

Business Process Modelling Notation (BPMN) Poster

Business Process Diagram Graphical Objects

Events

An event is something that happens during the process. These events affect the flow of the process and usually have a cause (trigger) or an impact (result). Examples: 'Email received', '3 o'clock', 'Warehouse empty', 'Critical error',....

Event type	Start	Intermediate	End	Description
General				The Start Event indicates where a particular process will start. Intermediate Events occur between a Start Event and an End Event. It will affect the flow of the process, but will not start or (directly) terminate the process. The End Event indicates when a process will end.
Message				A message arrives from a participant and triggers the Event. This causes process to start, continue, and/or if it was waiting for a message, or changes the flow of execution handling.
Timer				A specific time or cycle can be set that will trigger the start of the Process or continue the process. Intermediate timer can be used to model the time-based delays.
Error				This type of End indicates that a named Error should be generated. This Error will be caught by an Intermediate Event within the Event Context.
Cancel				This type of Event is used within a Transaction Sub-Process. This type of Event MUST be attached to the boundary of a Sub-Process. It SHALL be triggered if a Cancel Event is reached within the Transaction Sub-Process.
Compensation				This is used for compensation handling-both setting and performing compensation. It calls for compensation if the Event is part of a Normal Flow. It needs to be a named compensation call when attached to the boundary of an activity. Very useful for modelling roll-back actions within the transaction.
Rule				This type of event is triggered when the conditions for a rule become true. Rules can be very useful to interrupt the loop process, for example: 'The number of repeats > N'.
Link				A Link is a mechanism for connecting the End (Result) of one Process to the start (Trigger) of another. Typically, these are two Sub-Processes within the same parent Process. It can be used, for example, when the work area (page) is to small - go to another page.
Multiple				This means that there are multiple ways of triggering the Process. Only one of them will be required to (start, continue, end) the Process.
Terminate				This type of End indicates that all activities in the Process should be immediately ended. This includes all instances of Multi-Instances. The Process is ended without compensation or event handling.

Activities

An activity is a generic term of work that company performs. An activity can be atomic (task) or compound (process, sub-process). Examples: 'Send a letter', 'Write a report', 'Calculate the interests',....

A task is used to represent the activity on the lowest abstraction level.

More information about transaction and compensation attribute in 'Compensation Association'.

Task/Subprocess special attributes

Looping: The task or sub-process is repeated.

AdHoc: The tasks in the sub-process can not be connected with the sequence flow at the design time.

Multiple instances: Multiple instances of task or sub-process will be created.

Compensation: The symbol represents a compensation task or sub-process.

Artifacts

Artifacts are used to provide additional information about the process. If required, modelers and modelling tools are free to add new artifacts. Examples of data objects: 'A letter', 'Email message', 'XML document', 'Confirmation',....

This type of event is triggered when the conditions for a rule become true. Rules can be very useful to interrupt the loop process, for example: 'The number of repeats > N'.

Set of standardized artifacts

Data object: Data objects provide information about what activities require to be triggered and/or what they produce. They are considered as Artifacts because they do not have any direct effect on the Sequence Flow or Message Flow of the Process. State of the data object should also be set.

Group: The grouping can be used for documentation or analysis purposes. Groups can also be used to identify the activities of a distributed transaction that is shown across Pools. A grouping of activities that does not affect the Sequence of Message Flow.

Annotation: Text Annotations are a mechanism for a modeler to provide additional information for the reader of a BPMN Diagram.

Gateways

A gateway is used to split or merge multiple process flows. Thus it will determine branching, forking, merging and joining of paths. Examples: 'Condition true? - yes/no', 'Choose colour' - red/green/blue,....

Gateway control types

XOR (DATA): Data based exclusive decision or merging. Both symbols have equal meaning. See also Conditional flow.

XOR (EVENT): Event based exclusive decision or merging.

OR: Data based inclusive decision or merging.

COMPLEX: Complex condition (a combination of basic conditions).

AND: Parallel forking and joining (synchronization).

Swimlanes

Pools and lanes are used to represent organizations, roles, systems and responsibilities. Examples: 'University', 'Sales division', 'Warehouse', 'ERP system',....

A Pool MUST contain 0 or 1 business process.

A Pool can contain 0 or more lanes.

Two pools can be connected only with message flows.

A Pool represents a participant in a process. It contains a business process and is used in B2B situations.

A Lane is a sub-partition within a pool used to organize and categorize activities.

Business Process Diagram Connecting Objects

Graphical connecting objects

There are three ways of connecting Flow objects (Events, Activities, Gateways) to each other or other information - using sequence flow, message flow or association.

Graphical connecting objects

Normal: A Sequence Flow is used to show the order that activities will be performed in a Process.

Sequence flow: Sequence Flow can have condition expressions that are evaluated at runtime to determine whether or not the flow will be used.

Conditional sequence flow: For Data-Based Exclusive Decisions or Inclusive Decisions, one type of flow is the Default condition flow. This flow will be used only if all the other outgoing conditional flow is not true at runtime.

Default sequence flow: A Message Flow is used to show the flow of messages between two participants that are prepared to send and receive them. In BPMN, two separate Pools in the Diagram can represent the two participants. An Association (directed, non-directed) is used to associate information with Flow Objects. Text and graphical non-Flow Objects can be associated with the Flow objects.

Message flow:

Association:

Sequence Flow and message flow rules

Only those objects that can have an incoming and/or outgoing Sequence Flow / Message Flow are shown on tables.

	To:	To:
From:		
From:		
From:		
From:		
From:		
From:		
From:		
From:		
From:		
From:		
From:		
From:		

Sequence flow mechanism

The Sequence Flow mechanism is divided into four types: Normal flow, Exception flow, Link Events and Ad Hoc (no flow). Within these types of flow, BPMN is related to specific Workflow Patterns.

Compensation Association

In case of transactions it is desired that all activities which constitute a transaction are finished successfully. Otherwise transaction fails and rollback (compensation) activities occur which undo done activities.

Business Process Diagram Notation Common Patterns and Antipatterns

Improper modelling of Pools

When modelling Pools, sequence flows and start/end events are often missing, because it is wrongly presumed that message flows substitute sequence flows. Additional, sequence flows are incorrectly used to connect pools.

Model the process in each Pool independently and afterwards define message flows between Pools.

Improper use of time events

There are two common mistakes when using time events. First, starting events are often used instead of intermediate events. Second, using intermediate events as a delay mechanism instead of exception mechanism (representing the duration of a task) and vice-versa.

Improper use of Lanes

Lanes are often wrongly used in similar way as Pools. They wrongly contain more business processes or contain message flows between different lanes.

Improperly used Gateways

Gateway are connected only with sequence flows. Avoid also potential deadlock when using gateways.

Workflow patterns

Improper tasks and events

Analysts often wrongly model events and tasks. For example: events are wrongly modelled as tasks, task states are modelled as new tasks.

Improper use of message events and message flows

Starting and intermediate events can not be sources of message flows.

In both cases it is wrong - intermediate message events can not produce message flows.

Incorrect sequence flow mechanism

When using expanded sub-processes, sequence flows should be connected to the boundaries of sub-processes. Processes and sub-processes should start and end properly!

Explanation of Poster Symbols

Important note, explanation

Warning or error in the BPMN model

Recommendation

Wrong model

Right (corrected) model

About the BPMN Poster

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Please send the feedback to the authors!