

Business Process Modelling and Notation

DUM 09

What is BPMN?

- Business Process Modelling and Notation (BPMN) is a standard developed by Business Process Management Initiative (BMNI) in 2004
- The primary aim of BMPN is to provide a notation that would be easy to understand for all company users (analysts, developers, managers etc.)
- BPMN provides a standardized bridge connecting the gap between process analysis and subsequent implementation
- BPMN defines Busines Process Diagram (BPD)

Basics of BPMN

- BPD is a set of graphic elements
- These elements were chosen in order to be easily discernible from one another and used shapes are widely known
- Aim of BPMN is to create a simple mechanism for designing business process model capable of capturing desired complexity

Basics of BPMN

- BPMN consists of 4 basic categories of elements:
 - a. Flow objects
 - b. Connecting objects
 - c. Swimlanes
 - d. Artifacts

a. Flow objects

- BPD has a small set of key elements that are Flow objects (3)
- Therefore user does not need to learn how to distinguish between large number of different element shapes
- Flow objects are:
 1. Event
 2. Activity
 3. Gateway

1. Event

- An event is represented by circle. It is something that “happened” during the business process
- Events influence the flow of the process and usually have trigger and/or effect
- Events are recorded as circles that can have internal notes
- With regard to the process, we distinguish 3 types of events:

Start


























Intermediate



End



Types of events

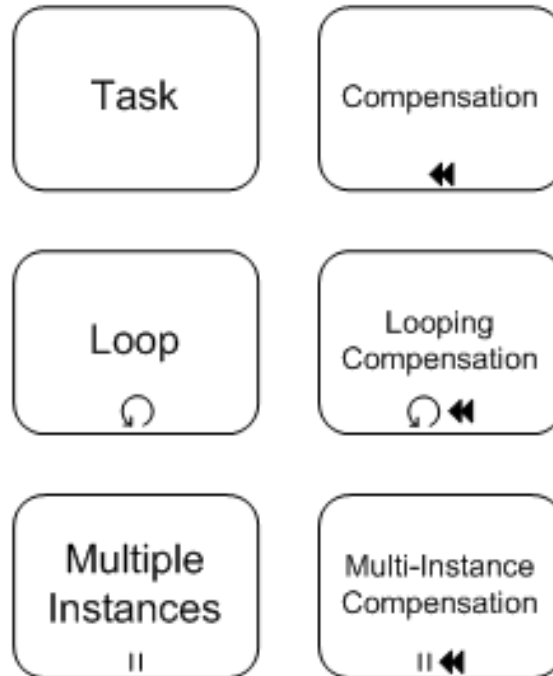
	start	intermediate	end
basic			
message			
timer			
rule			
exception			
cancellation			
compensation			
link			
multiple			
termination			

2. Activity

- Activity is represented by a rectangle with round corners
- It is a general graphic element representing some work
- Activity can be atomic or non-atomic (compound)
- Activity types are: Task and Sub-Process
- A Sub-process is noted with a small + sign

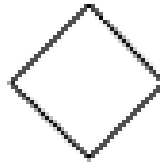


Types of activities



3. Gateway

- Gateway is represented by a diamond shape. It is used for splitting and joining of process flow
- Internal notation indicates behavior of gateway



Types of gateways

Gateways

Exclusive Decision/Merge (XOR)

Data-Based



Name

or



Event-Based



Inclusive Decision/Merge (OR)



Complex Decision/Merge



Parallel Fork/Join (AND)



b. Connecting objects

- In a BPD, flow objects are mutually connected in order to create basic structure (backbone) of a business process
- There are 3 types of connecting objects:
 1. Sequence Flow
 2. Message Flow
 3. Association

1. Sequence Flow

- A sequence flow is represented by an arrow and its orientation defines the order of activities being performed
- In BPMN, the concept “Control flow” is not used (in contrast to UML)



2. Message Flow

- A message flow is represented by dashed line with hollow arrow
- It is used for displaying a message flow between different participants (process roles) which send and receive messages



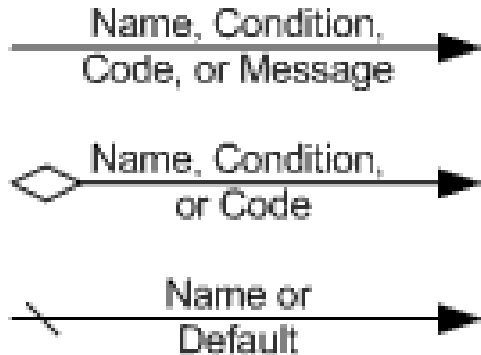
3. Association

- Association is represented by dotted line.
- It is used for connecting an object with some additional information (data, text or other artifact)
- Associations are used for displaying inputs and outputs of activities

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Connecting objects

Sequence Flow



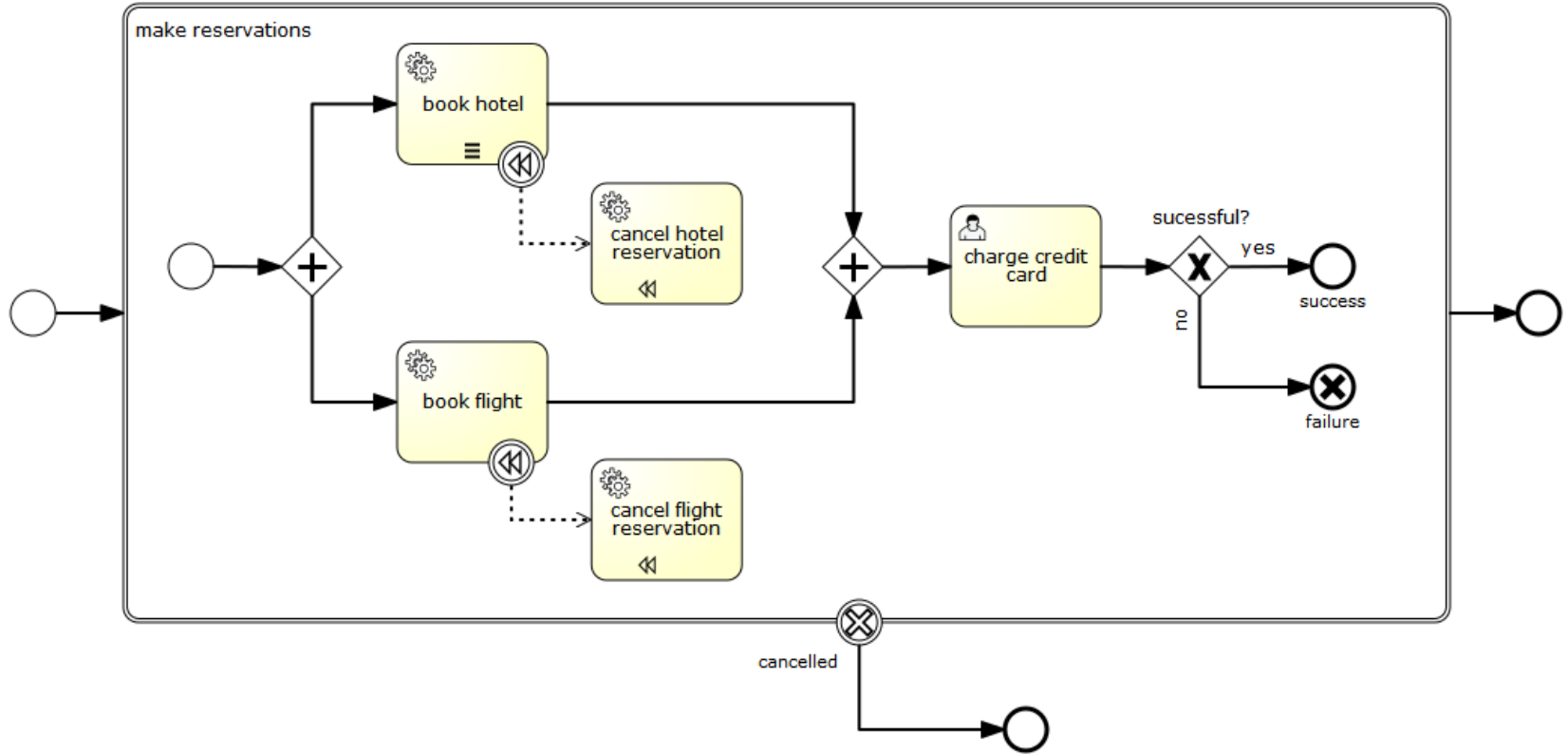
Message Flow



Association



Simple business process example



c. Swimlanes

- Many process oriented models and methods use the concept of swimlanes for displaying different functional competences or responsibilities
- Two types of BPD swimlanes are:
 1. Pool
 2. Lane

1. Pool

- Pool represents the participants within the process
- It also behaves as graphic container for differentiating sets of activities from other pools (processes), usually with relation to Business to Business (B2B) situation



2. Lane

- Lane is a sublevel of pool
- It takes place across the whole pool, either horizontally or vertically
- Lanes are used for organization and categorization of activities



d. Artifacts

- BPMN was designed to allow certain flexibility in extending the original notation and offer possibilities of adding further context for modelling specific situations
- There can be any number of artifacts in BPD but only if it is suitable for given business process context
- BPMN standard predefined these artifacts:
 1. Data Object
 2. Group
 3. Annotation

1. Data Object

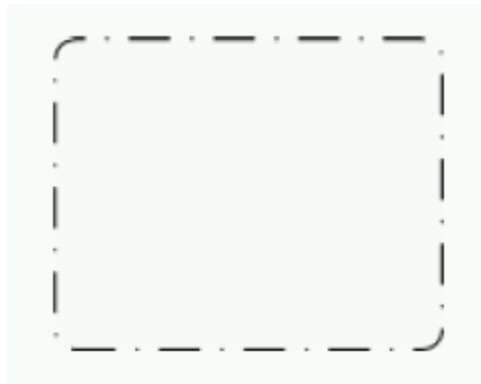
- Data objects represent a mechanism for expressing that certain data are required or produced by certain activity
- They are connected to activities by association link

Data Object



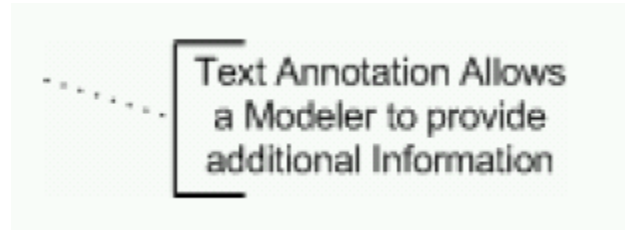
2. Group

- A group is represented by dashed rectangle
- Groups can be used during documentation or for object analysis but it has no effect on process flow



3. Annotation

- An annotation is a way how user can provide additional information for future reader of the process diagram



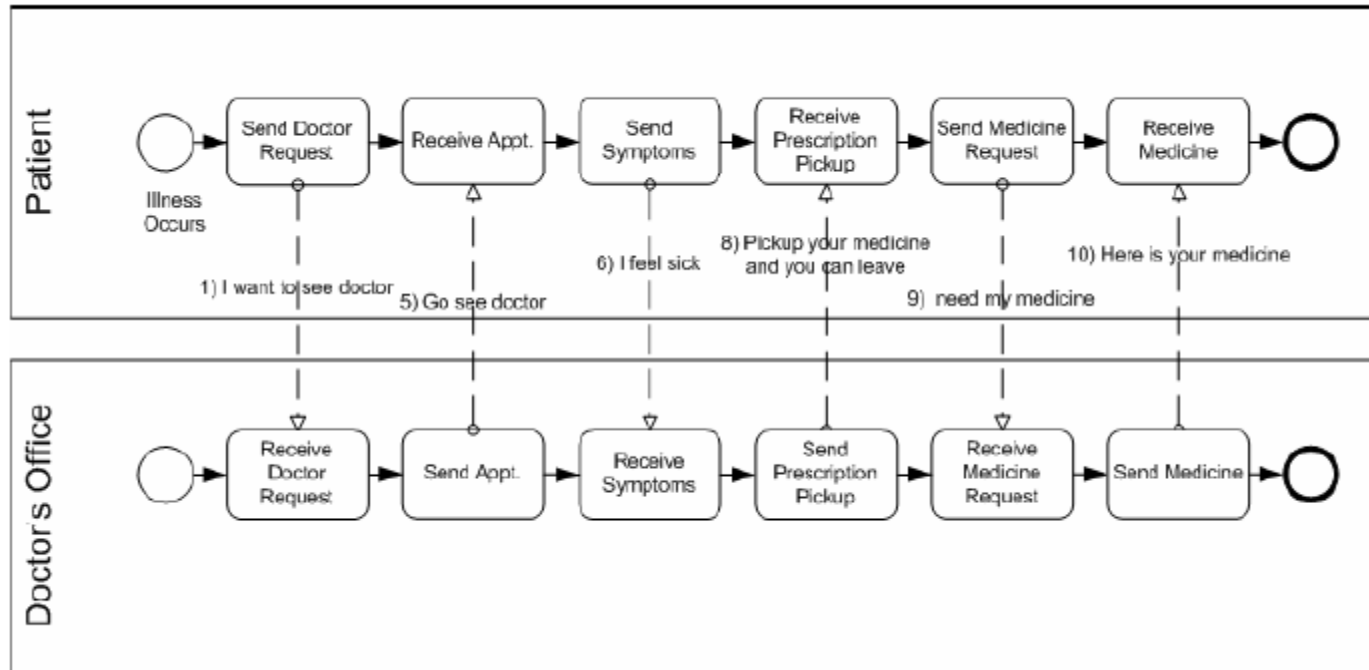
General use of BPMN

- Modelling of business processes is used during communication of various users with significantly different information
- BPMN is designed to cover many ways of modelling and allow to create not only basic process part but also complex processes within a company at various levels of decomposition
- There are two basic types of business processes that are distinguished in BPD:
 1. Cooperating (Public) B2B Processes
 2. Internal (Private) Business Processes

1. Cooperating (Public) B2B Processes

- Cooperating B2B processes show interaction between two or more business entities
- These diagrams display general point of view - the process is not described from PoV of any participant. It describes interaction between participants.
- Interactions are expressed as sequences of activities and exchange of messages between participants
- Activities used for cooperation between participants are considered as “contact points.” This way the process defines the interaction visible for any participant

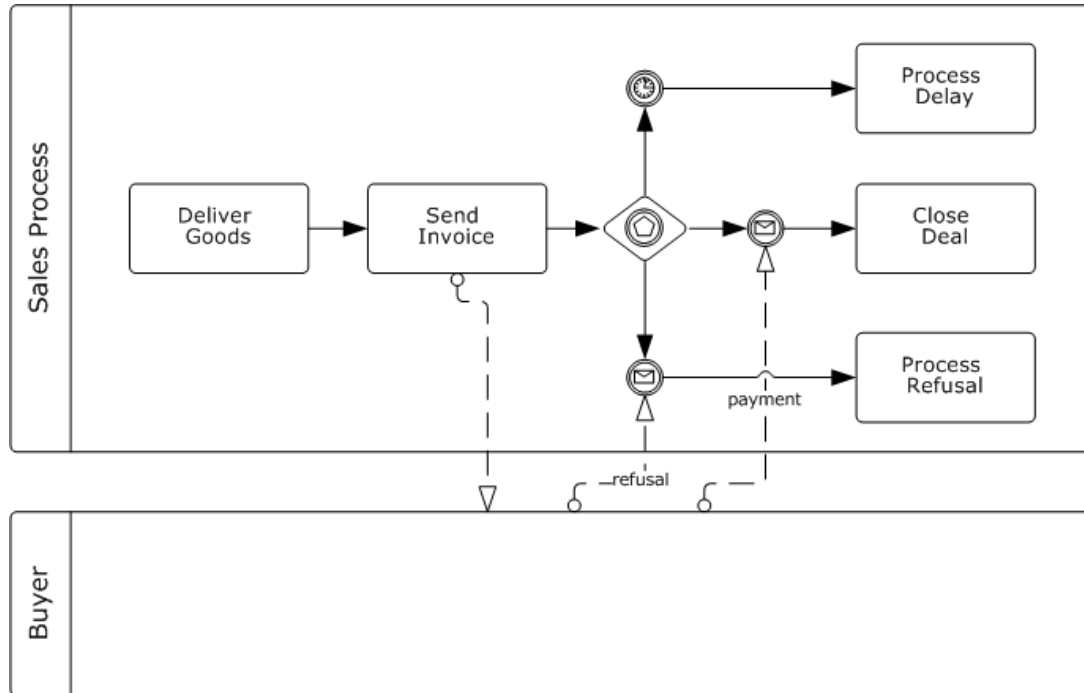
Example of B2B process



2. Internal business processes

- Models of internal business processes are focused on process just from the company point of view - these processes are not usually visible for public
- If swimlanes are used, internal process is shown as a single pool. Sequence flows within process cannot cross the border of pool. Any interaction outside pool (with third party) is recorded by message flow

Internal business process example



Various levels of decomposition

- Modelling of business processes usually starts with recording activities at the top level. These are subsequently modelled with finer and finer level of detail in further diagrams
- Based on a method used, there can be more levels of diagram. However BPMN is independent from any specific process method.