Escuela Técnica Superior de Ingeniería Informática
Departamento de Lenguajes y Sistemas Informáticos

Introduction to Business Process Modeling

Software Engineering and Databases Group
Department of Computer Languages and Systems
University of Seville
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1. Why business modeling?
2. How to model business processes?
3. BPMN examples
4. Key BPMN notation
5. Basic BPMN notation

Introduction to Business Process Modeling

- Learning objectives
  - Understand the **need** for **modeling business processes** during the process of information systems development.
  - Know **BPMN** as a **graphical notation** to model business processes.
  - **Develop** simple business processes models using BPMN.

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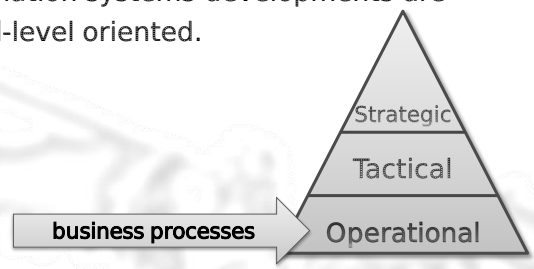
Introduction to Business Process Modeling

- Why modeling business processes?
  - Information systems should help their organizations to…
    - Make competitiveness **strategic decisions**.
    - Make business **tactical decisions**.
    - Perform **business processes** and their related **operations**.
  - Most information systems developments are **operational**-level oriented.



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Introduction to Business Process Modeling

- Why modeling business processes?
  - Designing an information system without knowing customers' organization operations (**business processes**) is a recipe for **failure**.
  - A **technically correct** product can be developed, but it will not succeed because of **being useless** for their users.

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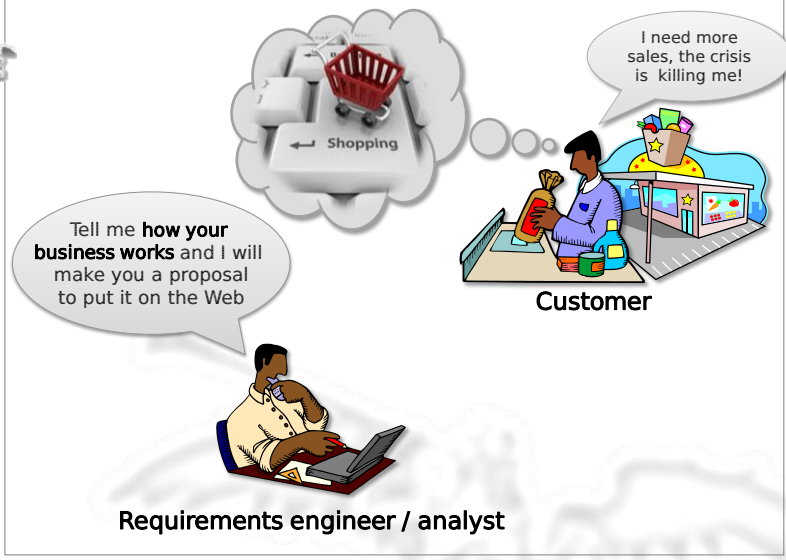
- Why modeling business processes?



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- How to model business processes?
  - **Textually**: description in natural language.
  - **Diagrammatically**: description using a diagram
    - EPC diagrams (*event-driven process chain*)
    - UML activity diagrams
    - BPMN diagrams (*Business Process Modeling Notation*)
  - The most recommended practice is to **combine** both types of descriptions, complementing the diagrams with textual descriptions.

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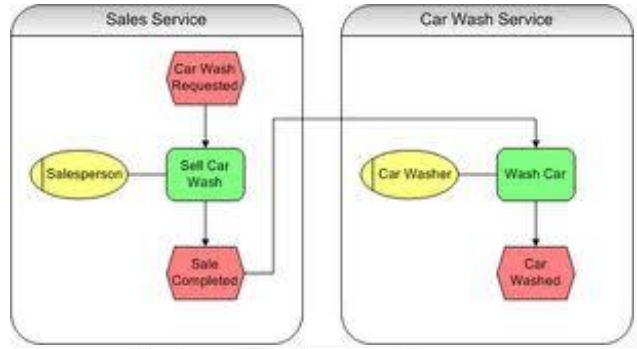
- How to model business processes?
  - EPC diagram example



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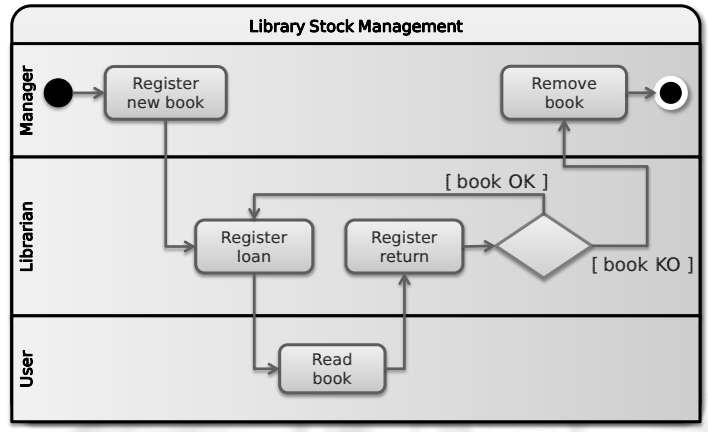
- How to model business processes?
  - UML activity diagram example



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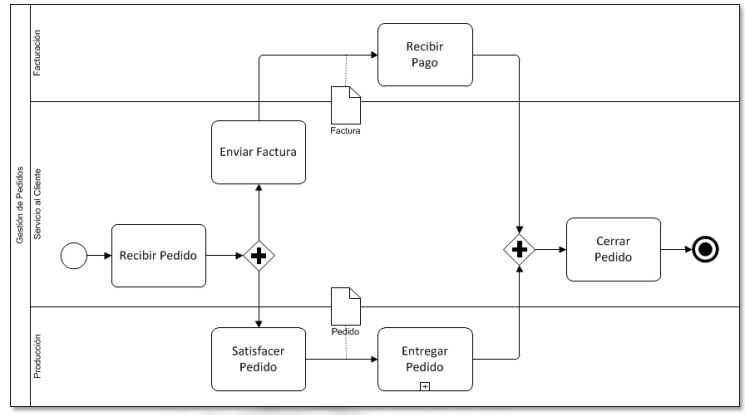
- BPMN examples: private process



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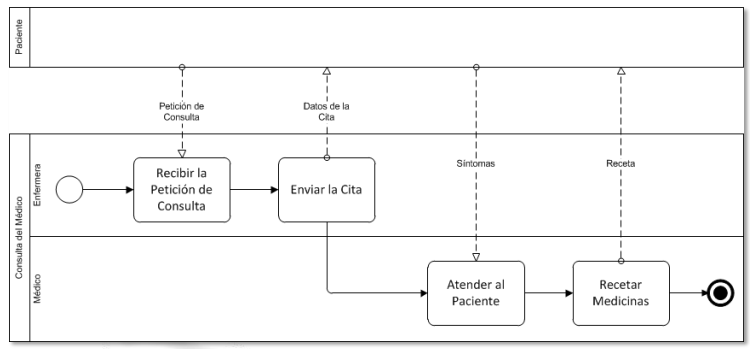
- BPMN examples: collaboration (I)



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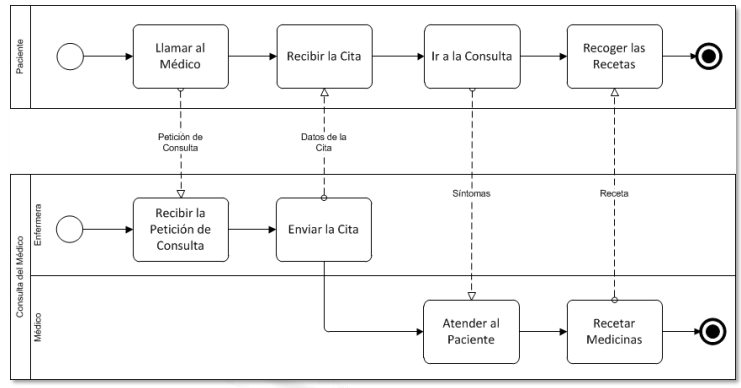

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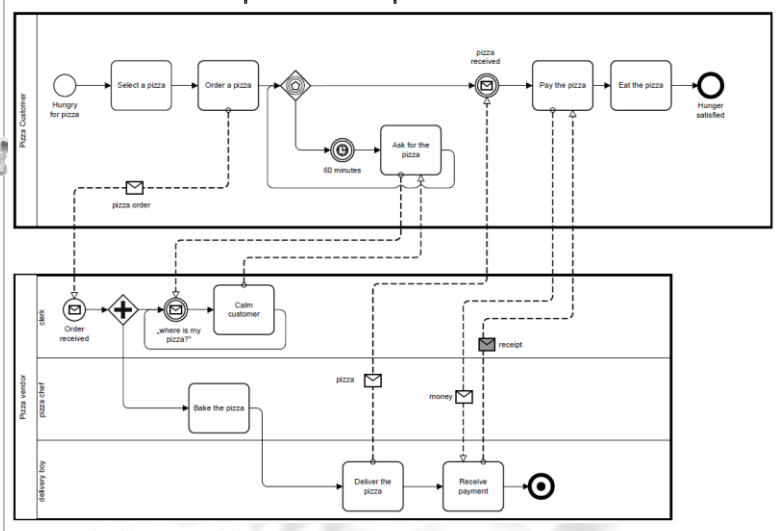
• BPMN examples: the pizza collaboration*



* Source: BPMN 2.0 by Example

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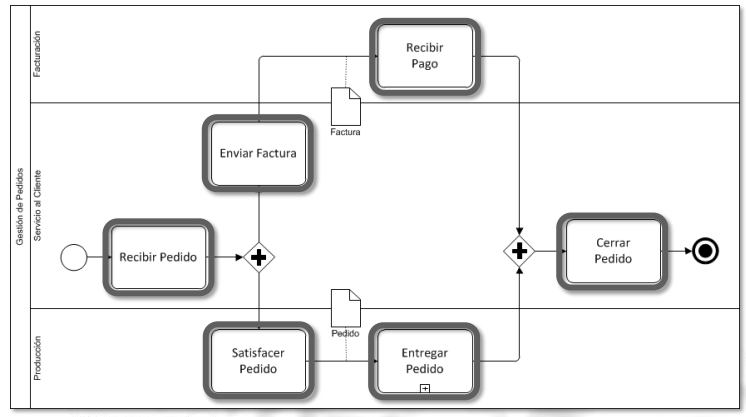
- Key BPMN elements
  - **Task**: any activity which is performed during a business process.



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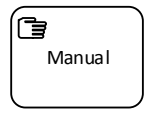
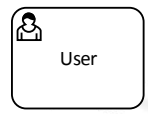
- Key BPMN elements
  - **Task**: different types of tasks in BPMN.



Manual: performed by a person without using any software system. E.g. a telephone technician installing a telephone at a customer location



User: performed by a person using a software system. Usually scheduled through a task list manager. E.g. a phone operator updates a customer record.

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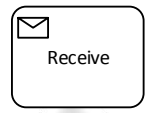
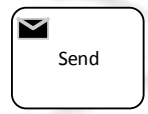
  - **Task**: different types of tasks in BPMN.

Service: performed automatically by a software system. E.g. calculate payroll.



Receive: it waits until a message from an external participant arrives. Equivalent to



Send: it sends a message to an external participant. Equivalent to

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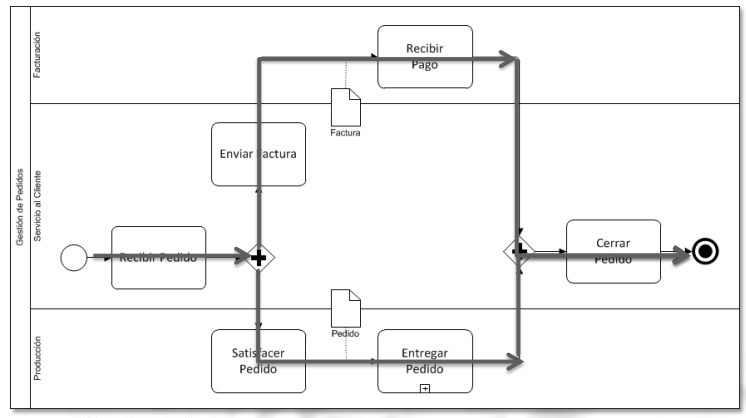
- Key BPMN elements
  - **Flow**: it indicates the order in which the tasks must be performed.



Introduction to Business Process Modeling

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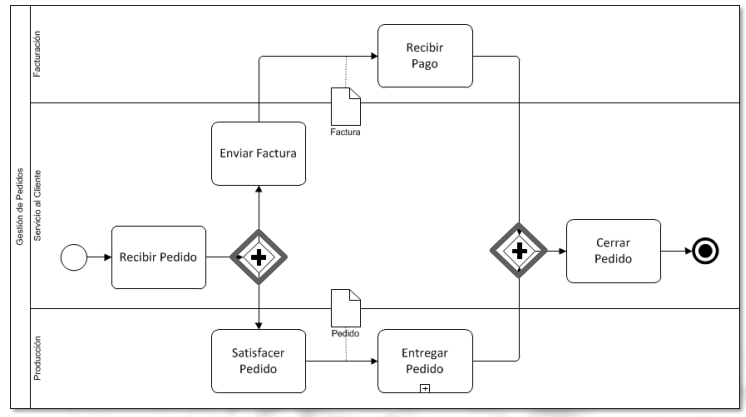
- Key BPMN elements
  - **Gateway**: it represents a **fork** or a **join** in the process flow.



Introduction to Business Process Modeling

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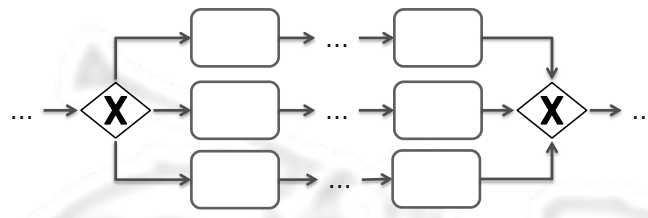
- Key BPMN elements
  - **Gateway**: basic gateway types in BPMN.
    - **Exclusive gateway (fork)**: process flow can take **only one** of several possible paths.
    - **Exclusive gateway (join)**: **at least one** path must be completed before continuing with the process flow.



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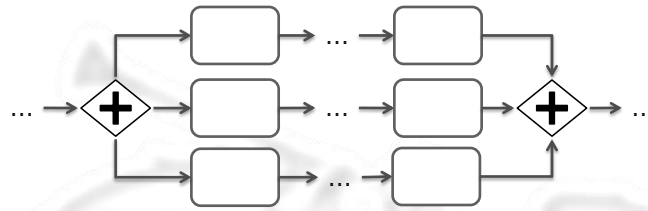
- Key BPMN elements
  - **Gateway**: basic gateway types in BPMN.
    - **Parallel gateway (fork)**: process flow takes **all** possible paths.
    - **Parallel gateway (join)**: **all** paths must be completed before continuing with the process flow.



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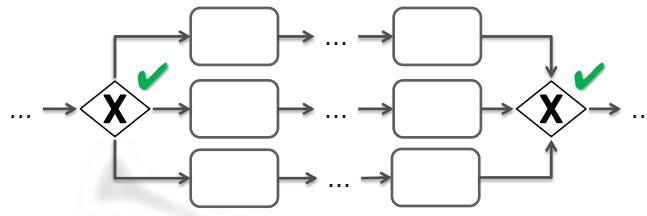
- Key BPMN elements
  - **Gateway**: balanced process models
    - The same type of gateway must be used for forking and joining, i.e. the process flow must be **balanced**.



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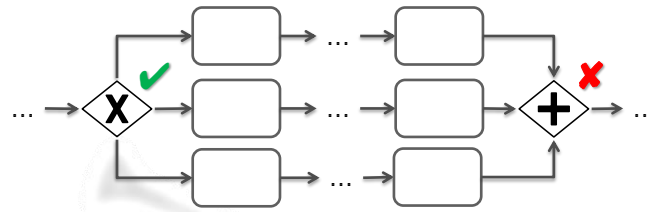

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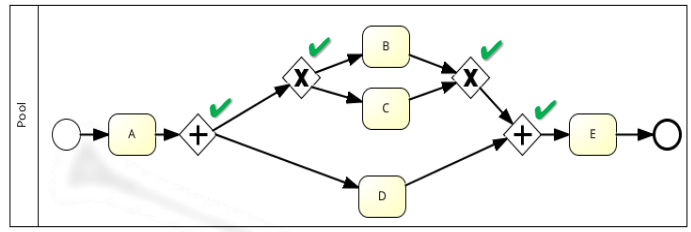

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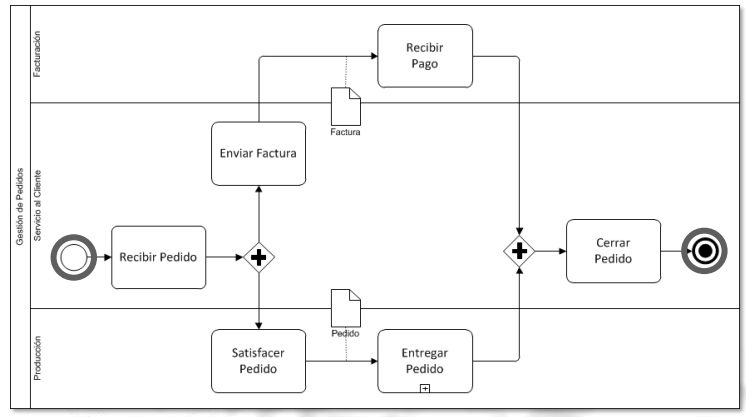
- Key BPMN elements
  - **Events**: they represent the start of a process, its ending, and other type of events.



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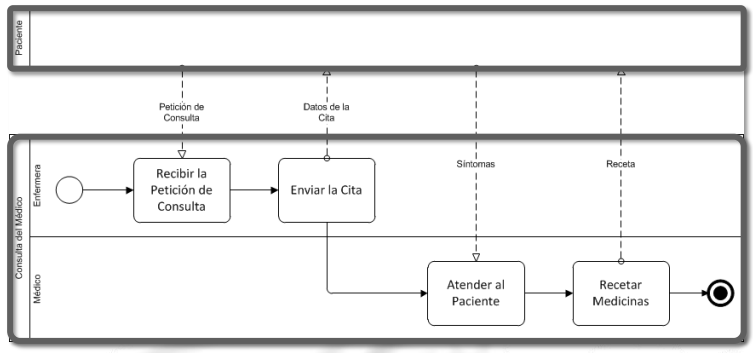
- Key BPMN elements
  - **Pools and swimlanes**: they represent the process organization and the roles performing the tasks.



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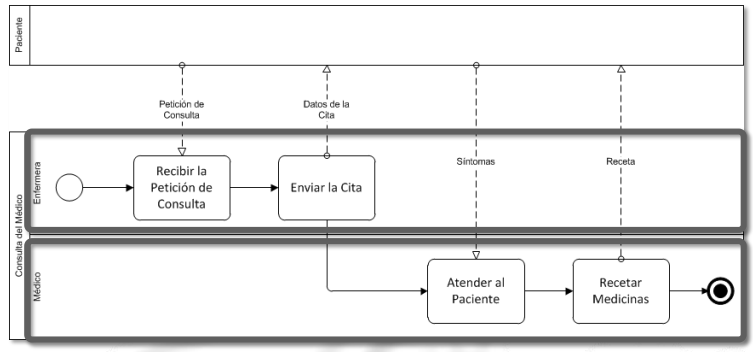

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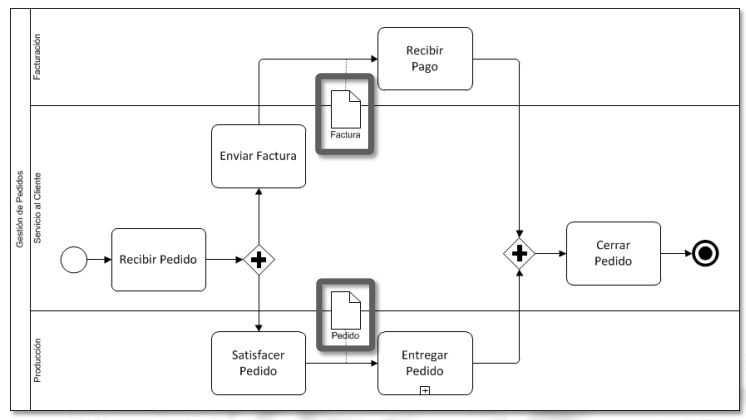
- Basic BPMN elements
  - **Data objects**: information flowing through the process, e.g. documents.



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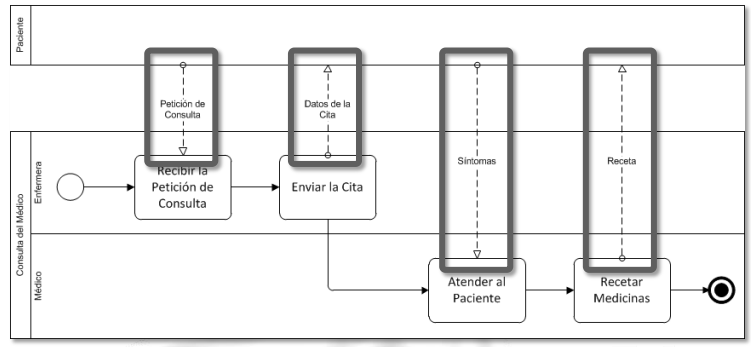
- Basic BPMN elements
  - **Message flows**: they represent communication between two organizations (pools).



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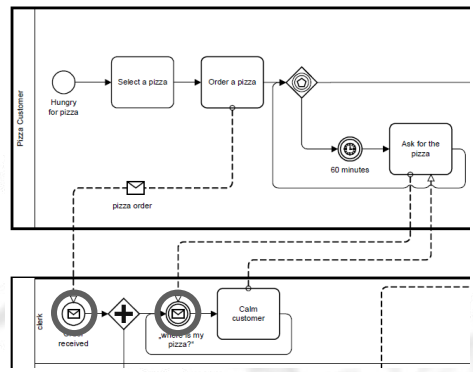
    - Receiving and sending messages can be represented through message **events**.



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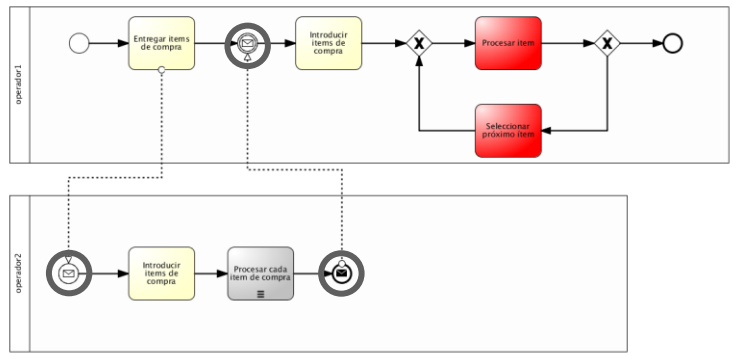

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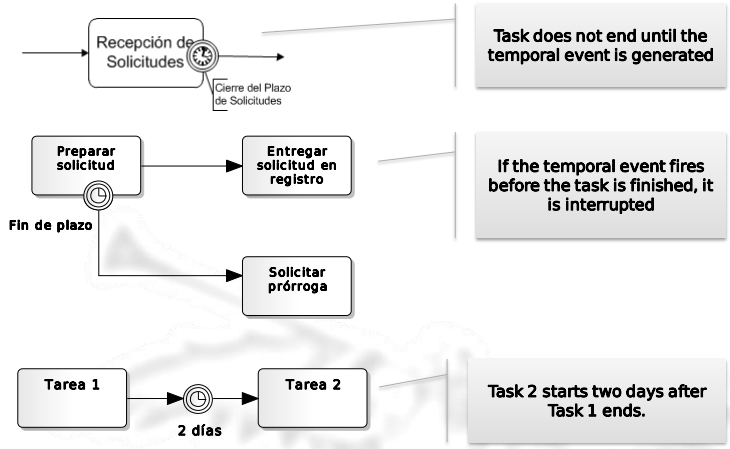
  - **Temporal events**: the most used together with message events.



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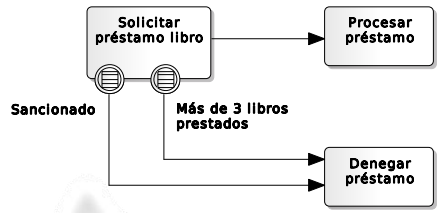
  - **Conditional events**: they are usually associated with **business rules**.



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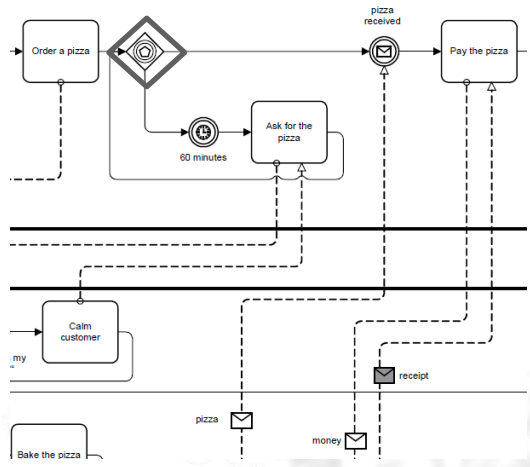
  - **Event gateways**: they select an output flow depending on which event happens first.



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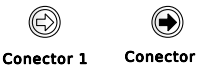
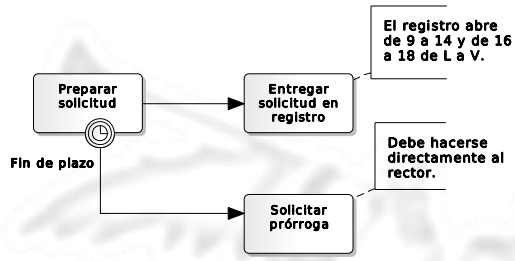
- Basic BPMN elements
  - **Sub-processes**: tasks which contain another business process.
  - **Connectors**: they allow the flow to continue elsewhere in the diagram.
  - **Comments**: they add information to any element in the diagram





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- Bibliography
  - B. Silver, *BPMN Method & Style* (2nd edition)
    - http://brsilver.com/
  - OMG, *BPMN 2.0 by Example*.
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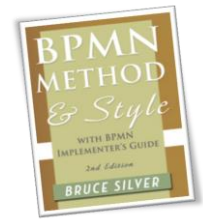

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Introduction to Business Process Modeling

- Comments, suggestions, ...