Business Process Modelling Notation (BPMN) Poster

Check for the latest version at: http://bpmn.itposter.net

Business Process Diagram Graphical Objects

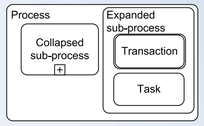
Events

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 \ Event flow	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 where a process will end.
Message	✉	✉	✉	A message arrives from a participant and triggers the Event. This causes process to (start, continue, end) if it was waiting for a message, or changes the flow if exception happens. End type of message event indicates that a message is sent to a participant at the conclusion of the process.
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 End 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 reacts to 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'. Intermediate rule is used only for exception handling.
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 working area (page) is too small – go to another page.
Multiple	⬟	⬟	⬟	This type of event indicates 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 terminated. This includes all instances of Multi-Instances. The Process is terminated without compensation or event handling.

Activities

An activity is a generic type of work that a 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 the transaction and compensation attribute can be found under »Compensation Association«.

Task/Subprocess special attributes

Looping	↻	The task or sub-process is repeated.
Ad Hoc	~	The tasks in the sub-process can not be connected with sequence flows at design time.
Multiple instances	‖	Multiple instances of task or sub-process will be created.
Compensation	◀◀	The symbol represents a compensation task or sub-process.

Artefacts

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

Set of standardized artefacts

Data object	[state]	Data objects provide information about what activities are required to be triggered and/or what they produce. They are considered as Artefacts because they do not have any direct effect on the Sequence Flow or Message Flow of the Process. The state of the data object should also be set.
Group		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. Grouping of activities does not affect the Sequence or Message Flow.
Annotation	Description	Text Annotations are a mechanism for a modeller 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)	◇ X	Data based exclusive decision or merging. Both symbols have equal meaning. See also Conditional flow.
XOR (EVENT)	◇ ⬟	Event based exclusive decision only.
OR	◇ ○	Data based inclusive decision or merging.
COM-PLEX	◇ ✱	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 only be connected 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

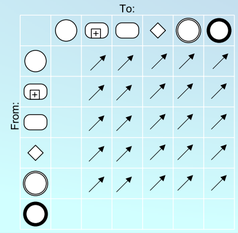
There are three ways of connecting **Flow objects (Events, Activities, Gateways)** with each other or with other information – using sequence flows, message flows or associations.

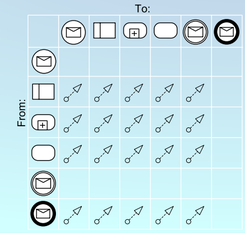
Graphical connecting objects

Normal sequence flow	→	A Sequence Flow is used to show the order In which the activities in a process will be performed.
Conditional sequence flow	◇→	A Sequence Flow can have condition expressions which are evaluated at runtime to determine whether or not the flow will be used.
Default 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 other outgoing conditional flows are NOT true at runtime.
Message 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 a Diagram can represent the two participants.
Association	⟶	An Association (directed, non-directed) is used to associate information with Flow Objects. Text and graphical non-Flow Objects can be associated with Flow objects.

Sequence Flow and Message Flow rules

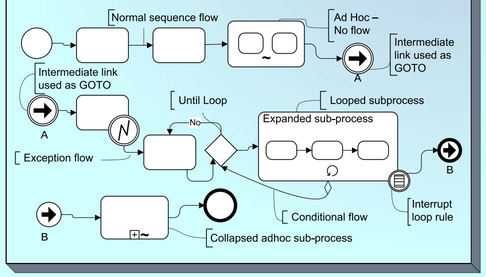
Only objects that can have an incoming and/or outgoing Sequence Flow / Message Flow are shown in the Tables Below.





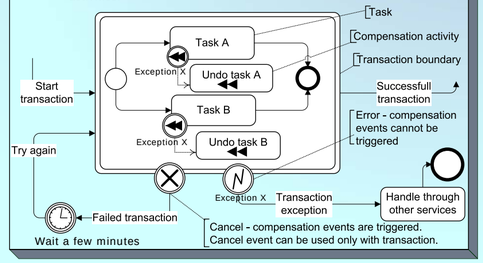
Sequence flow mechanism

The Sequence Flow mechanisms is divided into types: Normal flow, Exception flow, Conditional flow, Link Events and Ad Hoc (no flow). Refer also to specific »Workflow Patterns«.



Compensation Association

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

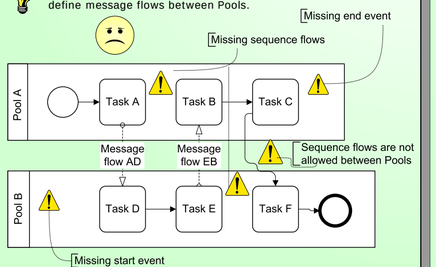


Business Process Diagram Notation - Common Patterns and Antipatterns

Wrong use of flows in/between pools

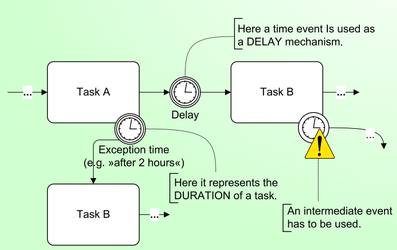
When modelling Pools, sequence flows and start/end events are often missing, because it is wrongly presumed that message flows substitute sequence flows. Additionally, sequence flows are incorrectly used to connect pools.

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



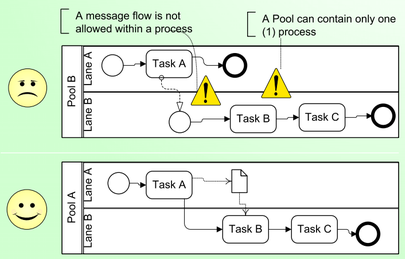
(Wrong) Use of time events

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



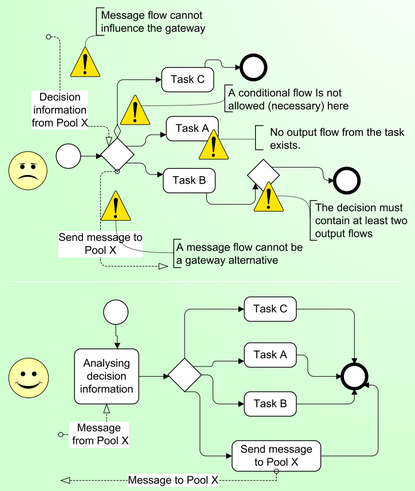
Use of flows within lanes

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

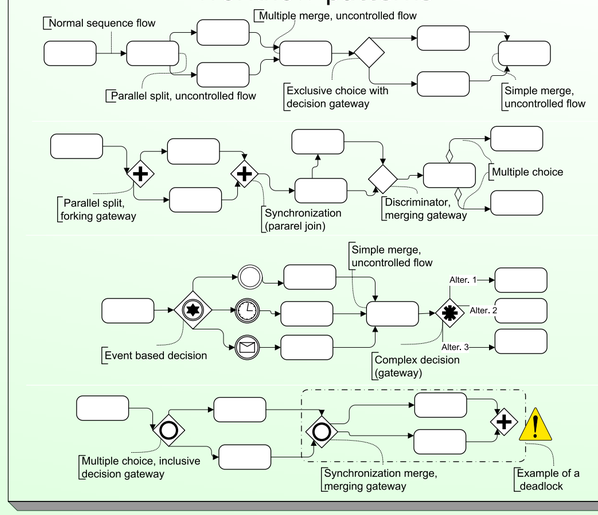


Use of gateways

Gateways are connected only with sequence flows. Also Avoid potential deadlocks when using gateways.

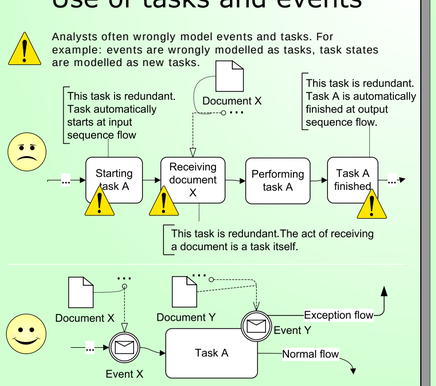


Workflow patterns



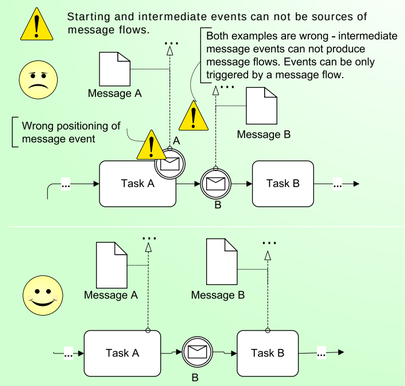
Use of tasks and events

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



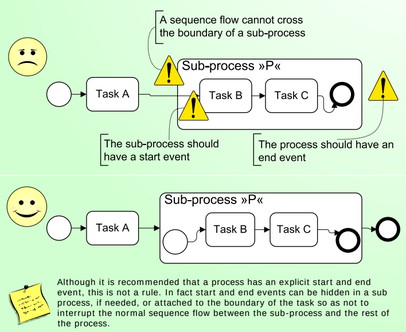
Use of message events and message flows

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



Use of the 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!



Although it is recommended that a process has an explicit start and end event, this is not a rule. In fact start and end events can be hidden in a sub process, if needed, or attached to the boundary of the task so as not to interrupt the normal sequence flow between the sub-process and the rest of the process.

Explanation of Poster Symbols

📝	**Important note, explanation**
⚠	**Warning or error in the BPMN model**
💡	**Recommendation**
☹	**Wrong model**
☺	**Right (corrected) model**

About the BPMN Poster

Authors:
Gregor Polančič & Tomislav Rozman
Email: info@itposter.net
University of Maribor
Faculty of Electrical Engineering and Computer Science
Institute of Informatics

Poster version: 1.0.9 (4th June 2008)
Literature used: BPMN Specification 1.0 @ http://www.bpmi.org

http://bpmn.itposter.net