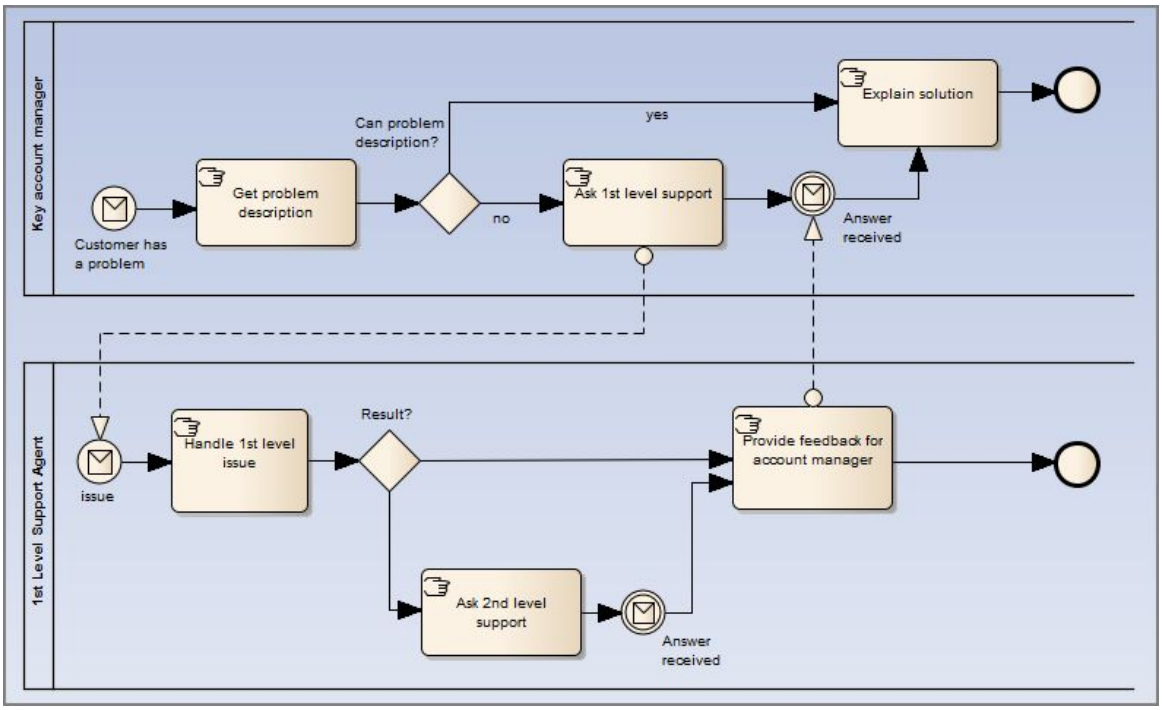
	edge-mounted on other elements.
Gateway	Define a decision point in a business process. If a condition is true then processing continues one way; if false, then another.
Activity	Represents work that is performed within a Business Process. An Activity can be modeled as a: • Sub-Process - a compound Activity that is defined as a flow of other BPMN 2.0 elements or • Task - an atomic Activity that cannot be broken down into a smaller unit As a sub-process, the Activity can be made a composite element that links to a child diagram containing the flow of other BPMN elements.
Data Object	Provide or store the information for an Activity.
Data Store	Represent a mechanism for an Activity to retrieve or update stored information.
Choreograph	Extend an Activity element to represent a

y	process unit of information exchange between elements.
Group	Extend a Boundary element to group other elements.
Text Annotation	Create a comment.

BPMN 2.0 Collaboration Connectors

Item	Use to
Message Flow	Extend a Control Flow relationship to define the flow of communications in the process.
Conversation Link	Connect a Conversation Node to or from an element.
Sequence Flow	Extend a Control Flow relationship to define the flow of activity.
Association	Link the information and artifacts with BPMN graphic elements.

Example BPMN 2.0 Collaboration Diagram



Notes

- The appearance and specification of some elements and connectors are defined by Tagged Values

BPMN 2.0 Conversation Toolbox Pages

To create BPMN elements and relationships on Conversation diagrams in either BPMN 2.0 or BPEL formats, you can use the BPMN 2.0 Conversation pages of the Diagram Toolbox.

Access

Use any of the methods outlined here to display the Diagram Toolbox, then click on to display the 'Find Toolbox Item' dialog and specify 'BPMN 2.0 Business Process'.

Ribbon	Design > Diagram > Toolbox : > Specify 'BPMN 2.0 Conversation' in the 'Find Toolbox Item' dialog
Keyboard Shortcuts	Alt+5 : > Specify 'BPMN 2.0 Conversation' in the 'Find Toolbox Item' dialog
Other	Click the icon on the Diagram caption bar to display the Diagram Toolbox, then > Specify 'BPMN 2.0 Conversation' in the 'Find Toolbox Item' dialog

BPMN 2.0 Conversation Elements

Item	Use to
Conversation Model	Extend a composite Activity that defines the logical relationship of Message exchanges between two or more business entities.
Conversation	Extend a Class element to group a set of Message Flows together based on a certain concept.
Pool	Extend a Partition element to logically organize an Activity.
Activity	Represents work that is performed within a Business Process. An Activity can be modeled as a: • Sub-Process - a compound Activity that is defined as a flow of other BPMN 2.0 elements or • Task - an atomic Activity that cannot be broken down into a smaller unit As a sub-process, the Activity can be made a composite element that links to a

	child diagram containing the flow of other BPMN elements.
Start Event	Define the initiating event in a process. Elements of this type cannot be edge-mounted on other elements.
Intermediate Event	Define an intermediate event in a process. Elements of this type can only be edge-mounted on Activity elements.
End Event	Define the terminating event in a process. Elements of this type cannot be edge-mounted on other elements.
Gateway	Define a decision point in a business process. If a condition is true then processing continues one way; if false, then another.
Text Annotation	Create a comment.

BPMN 2.0 Conversation Connectors

Item	Use to
Conversation Link	Connect a Conversation Node to a Pool element, in either direction. Either the source or target element for a Conversation Link must be a Conversation Node element.
Message Flow	Extend a Control Flow relationship to define the flow of communications in the process.
Sequence Flow	Extend a Control Flow relationship to define the flow of activity.
Association	Link the information and artifacts with BPMN graphic elements.

Notes

- The appearance and specification of some elements and connectors are defined by Tagged Values

BPMN 2.0 Type Toolbox Page

When you are working on a BPMN 2.0 diagram, you can also create a range of elements and connectors that are common to all of the BPMN 2.0 diagram types, by dragging them from the BPMN 2.0 Types page of the Diagram Toolbox. The 'BPMN 2.0 Types' toolbox page is common to all of the BPMN 2.0 toolboxes.

Access

Use any of the methods outlined here to display the Diagram Toolbox, then click on to display the 'Find Toolbox Item' dialog and specify 'BPMN 2.0 <diagram type>'.

Ribbon	Design > Diagram > Toolbox : to display the 'Find Toolbox Item' dialog and specify 'BPMN 2.0 <any diagram type>'
Keyboard Shortcuts	Alt+5 : 'Hamburger' icon | BPMN 2.0 | BPMN 2.0 <any diagram type>
Other	Click the icon on the Diagram caption bar to display the Diagram Toolbox, then > BPMN 2.0 > BPMN 2.0 <any diagram type>

BPMN 2.0 Types

These items define the non-graphic elements or properties (Tagged Values) of the Core BPMN 2.0 graphic elements.

- Assignment
- CorrelationKey
- CorrelationProperty
- CorrelationPropertyBinding
- CorrelationPropertyRetrievalExpression
- CorrelationSubscription
- Category
- CategoryValue
- ComplexBehaviorDefinition
- ItemDefinition
- Error
- Escalation
- Signal
- IOSpecification
- InputSet
- OutputSet
- InputOutputBinding
- Interface

- Endpoint
- Operation
- Participant (use Pool element)
- Resource
- ResourceRole
- ResourceParameter
- Property
- ConversationAssociation
- PartnerEntity
- PartnerRole

BPMN 2.0 XML

It is possible to serialize BPMN 2.0 Models in BPMN 2.0 XML. The serialized XML file contains both the model semantics as well as the diagram-interchange information. You can also import a BPMN 2.0 XML file into your project.

Access

For Serialization:

Select a Package in the Project Browser, then use one of the methods outlined here, to open the 'Publish Model Package' dialog.

Ribbon	Publish > Model Exchange > Export XMI > Export XMI for Current Package : Publish
Keyboard Shortcuts	Ctrl+Alt+E : Publish

Serialize a Model

Step	Action
1	Open the 'Publish Model Package' dialog.
2	In the 'XML Type' field, select 'BPMN 2.0 XML'.
3	Click on the Export button to initiate the BPMN 2.0 XML serialization.

Access

For Import:

Select a Package in the Project Browser, into which to import the XML file. Then use one of the methods outlined here to open the 'Import Package from BPMN 2.0' dialog.

Ribbon	Publish > Technologies > Import > BPMN 2.0
Keyboard Shortcuts	Ctrl+Alt+I : Other XML Formats > BPMN 2.0

Import BPMN 2.0 XML

Step	Action
1	In the 'Import Package from BPMN 2.0' dialog, specify the file path name, or click on the file browser icon and choose a file.
2	Click on the Import button to import the file into the Package.

Notes

- The Package being serialized is assumed to be self-contained
- Only the contents of the selected Package are considered for serialization - child Packages (and their contents) are ignored
- Serialization of these items in the BPMN 2.0 Types section of the Toolbox is not supported:
  - InputOutputBinding
  - Conversation Association
- Exporting to and importing from BPMN 2.0 XML is supported in all editions of Enterprise Architect

BPEL Models

Business Process Execution Language (BPEL) is an Orchestration language, serialized in XML, which specifies an executable process that involves message exchanges with other systems. This messaging facility depends on the use of the Web Services Description Language (WSDL) 1.1 to describe outgoing and incoming messages.

This text is derived from the BPEL entry in the online Wikipedia:

'Business Process Execution Language (BPEL), short for Web Services Business Process Execution Language (WS-BPEL), is an executable language for specifying interactions with Web Services. Processes in Business Process Execution Language export and import information by using Web Service interfaces exclusively.'

Web service interactions can be described in two ways:

1. Executable business processes, which model the actual behavior of a participant in a business interaction.
2. Abstract business processes, which are partially specified processes that are not intended to be executed. An Abstract Process might hide some of the required concrete operational details.

BPEL in Enterprise Architect:

Enterprise Architect supports generating BPEL from

executable processes in the Unified and Ultimate editions. Although there is no standard graphical notation for WS-BPEL, Enterprise Architect uses BPMN profile as a graphical front-end to capture BPEL Process descriptions. Through the BPMN Profile, Enterprise Architect helps you to develop BPEL diagrams quickly and simply. While BPMN provides a graphical notation for visualizing business process, BPEL provides a way for visualizing this graphical business process in XML.

Enterprise Architect supports generating:

- BPEL 2.0 from models created using constructs in BPMN 2.0 Profile

Notes

- BPEL is supported in the Unified and Ultimate editions of Enterprise Architect
- Enable BPMN 2.0 Technology for BPEL 2.0 modeling in the 'MDG Technologies' dialog ('Specialize > Technologies > Manage')

BPEL 2.0 Model

Enterprise Architect uses BPMN 2.0 as a graphical front-end to capture BPEL 2.0 Process description (as BPEL 2.0 does not have a standard graphical notation). Enterprise Architect uses the partial mapping specified in the BPMN 2.0 specification to map BPMN 2.0 constructs to BPEL 2.0.

Map Constructs

Step	Action
1	Create a BPEL 2.0 Package Structure. Alternatively: 1. Create a Package in the Project Browser. 2. Click on the 'New Diagram' option in the Project Browser header drop-down menu. 3. Select 'BPMN 2.0' in the 'Select From' field and 'BPEL' in the 'Diagram Types' field. 4. Click on the 'BPEL' icon from the BPMN 2.0 - Business Process Toolbox and drag it into the created BPEL diagram.
2	Open the BPEL diagram under the <<BPELProcess>> stereotyped element.

3	Model the BPEL 2.0 Process using the constructs on the 'BPMN 2.0 - Business Process' Toolbox pages. BPMN 2.0 - Business Process page: • BPEL • Activity • Data Object • Start Event • Intermediate Event • Event • Gateway • Pool BPMN 2.0 - Business Process Connectors page: • Sequence Flow • Association • Message Flow BPMN 2.0 Types page: • Assignment • Error • Interface • Operation • Property
4	Create Web Service Operations for the BPEL Process and other related Pools, if required.
5	Generate BPEL 2.0 code from the BPEL Process.

Notes

- Generating BPEL 2.0 from a BPMN 2.0 model is supported in the Unified and Ultimate editions of Enterprise Architect
- Enable the BPMN 2.0 Technology in the 'MDG Technologies' dialog ('Specialize > Technologies > Manage')

BPEL 2.0 Example

- The Enterprise Architect Example file (EAExample.EAP) has a sample BPMN 2.0 model from which BPEL 2.0 can be generated
- If you have installed Enterprise Architect at the default location, open this file: C:\Program Files\Sparx Systems\EA\EAExample.EAP
- The BPMN 2.0 model Package is in: Example Model > Analysis and Business Modeling > BPEL Example > BPEL 2.0 Model

Modeling Restrictions

- Every BPEL Process and Sub-Process should start with a Start Event and end with an End Event
- Boundary Start and End Events are not supported
- Sequence Flow Looping is not supported in both Normal and Exception Paths
- All Sequence Flows should flow downstream and not upstream
- Sub-Process cannot be a Loop node and have boundary Intermediate Events
- Event Sub-Process cannot act as a Loop Node
- Assignments are not supported on:
  - Start Events on Event Sub-Processes
  - End Events
  - Sub-Processes
  - Boundary Intermediate Events
  - Gateways
  - Tasks and Intermediate Events that immediately follow an XOR Event Gateway
- Exception Path has to merge back into the Normal Path
- An exception to this rule is boundary Compensation Intermediate Event, which should have a BPMN 2.0 Association to a Compensation Activity (that has no incoming or outgoing Sequence Flows)
- Multiple Exception Paths from an Activity must join at the same location in the Normal Path
- An Exception Path should not cross another Exception Path

- Activities in an Exception Path cannot have boundary Intermediate Events
- Pools are treated as black boxes (that is, they do not expose any details) and hence they cannot contain any child elements or have any incoming/outgoing Sequence Flow connectors

Create BPEL 2.0 Model Structure

A BPEL 2.0 model consists of a BPEL Process (containing a BPEL diagram and mappable BPMN 2.0 constructs) and other supporting elements (such as a BPMN 2.0 Assignment or BPMN 2.0 Operation) required for generating a BPEL 2.0 code.

A sample BPEL 2.0 Package structure can be created in the Project Browser, using the 'Select Model(s) (Model Wizard)' dialog. You can use this Package structure as a template for developing your BPEL Process.

Access

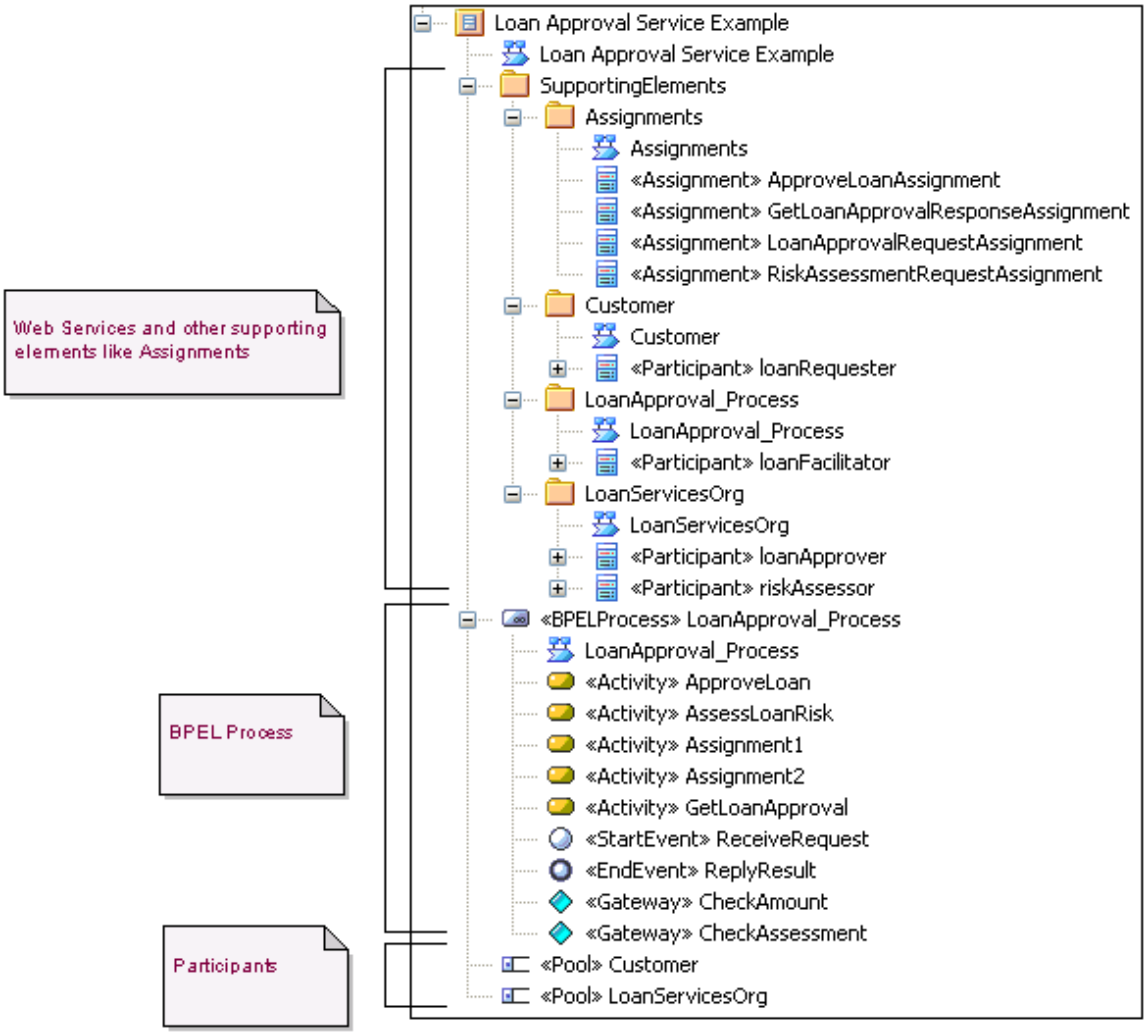
Ribbon	Design > Package > Insert > Insert using Model Wizard
Context Menu	Project Browser | Right-click on Package | Add a Model using Wizard
Keyboard Shortcuts	Ctrl+Shift+M
Other	Project Browser caption bar menu | New Model from Pattern

Create a BPEL 2.0 Package structure as a starting point for developing a BPEL Process

Step	Action
1	Select the root node or a Package in the Project Browser.
2	Click on the 'New Model from Pattern' menu option in the Project Browser header.
3	Select the value BPMN 2.0 in the Technology section.
4	Check the option 'BPEL 2.0 Model' in the 'Name' section.
5	Click on the OK button to create the sample BPEL 2.0 Package structure.

Example BPEL 2.0 Package Structure

The BPEL Process LoanApproval_Process acts as container for the BPEL diagram and elements. The SupportingElements Package contains supporting components such as Assignments and Web Service Operations.



Model a BPEL 2.0 Process

The BPEL Process in Enterprise Architect represents the top-level container for the BPMN 2.0 elements, from which BPEL 2.0 can be generated. Conceptually it maps to the BPEL process element.

BPEL Properties

- Double-click on the BPEL Process in the BPEL diagram, or
- Right-click on the BPEL Process in the BPEL diagram (or the Project Browser) and select BPEL | BPEL 2.0 Properties

Options

Field/Button	Action
Name	Specify the name for the BPEL Process.
Query Language	Specify the language used in the BPEL Process for the selection of nodes in Assignments. Defaults to 'XPath 1.0'.

OK	Save the values entered in the dialog.
Cancel	Discard the values entered in the dialog.
Help	Display this Help topic.
General	Open the 'UML Properties' dialog.

Start Event

A BPMN 2.0 Start Event indicates where a particular Process begins. Every Process in Enterprise Architect must begin with a Start Event.

BPEL Properties

- Double-click on the Start Event in the BPEL diagram, or
- Right-click on the Start Event | BPEL | BPEL 2.0 Properties

Options

Field/Button	Action
Name	Type the name for the Start Event.
Event Type	Select a trigger for the Start Event, namely: • Compensation • Conditional • Error • Escalation

	• Message • Multiple • None • Parallel Multiple • Signal • Timer
Details Tab	Depending on the selected Event Type, the 'Details' tab changes as shown: • Message Event Type - Pool Package - Select the Package that represents one of the involved Participants - Operation - Select an Operation from the list of operation(s) in the selected Pool Package • Timer Event Type - Time Cycle - Specify the value for the time duration - Time Date - Specify the value for the time date • Error Event Type - Error - Select an Error element
Assignments	(Optional) Select one or more Assignment elements created in the SupportingElements Package in this tab.

OK	Save the values entered in the dialog.
Cancel	Discard the values entered in the dialog.
Help	Display this Help topic.
General	Open the 'UML Properties' dialog.

Notes

- Either set 'Time Cycle' or 'Time Date for Timer Event Type' but not both, as they are mutually exclusive fields
- The 'Assignments' tab is not available on Start Events that are used to start an Event Sub-Process
- Compensation, Error and Timer event types are valid only on an Event Sub-Process
- Conditional, Escalation, Multiple, Parallel Multiple and Signal event types cannot be mapped to BPEL 2.0

Intermediate Event

A BPMN 2.0 Intermediate Event indicates where an event occurs somewhere between the start and end of a Process.

BPEL Properties

- Double-click on the Intermediate Event in the BPEL diagram
- Right-click on the Intermediate Event | BPEL | BPEL 2.0 Properties

Options

Field/Button	Action
Name	Specify the name for the Intermediate Event.
Event Type	Select the type for the Intermediate Event, namely: • Cancel • Compensation • Conditional • Error

	• Escalation • Link • Message • Multiple • None • Parallel Multiple • Signal • Timer
Details Tab	Depending on the selected Event Type, the 'Details' tab changes: • Message Event Type - Pool Package - Select the Package that represents one of the involved Participants - Operation - Select an Operation from the list of operation(s) in the selected Pool Package • Link Event Type - Link Event - Select a Link Event element (to act as a target for this Link Event) from the list of Link Event elements under the current Process or Sub-Process • Timer Event Type - Time Cycle - Specify the value for the time duration - Time Date - Specify the value for

	the time date • Compensation Event Type - Activity - Select an Activity from the list of Activity elements under the current Process or Sub-Process • Error Event Type - Error - Select an Error element
Assignments	(Optional) Select one or more Assignment elements created in the SupportingElements Package in this tab.
OK	Save the values entered in the dialog.
Cancel	Discard the values entered in the dialog.
Help	Display this Help topic.
General	Open the 'UML Properties' dialog.

Notes

- Cancel, Conditional, Escalation, Multiple, None, Parallel Multiple and Signal event type cannot be mapped to BPEL 2.0
- The 'Assignments' tab is not available on Intermediate

Events that are attached to the boundary of an Activity

- Either set 'Time Cycle' or 'Time Date for Timer Trigger Type' but not both as they are mutually exclusive fields
- The Error event type is valid only on an Intermediate Event attached to the boundary of an Activity
- The Compensation event type is valid only on an Event Sub-Process or when attached to the boundary of an Activity
- The Link Intermediate Event can be used either as a GOTO or an off-page connector; therefore, this event can have either incoming or outgoing Sequence Flows - but not both

Activity

A BPMN 2.0 Activity represents work that is performed within a Process. An Activity can be modeled as a:

- Sub-Process - a compound Activity that is defined as a flow of other BPMN 2.0 elements or
- Task - an atomic Activity that cannot be broken down into a smaller unit

Activities - both Tasks and Sub-Processes - can also, optionally, act as Looping constructs. The OMG BPMN 2.0 Specification defines two types of Looping construct:

- Standard Loop (while or until)
- Multi-Instance Loop (for each)

BPEL Properties

- Double-click on the Activity in the BPEL diagram
- Right-click on the Activity | BPEL | BPEL 2.0 Properties

Options

Option	Action
Name	Type a name for the Activity.

Type	Specify whether the Activity is a: • Task or • Sub-Process
Task Type / SubProcess Type	Depending on the value selected in the 'Type' field, the 'Task Type / SubProcess Type' field has these values: • Task Type: - Abstract - Business Rule - Manual - Receive - Script - Send - Service - User • SubProcess Type: - Ad-Hoc - Call Activity - Compensation - Embedded - Event - Transaction
Details Tab	Depending on the selected Task Type, the 'Details' tab changes: Receive / Send / Service Task Type • Pool Package - Select the Package that

	represents one of the involved Participants • Operation - Select an Operation from the list of operation(s) in the selected Pool Package
Assignments	(Optional) Select one or more Assignment elements created in the SupportingElements Package in this tab.
Loop Details	(Optional) Activities can be repeated sequentially, behaving like a Loop. Specify the Activity looping details in this tab. • Loop Type - Select 'Standard' for creating a 'while' or 'until' loop, or 'MultiInstance' for creating a 'for each' loop • Evaluate condition at the beginning of loop - Check this option to create a 'while' Standard loop; defaults to unselected for an 'until' loop • Loop Condition - Enter a boolean condition for a Standard loop or a numeric condition for a MultiInstance loop • Loop Maximum - (Optional) Specify the maximum value for the loop evaluation for a Standard loop

	• Loop Ordering - For a MultiInstanceLoop Type select 'Parallel' for generating instances in parallel, or 'Sequential for generating instances in sequence
OK	Click on this button to save the values entered in the dialog.
Cancel	Click on this button to discard the values entered in the dialog.
Help	Click on this button to display this Help topic.
General	Click on this button to open the 'UML Properties' dialog.

Notes

- The 'Assignments' tab is not applicable for Sub-Process
- The 'Loop Details' tab is not applicable for Event Sub-Process
- Business Rule, Manual, Script and User Task types cannot be mapped to BPEL 2.0
- Ad-Hoc, Call Activity and Transaction Sub-Process types

cannot be mapped to BPEL 2.0

Gateway

A BPMN 2.0 Gateway controls the way in which Sequence Flows converge and diverge within a Process. They provide a gating mechanism that either allows or blocks a Sequence Flow.

BPEL Properties

- Double-click on the Gateway in the BPEL diagram
- Right-click on the Gateway | BPEL | BPEL 2.0 Properties

Options

Field/Button	Action
Name	Specify the name for the Gateway.
Gateway	Select the type for the Gateway, namely: • Complex • Event • Exclusive • Inclusive • Parallel

Details Tab	Depending on the selected Gateway, the 'Details' tab changes as shown: • Event Type - Set to 'Exclusive' to represent an Exclusive Event Based Gateway
OK	Save the values entered in the dialog.
Cancel	Discard the values entered in the dialog.
Help	Display this Help topic.
General	Open the 'UML Properties' dialog.

Notes

- The target of the outgoing Sequence Flows of this Event Exclusive Gateway must be either a:
  - Receive Task or a
  - Message or Timer Intermediate Event
- If a Message Task is one of the targets of the outgoing Sequence Flow of an Event Exclusive Gateway, then a Message Intermediate Event cannot be the target of the other outgoing Sequence Flows of this Event Exclusive Gateway

End Event

A BPMN 2.0 End Event indicates where a particular Process ends. Every Process in Enterprise Architect must end with an End Event.

BPEL Properties

- Double-click on the End Event in the BPEL diagram
- Right-click on the End Event | BPEL | BPEL 2.0 Properties

Options

Field/Button	Action
Name	Specify the name for the End Event.
Event Type	Select the type for the End Event, namely: • Cancel • Compensation • Error • Escalation

	• Message • Multiple • None • Signal • Terminate
Details Tab	Depending on the selected Event Type, the 'Details' tab changes: • Message Event Type: - Pool Package - Select the Package that represents one of the involved Participants - Operation - Select an Operation from the list of operation(s) in the selected Pool Package • Compensation Event Type: - Activity - Select an Activity from the list of Activity elements under the current Process or Sub-Process • Error Event Type - Error - Select an Error element
OK	Save the values entered in the dialog.
Cancel	Discard the values entered in the dialog.
Help	Display this Help topic.

General	Open the 'UML Properties' dialog.

Notes

- The Compensation Event type is valid only on an Event Sub-Process
- Cancel, Escalation, Multiple and Signal Event types cannot be mapped to BPEL 2.0

Data Object

A BPMN 2.0 Data Object is mapped to a BPEL 2.0 Variable and occurs in the context of a Process or Sub-Process, just like a Property. A Data Object cannot have an incoming or outgoing Sequence Flow or Message Flow.

BPEL Properties

- Double-click on the Data Object in the BPEL diagram
- Right-click on the Data Object | BPEL | BPEL 2.0 Properties

Options

Field/Button	Action
Name	Specify the name for the Data Object.
Type	Either: • Select an XML Schema basic type from the drop-down list, or • Use the ... button to select XML Schema ComplexType, SimpleType, Union or Enumeration

OK	Save the values entered in the dialog.
Cancel	Discard the values entered in the dialog.
Help	Display this Help topic.
General	Open the 'UML Properties' dialog.

Property

A BPMN 2.0 Property is mapped to a BPEL 2.0 Variable and occurs in the context of a Process or Sub-Process, just like a Data Object.

However, unlike a Data Object, Property is not displayed on a BPEL diagram. Enterprise Architect supports Property on BPMN 2.0 BPEL and BPMN 2.0 Activity elements.

Access

Ribbon	Design > Diagram > Toolbox : > Specify 'BPMN 2.0 Types' in the 'Find Toolbox Item' dialog
Keyboard Shortcuts	Alt+5 : > Specify 'BPMN 2.0 Types' in the 'Find Toolbox Item' dialog
Other	You can display or hide the Diagram Toolbox by clicking on the or icons at the left-hand end of the Caption Bar at the top of the Diagram View.

BPEL Properties

- Right-click on the Property | BPEL | BPEL 2.0 Properties

Options

Field/Button	Action
Name	Specify the name for the Property.
Type	Either: • Select an XML Schema basic type from the drop-down list or • Use the ... button to select XML Schema ComplexType, SimpleType, Union or Enumeration
OK	Save the values entered in the dialog.
Cancel	Discard the values entered in the dialog.
Help	Display this Help topic.
General	Open the attribute properties.

Sequence Flow

A BPMN 2.0 Sequence Flow connector shows the order in which the activities (Tasks and Events) are performed in a BPEL Process.

Access BPEL Properties

- Double-click on the Sequence Flow in the BPEL diagram
- Right-click on the Sequence Flow | BPEL | BPEL 2.0 Properties

Define the Sequence Flow

Field/Button	Action
Condition Type	Click on the drop-down arrow and select the type of the condition on the Sequence Flow, namely: • None • Default • Expression
Expression	This field is enabled when the 'Condition Type' is set to 'Expression'.

	Type in a boolean expression to act as a gating condition.
Ordering	This field is enabled when the 'Condition Type' is set to 'Expression'. Type in a numerical value that determines the order in which the condition set in the 'Expression' field is to be evaluated.
OK	Click on this button to save the values entered in the dialog.
Cancel	Click on this button to discard the values entered in the dialog.
Help	Click on this button to display this Help topic.
General	Click on this button to open the 'UML Properties' dialog.

Pool

A BPMN 2.0 Pool represents a Participant in a Process and does not map to any specific BPEL 2.0 element. Enterprise Architect uses Pools to represent external Participants, with which the BPEL Process communicates. These are 'black box' pools; that is, they are abstract and do not expose any details (they do not have any BPMN 2.0 elements inside them).

BPEL Properties

- Double-click on the Pool in the BPEL diagram
- Right -click on the Pool | BPEL | BPEL 2.0 Properties

Options

Field/Button	Action
Name	Specify the name for the Pool.
OK	Save the values entered in the dialog.
Cancel	Discard the values entered in the dialog.

Help	Display this Help topic.
General	Open the 'UML Properties' dialog.

Notes

- A BPEL Process should not contain a Pool as its child element
- A BPEL diagram under a BPEL Process contains an implicit Pool, so it is invalid to add a Pool in this BPEL diagram to represent the BPEL Process
- Pool cannot have any incoming or outgoing Sequence Flow connectors - it can have only incoming or outgoing Message Flow connectors

Assignment

A BPMN 2.0 Assignment element enables data to be copied between messages and variables within a BPEL Process. An Assignment element maps to a BPEL 2.0 assign activity and copies the specified value from the source to the target.

In Enterprise Architect, Assignment elements should be created in the Assignments Package in SupportingElements. If they are created elsewhere, they cannot be enacted correctly.

Access

Ribbon	Design > Diagram > Toolbox : > Specify 'BPMN 2.0 Types' in the 'Find Toolbox Item' dialog
Keyboard Shortcuts	Alt+5 : > Specify 'BPMN 2.0 Types' in the 'Find Toolbox Item' dialog
Other	You can display or hide the Diagram Toolbox by clicking on the or icons at the left-hand end of the Caption Bar at the top of the Diagram View.

BPEL Properties

- Double-click on the Assignment in the BPEL diagram
- Right-click on the Assignment | BPEL | BPEL 2.0 Properties

Options

Field/Button	Action
Name	Specify the name for the Assignment.
Copy From	Complete the fields in this panel, as directed.
Type	Depending on the value selected in this field, further details are required.
Literal	Specify a literal value.
Expression	Specify an expression.
Message	Select a BPMN 2.0 Message in the Package representing the BPEL Process / Pool under the SupportingElements

	Package.
Part	Select a BPMN 2.0 Property belonging to the selected Message.
Variable	Select a BPMN 2.0 Data Object or BPMN 2.0 Property created under the BPEL Process.
Copy To	Complete the fields in this panel, as directed.
Message	Select a BPMN 2.0 Message in the Package representing the BPEL Process / Pool under the SupportingElements Package.
Part	Select a BPMN 2.0 Property belonging to the selected Message.
Variable	Select a BPMN 2.0 Data Object or BPMN 2.0 Property created under the BPEL Process.
OK	Save the values entered in the dialog.
Cancel	Discard the values entered in the dialog.
Help	Display this Help topic.

General	Open the 'UML Properties' dialog.

Notes

- Messages are created when you create a Web Service Operation

Create BPEL 2.0 Web Service Operation

BPEL is an Orchestration language, which orchestrates services that are exposed using WSDL 1.1. It coordinates the execution of the various operations of these involved services. BPEL 2.0 supports WSDL 1.1 one-way and request-response operations only (and not solicit-response and notification operations). Enterprise Architect enables you to create, for BPEL Process and Pool elements, Web Service Operations that support either synchronous (request-response) or asynchronous (one-way) interactions.

Access

Context Menu	In the Project Browser or on a diagram: Right-click on a BPEL Process or Pool element | BPEL | Create WebService

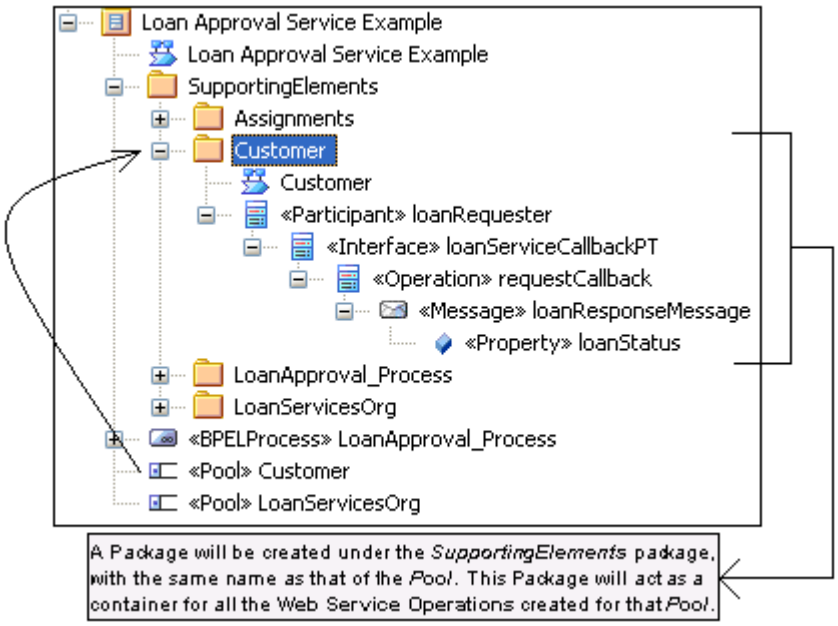
Options

Field/Button	Action

Operation	Specify whether to create a new Web Service Operation or create one from an existing WSDL created / imported into Enterprise Architect (using the 'Import WSDL' dialog) by selecting either: • Create New, or • Create from existing WSDL PortType Operation
Type	Specify whether to create a one-way or request-response Operation by selecting either: • Asynchronous or • Synchronous
Partnership Details	The interaction between the Web Service and the BPEL Process is modeled as a BPEL partnerLink. For this interaction, provide: • Name - Name of the BPEL partnerLink • Role - In the BPEL partnerLink, the name of either: - myRole (if this operation belongs to the BPEL Process Web Service) or - partnerRole (if this operation belongs to the Web Service of a Pool)

Web Service	• When 'Create New' is selected in the 'Operation' field: - PortType - Name of the WSDL 1.1 PortType (Interface) - Operation - Name of the WSDL 1.1 PortType Operation • When 'Create from existing WSDL PortType Operation' is selected in the 'Operation' field: - WSDL Package - Select an existing WSDL Package created or imported into Enterprise Architect - PortType - Select a WSDL 1.1 PortType from the selected WSDL Package - Operation - Select a WSDL 1.1 PortType Operation in the selected PortType
Input	When 'Create New' is selected in the 'Operation' field: • Message Name - Name of the WSDL 1.1 Message. • Properties - Click on the ... button to enter the WSDL 1.1 Message Part Name and XSD Type When 'Create from existing WSDL Port Type Operation' is selected in the

	'Operation' field: • The fields in this tab are pre-filled with the details of the input WSDL 1.1 Message (of the WSDL 1.1 PortType Operation selected in the 'Operation' field in the 'Web Service' tab)
Output	When 'Create New' is selected in the 'Operation' field: • Message Name - Name of the WSDL 1.1 Message • Properties - Click on the ... button to enter the WSDL 1.1 Message Part Name and XSD Type When 'Create from existing WSDL Port Type Operation' is selected in the 'Operation' field: • The fields in this tab are pre-filled with the details of the output WSDL 1.1 Message (of the WSDL 1.1 PortType Operation selected in the 'Operation' field in the 'Web Service' tab)
OK	Create a Web Service Operation based on the values entered in the dialog. The operation is created in a Package that has the same name as the BPEL Process / Pool from which this dialog is invoked,

	under the SupportingElements Package. 
Cancel	Discard the values entered in the dialog and abort creating the Web Service Operation.
Help	Display this Help topic.

Notes

- The 'Output' tab is not applicable for an Asynchronous operation

Generate BPEL 2.0

BPEL 2.0 code can be generated from a BPEL Process. The system validates the BPEL Process before generating the code. In addition to generating the code, WSDL 1.1 files are generated for the BPEL Process and all the involved Pools (provided Web Service Operations are defined for them).

Access

Context Menu	In the Project Browser or on a diagram: Right-click on a BPEL Process element | BPEL | Generate BPEL 2.0

Options

Field/Button	Action
File Name	Specify the path where the BPEL 2.0 file is to be generated.
Namespace Details	Double-click on an entry (if any) in this field to open the 'Namespace Details'

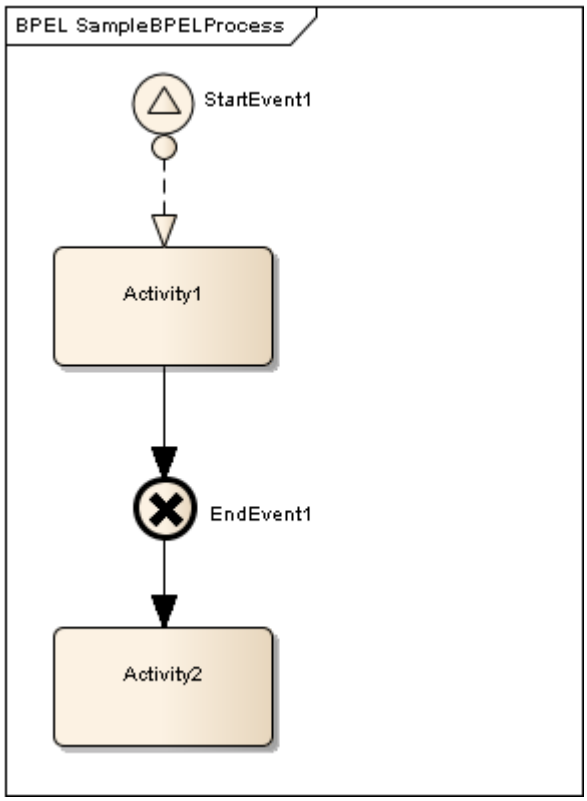
	dialog and add / edit the namespace details. The entry DefaultPool represents the current BPEL Process.
Generate BPEL	Validate the model and generate BPEL 2.0.
Close	Click on this button to close this dialog.
Help	Display this Help topic.
View BPEL	View the generated BPEL 2.0 file.

BPEL Model Validation

The BPEL model is validated for both syntax and semantic errors before generating the BPEL code. Upon successful validation, the BPEL file (and the associated WSDL 1.1 files, if any) are generated. The results of the validation, as well as the progress of the BPEL generation, are displayed in the 'BPEL Progress' tab of the System Output window.

Example BPEL Model Violation

This model shows several basic BPEL violations:



- StartEvent1 is of type Signal, which cannot be mapped to BPEL

- The Message Flow connector between StartEvent1 and Activity1 is invalid, as Message Flow cannot be used to connect Activities or Events within a Process
- EndEvent1 is of type Cancel, which cannot be mapped to BPEL
- EndEvent1 cannot have any outgoing Sequence Flow connector, as it represents the end of a Process
- Activity2 is not valid, as only an End Event represents the end of a Process

Notes

- Double-click on a validation error entry in the 'BPEL Progress' tab of the System Output window to go to the source of the error in the Project Browser

Migrate BPMN 1.1 Model to BPMN 2.0

It is possible to migrate a BPMN 1.1 model (or part of a model) to BPMN 2.0, using the Automation Interface function Migrate(). This function updates the Tagged Values and, if required, stereotypes to BPMN 2.0 for all elements, attributes, connectors and diagrams under the selected Package or element.

Example

This VB script calls the Migrate() function to migrate the Package or element to BPMN 2.0:

```
Sub MigrateElement (sGUID, lngPackageID)
    Dim proj as EA.Project
    set proj = Repository.GetProjectInterface
    proj.Migrate sGUID, "BPMN1.1", "BPMN2.0"
    'refresh the model
    If lngPackageID<>0 Then
        Repository.RefreshModelView (lngPackageID)
    End If
End Sub
Sub MigrateSelectedItem
    Dim selType
```

```
    Dim selElement as EA.Element
    Dim selPackage as EA.Package
    selType = GetTreeSelectedItemType
    If selType = 4 Then 'means Element
        set selElement = GetTreeSelectedObject
        MigrateElement selElement.ElementGUID,
selElement.PackageID
        MsgBox "Element Migration Completed",0,"BPMN
2.0 Migration"
    ElseIf selType = 5 Then 'means Package
        set selPackage = GetTreeSelectedObject
        MigrateElement selPackage.PackageGUID,
selPackage.PackageID
        MsgBox "Package Migration Completed",0,"BPMN
2.0 Migration"
    Else
        MsgBox "Select a Package or Element in the Project
Browser to initiate migration",0,"BPMN 2.0 Migration"
    End If
End Sub
Sub Main
    MigrateSelectedItem
End Sub
Main
```

Notes

- Please backup your project before you run the BPMN 2.0 Migrator
- Normalization occurs on these tags:
  - BPMN1.1::Activity::InMessageRef
  - BPMN1.1::Activity::OutMessageRef
  - BPMN1.1::Activity::IORules
  - BPMN1.1::Activity::InputSets
  - BPMN1.1::Activity::OutputSets
  - BPMN1.1::Activity::ComplexMI_FlowCondition
  - BPMN1.1::Activity::Performers
  - BPMN1.1::BusinessProcess::InputSets
  - BPMN1.1::BusinessProcess::OutputSets
  - BPMN1.1::BusinessProcess::Performers
  - BPMN1.1::EndEvent::ErrorCode
  - BPMN1.1::IntermediateEvent::ErrorCode

  Taking BPMN1.1::Activity::InMessageRef as an example, these steps take place:

  (1) Create a new element BPMN2.0::Operation (this is the bridging element)
  (2) Insert the reference tag 'BPMN2.0::Activity::operationRef'
  (3) Migrate BPMN1.1::Activity::InMessageRef to BPMN2.0::Operation::InMessageRef
- Denormalization occurs on these tags:
  - A BPMN1.1::Transaction referenced by a

BPMN1.1::Activity::TransactionRef
> BPMN1.1::Transaction::TransactionMethod
> BPMN1.1::Transaction::TransactionProtocol
- A BPMN1.1::WebService referenced by a BPMN1.1::Activity::WebServiceRef,
BPMN1.1::StartEvent::WebServiceRef,
BPMN1.1::IntermediateEvent::WebServiceRef,
BPMN1.1::EndEvent::WebServiceRef
> BPMN1.1::WebService::Operation
> BPMN1.1::WebService::Interface
> BPMN1.1::WebService::ParticipantRef
- A BPMN1.1::Condition referenced by a BPMN1.1::StartEvent::ConditionRef,
BPMN1.1::IntermediateEvent::ConditionRef
> BPMN1.1::Condition::ConditionExpression

Taking BPMN1.1::Activity::TransactionRef as an example, these steps take place:

(1) Find element BPMN1.1::Transaction by BPMN1.1::Activity::TransactionRef
(2) Migrate this referenced BPMN1.1::Transaction::TransactionMethod's value to
BPMN2.0::Activity::transactionMethod
(3) Migrate this referenced BPMN1.1::Transaction::TransactionProtocol's value to
BPMN2.0::Activity::transactionProtocol

- If a BPMN1.1 stereo tag is discarded in BPMN2.0, it is preserved if the tag has a value