

Requirements Analysis & Modelling

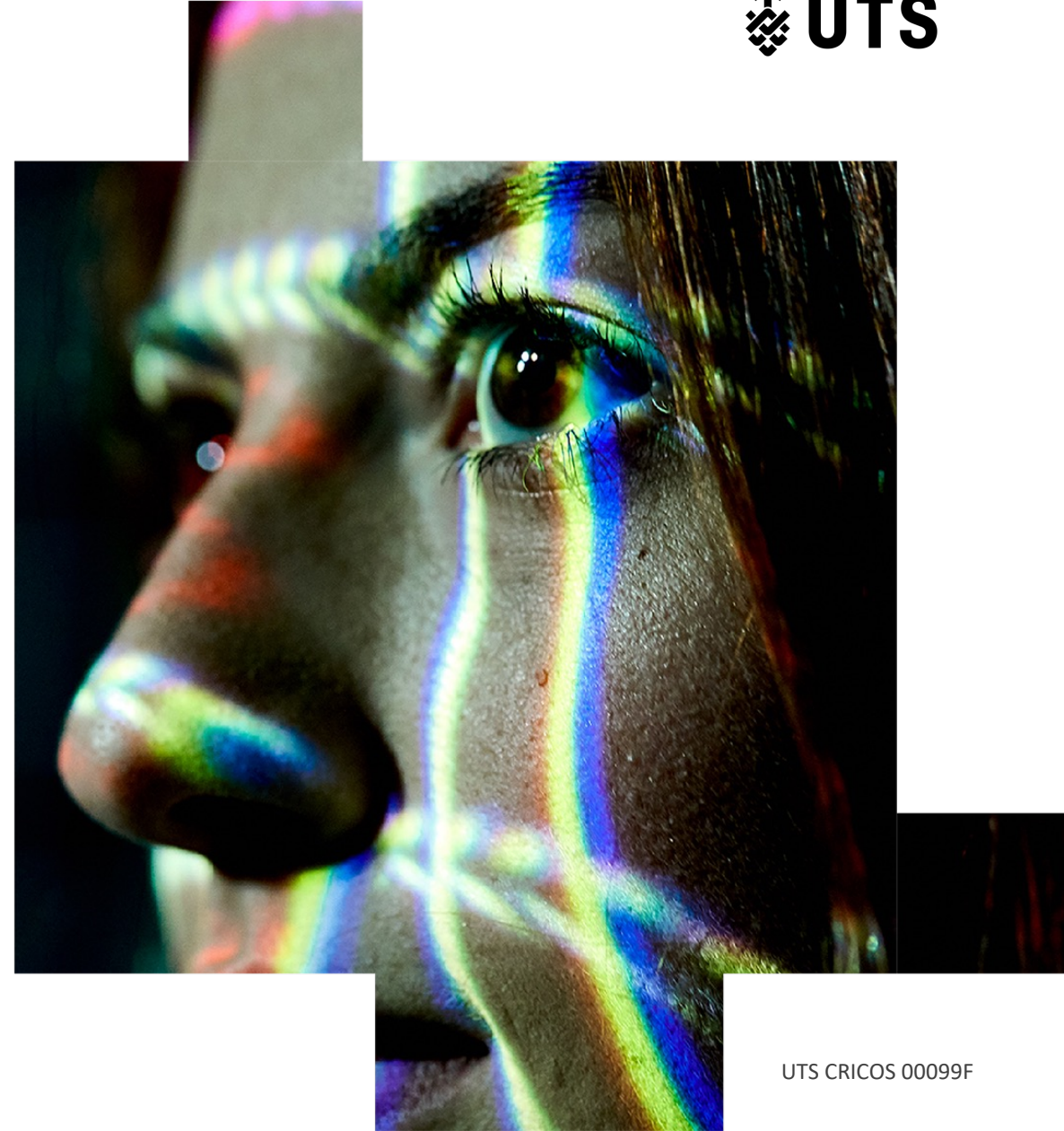
SSTC 2022
Module 2 – Lecture 2

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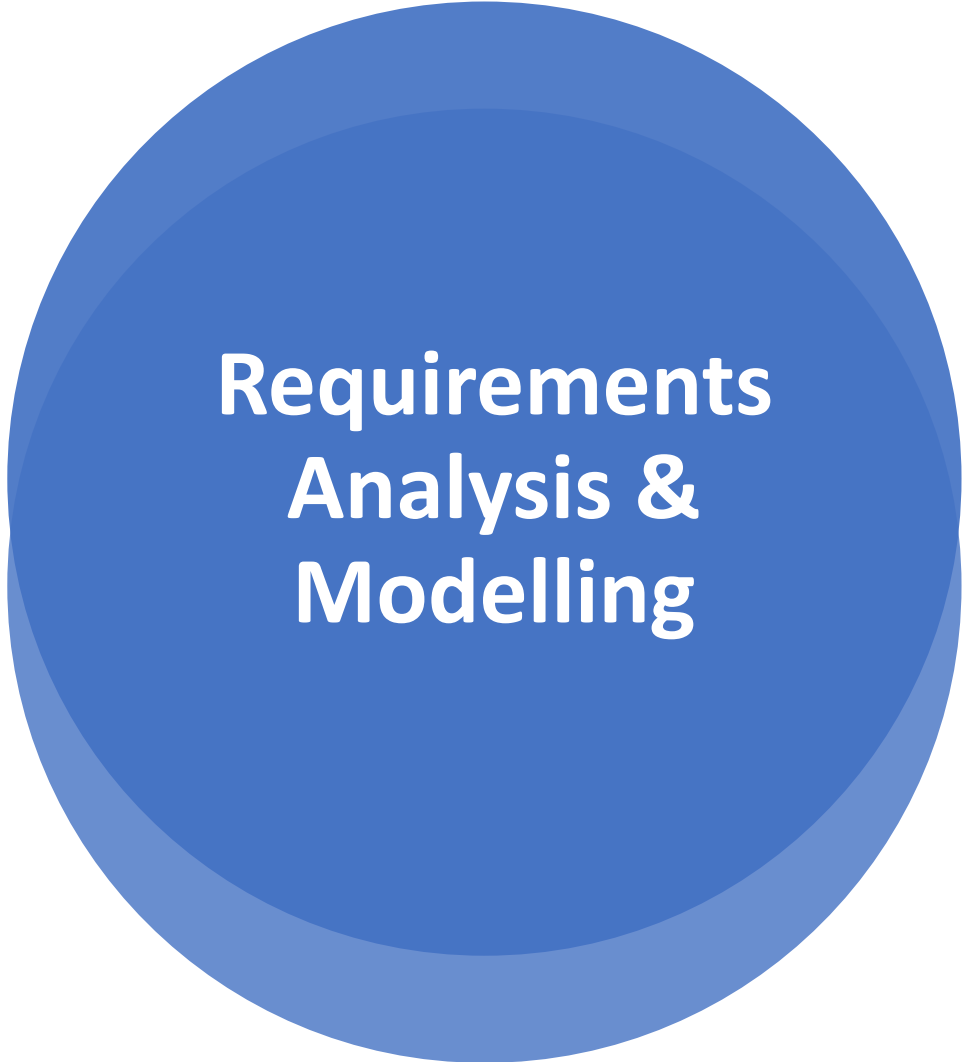
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- Understanding Business Processes
- Business Process Modelling (BPM)
- Context & Context Diagram
- Business Process Modelling Notation (BPMN)



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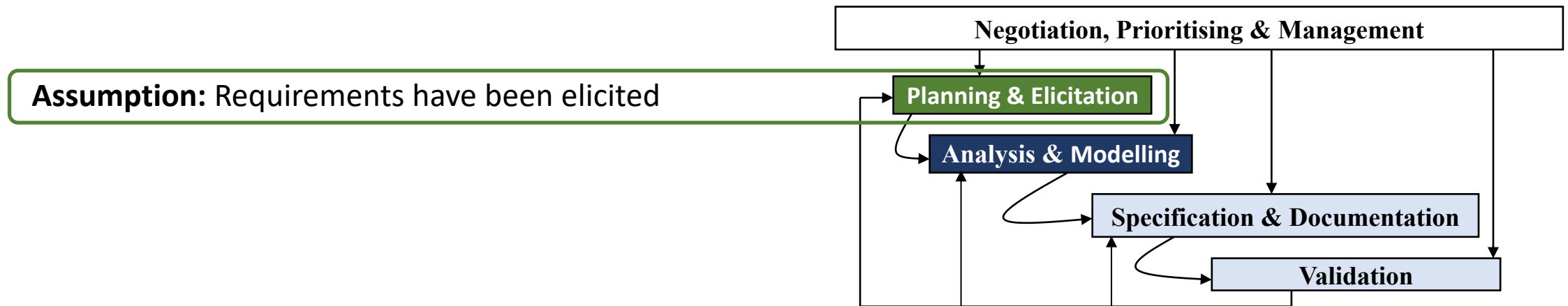


Business Processes

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Objectives

- Understand the working of **business systems** to better specify system and user requirements
- How to model, analyse and understand the **business processes** in an organisation



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Business Processes

A **business process** is a collection of **related, structured activities or tasks** by people or equipment in which a specific sequence produces a service or product.

Business processes occur at **all organizational levels** and may or may not be visible to the customers.

https://en.wikipedia.org/wiki/Business_process

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Business Processes

Some alternative definitions:

1. *A business process is the combination of a set of **activities** within an enterprise with a structure describing their **logical order and dependence**, whose objective is to produce a desired result.*
2. *A business process is a collection of **activities** designed to produce a specific output for a particular customer.*
3. *A business process is thus a specific **ordering of work activities across time and place**, with a beginning, an end, and clearly defined inputs and outputs.*

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Business Processes

- Experts from IT and business engineering disciplines argue that successful **systems development starts with** the understanding of the business processes of an organisation.
- A business process has a strong emphasis on **how the work is done within an organization.**

Business Process Modelling (BPM)

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Business Process Modelling

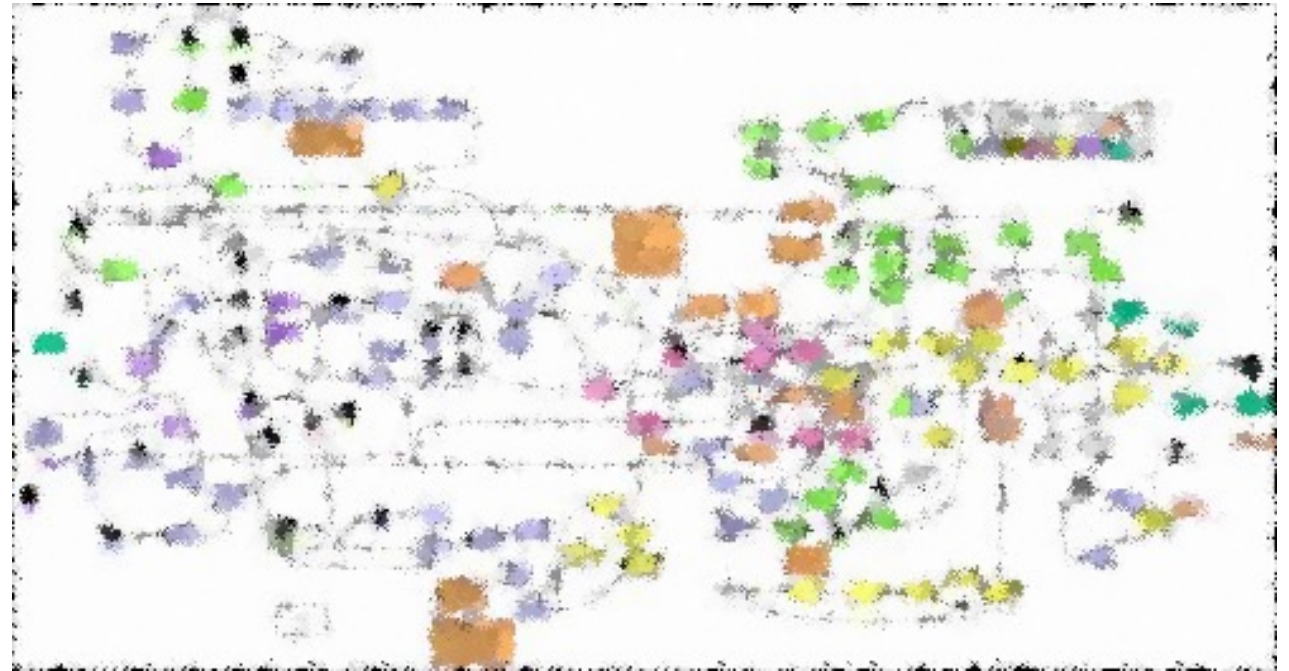
- **Business process modelling (BPM)** in systems engineering is the activity of representing processes of an enterprise, so that the **current process may be analyzed or improved**.
Source: http://en.wikipedia.org/wiki/Business_process_modeling
- Conceptual modelling of business processes is performed to **facilitate the development of software** that supports the business processes
- BPM is used to map out an organization's current (or "as-is") processes to create a baseline for **process improvements and to design future** (or "to-be") processes with those improvements incorporated.
- Modelling of a business process typically shows events, actions and links or connection points, in a logical order from end to end.

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How to approach BPM?

In general terms, Business Processes present a significant level of complexity

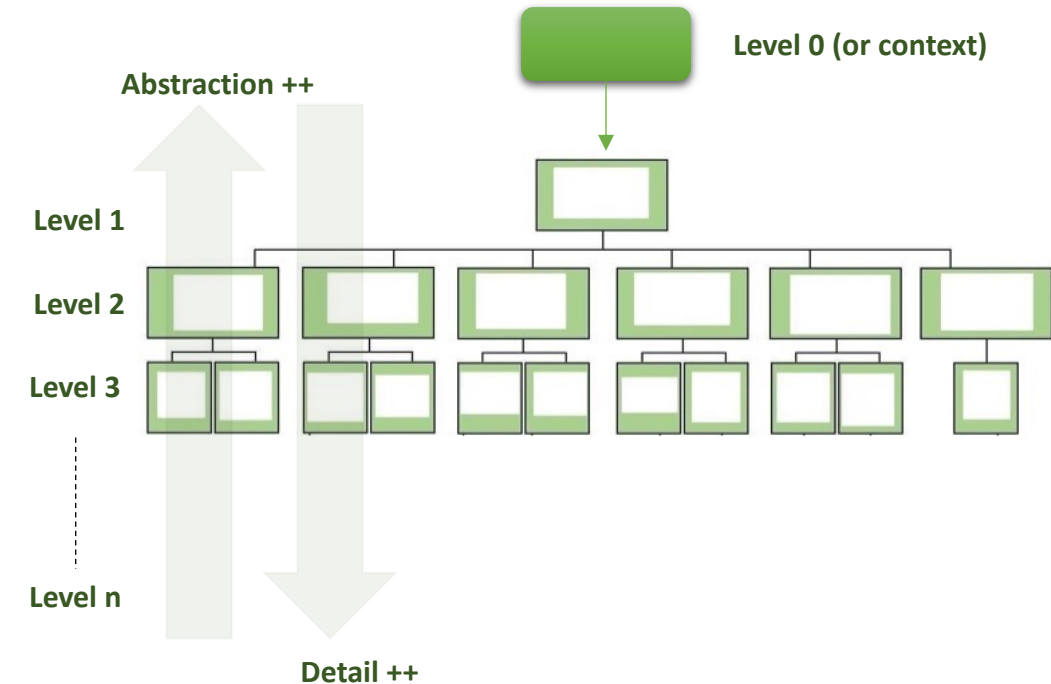
How to deal with complexity?



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Process/System decomposition

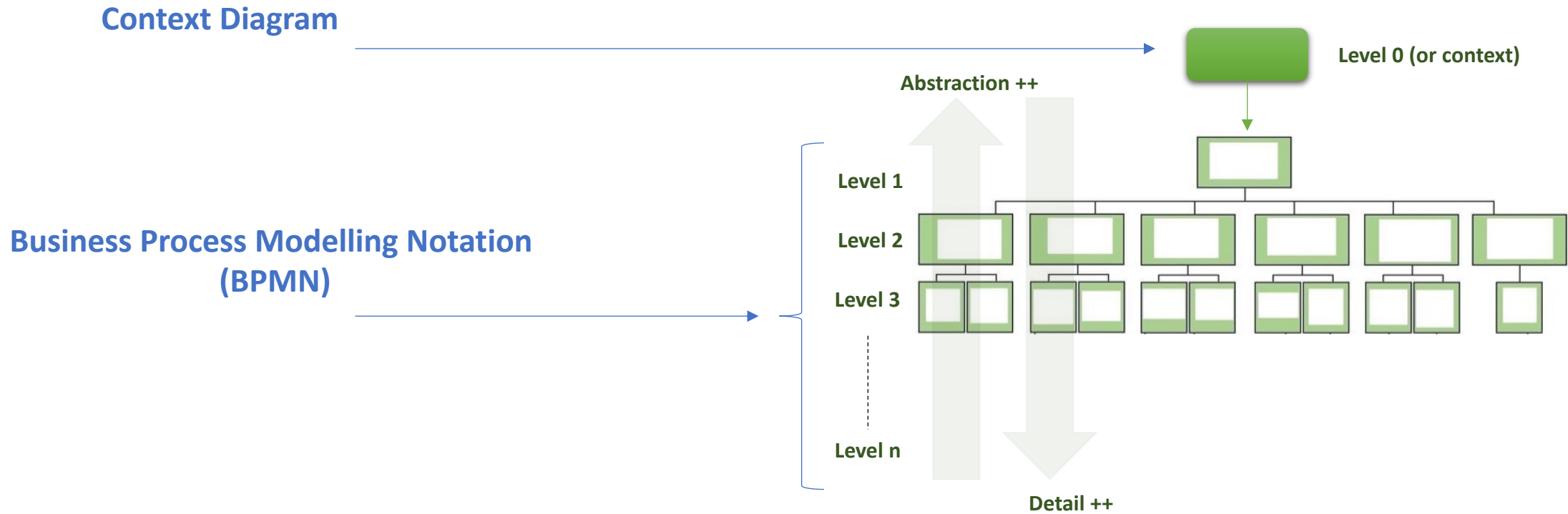
- A large or complex process (or system) is more easily to understand and analyse when broken down using **process decomposition**.
- Decomposition is normally a top-down approach in which the process is **first specified at a high and more abstracted level**; then different entities are decomposed into **smaller and smaller more specific related parts**.



The main purpose of process decomposition is to **break up a large or complex business process (or system) into smaller and more manageable chunks/components (sub-processes and tasks)**. It therefore facilitates understanding of the business process and hence is a useful tool in conducting analysis and design.

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Context Diagram & BPMN



Context Diagram

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Context & Context Diagram

A System Context Diagram (SCD) is a diagram that defines the **boundary between the system**, or part of a system, **and its environment**, showing the entities that interact with it.

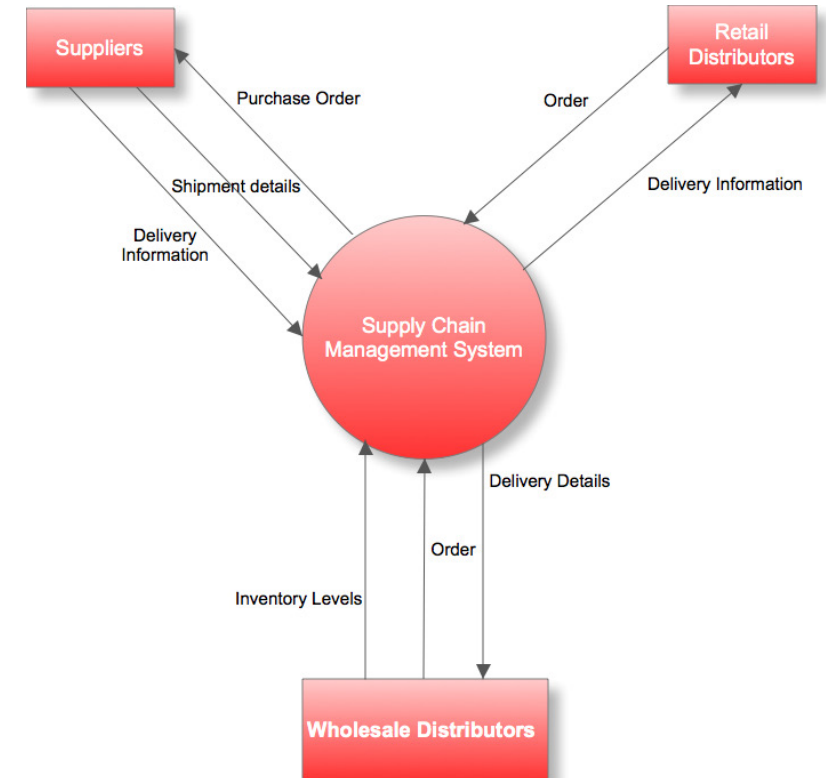
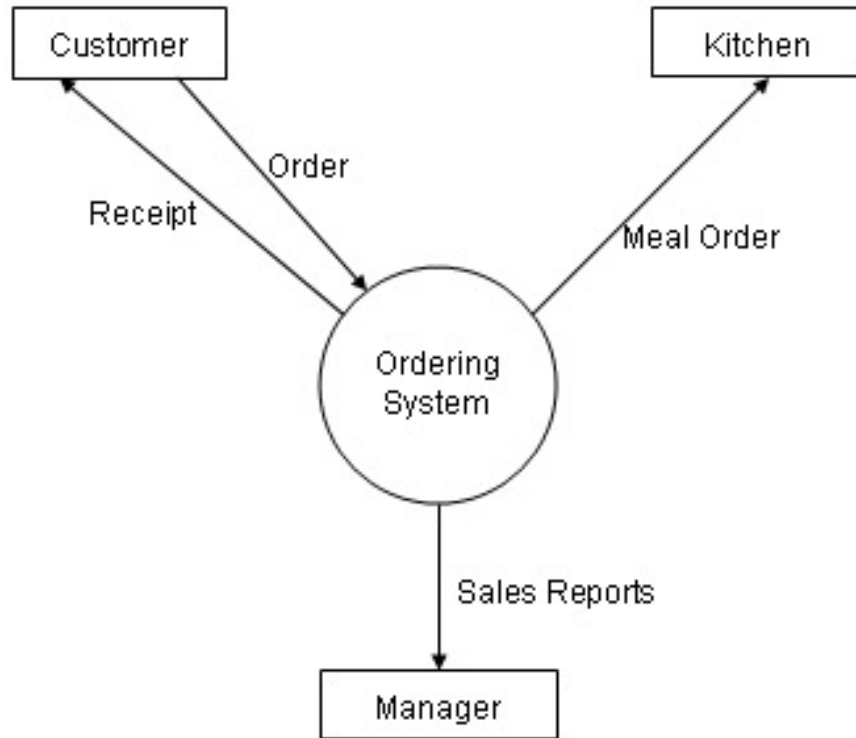
Source: http://en.wikipedia.org/wiki/System_context_diagram

A context diagram shows **(parts/components)**:

- The **system** that is being analysed.
- The **entities** (other systems, people and organisations) that interact with the system.
- The **information/data** (not the processes) that flows between the system and each entity.

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Context & Context Diagram



<http://www.cpanel.stpaulsscience.org/gceict/specifications/aqa/unit3/devsolutions/context/intro.htm>

<http://businessanalystlearnings.com/ba-techniques>

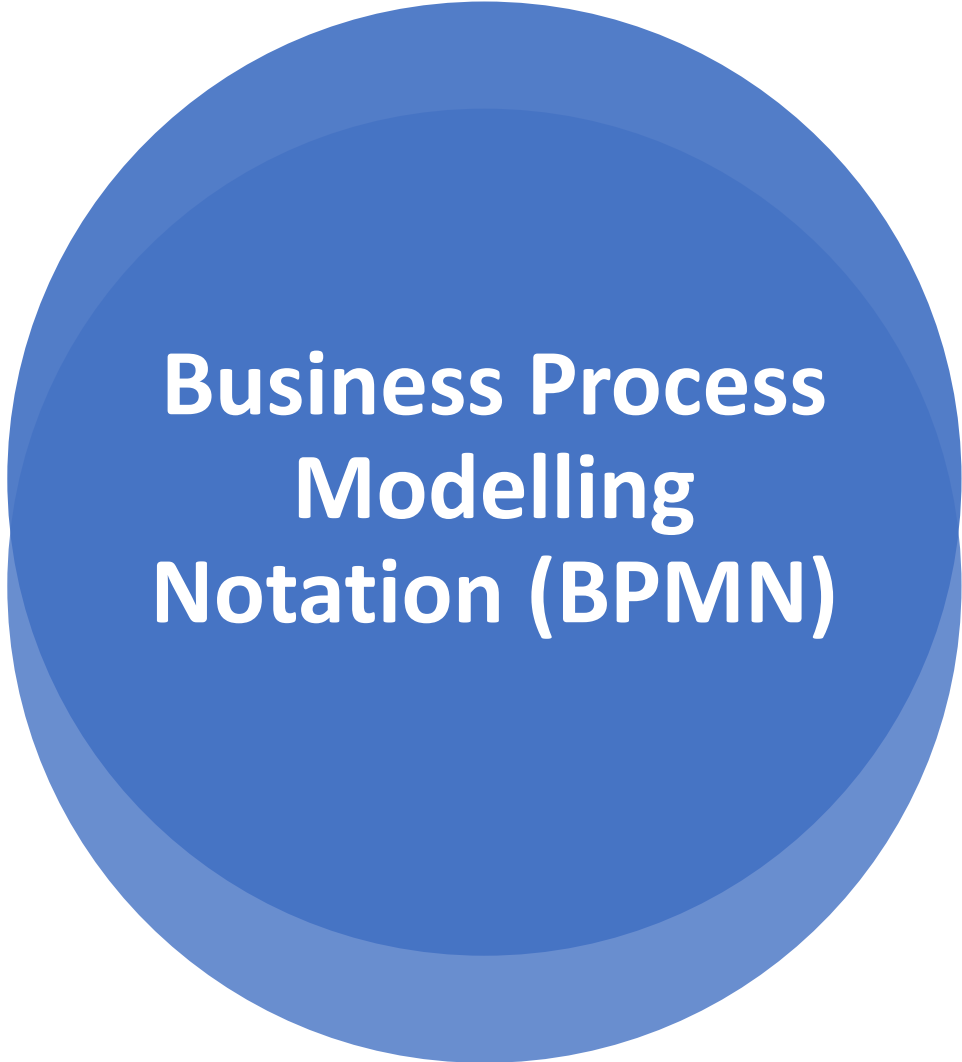
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Context & Context Diagram

A Context Diagram can:

- help define and agree the **scope or boundary** of the system of interest
- provide a simple **high-level picture** or birds eye view of the system of interest
- help identify the **elements (including also other systems) in the environment of the system** of interest that it interacts with
- All systems operate in an **environment**; failure to pay attention to that environment will lead to failure

The context diagram **depicts the project scope at a high level of abstraction** but reveals nothing about the system functionality, architecture, or look-and-feel. Nor does it explicitly identify the features or functionality that are in or out of scope. The functional behavior of the system is merely implied by the labeled flows that connect the system to the external entities.



Business Process Modelling Notation (BPMN)



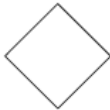


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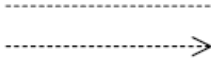





Business Process Modelling Notation (BPMN)

- Business Process Modelling Notation (BPMN) is a **standard notation** used for business process modeling.
- As a standard notation, it is expected to be **readily understandable by all users**, including analysts, technical developers, as well as business people.
- BPMN defines a **Business Process Diagram (BPD)**, which is based on a flowcharting technique tailored for creating **graphical models** of business process operations.

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Business Process Modelling Notation (BPMN)

Element	Description	Notation
Event	An event is something that “happens” during the course of a business process. These events affect the flow of the process and usually have a cause (trigger) or an impact (result). Events are circles with open centers to allow internal markers to differentiate different triggers or results. There are three types of Events, based on when they affect the flow: Start, Intermediate, and End.	
Activity	An activity is a generic term for work that company performs. An activity can be atomic or non-atomic (compound). The types of activities that are a part of a Process Model are: Process, Sub-Process, and Task. Tasks and Sub-Processes are rounded rectangles. Processes are either unbounded or a contained within a Pool.	
Gateway	A Gateway is used to control the divergence and convergence of Sequence Flow. Thus, it will determine branching, forking, merging, and joining of paths. Internal Markers will indicate the type of behavior control.	
Sequence Flow	A Sequence Flow is used to show the order that activities will be performed in a Process.	
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 the Diagram will represent the two participants (e.g., business entities or business roles).	

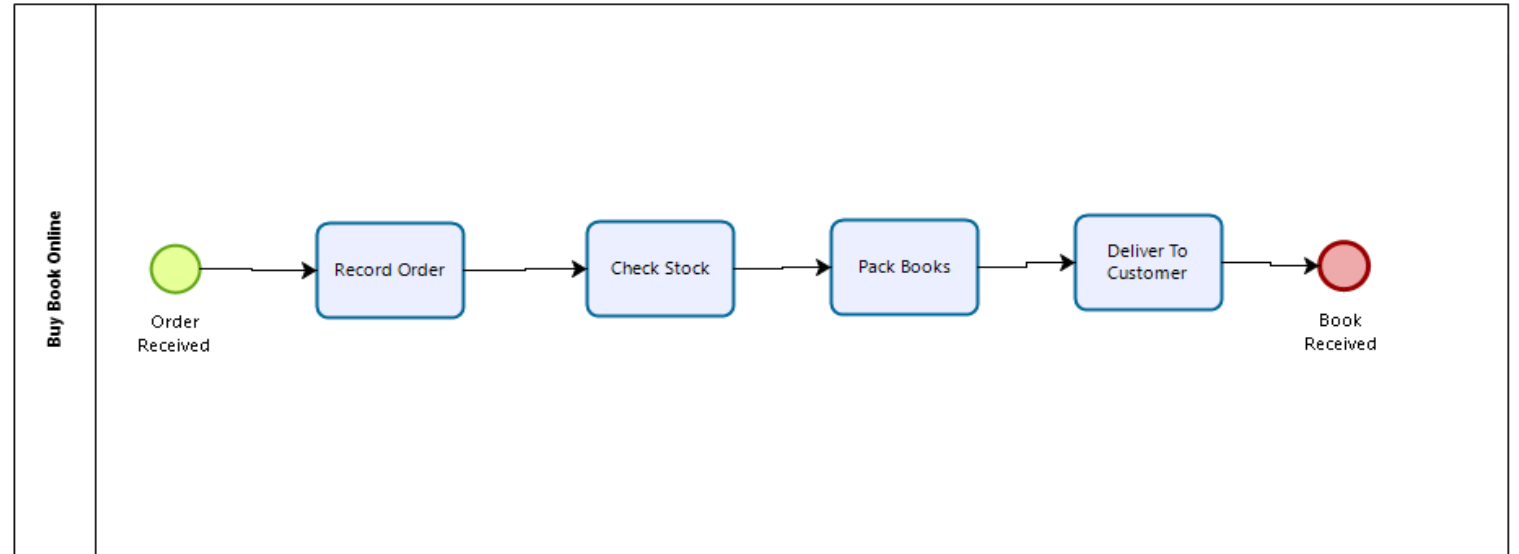
Association	An Association is used to associate information with Flow Objects. Text and graphical non-Flow Objects can be associated with the Flow Objects.	
Pool	A Pool represents a Participant in a Process. It is also acts as a “swimlane” and a graphical container for partitioning a set of activities from other Pools, usually in the context of B2B situations.	
Lane	A Lane is a sub-partition within a Pool and will extend the entire length of the Pool, either vertically or horizontally. Lanes are used to organize and categorize activities.	
Data Object	Data Objects are considered Artifacts because they do not have any direct effect on the Sequence Flow or Message Flow of the Process, but they do provide information about what activities require to be performed and/or what they produce.	
Group (a box around a group of objects for documentation purposes)	A grouping of activities that does not affect the Sequence Flow. 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.	
Text Annotation (attached with an Association)	Text Annotations are a mechanism for a modeler to provide additional information for the reader of a BPMN Diagram.	

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Business Process Modelling Notation (BPMN): some examples

Typical “Level 1”

A simple sequence of activities in this specific case.



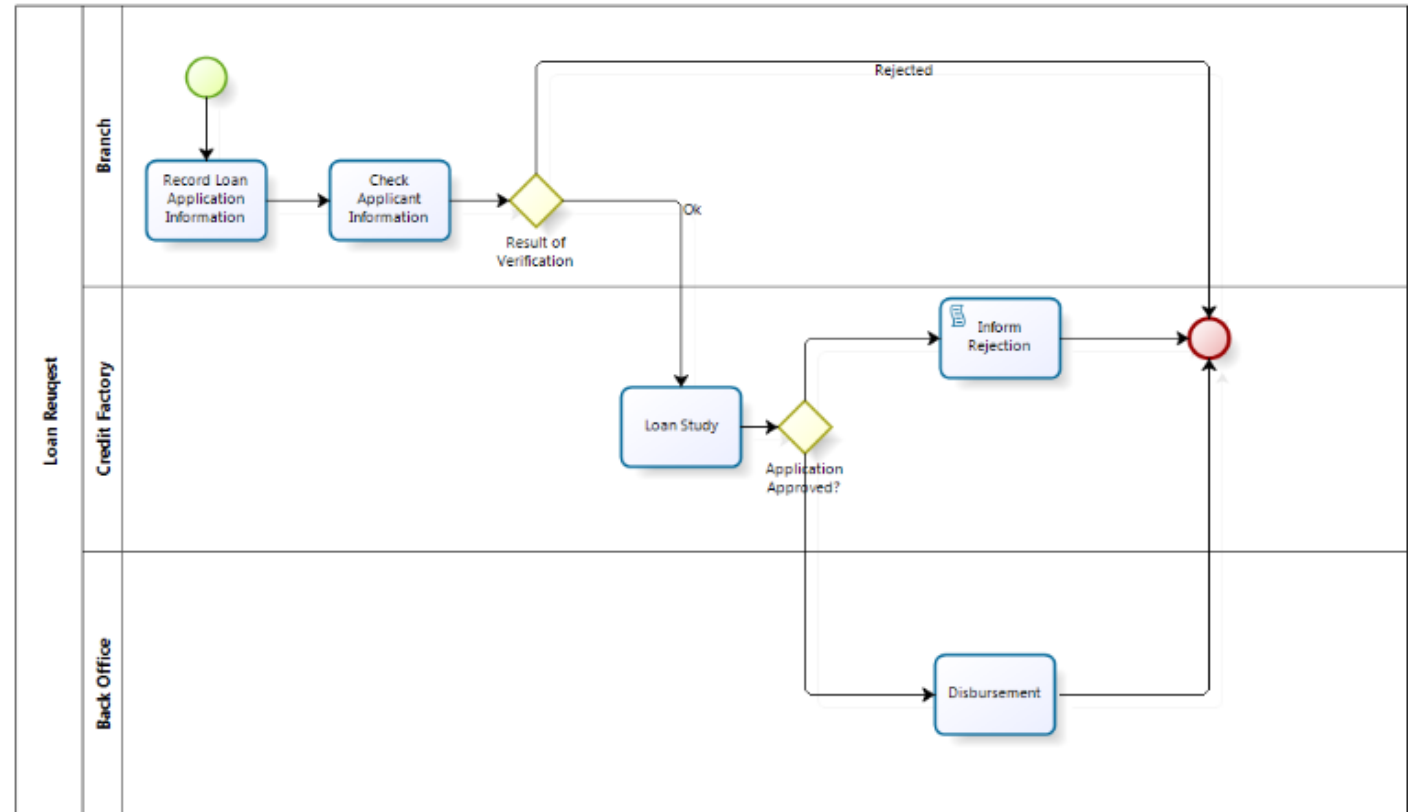
Regardless of the level, any process should have a **start and end events**.

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Business Process Modelling Notation (BPMN): some examples

Using more BPMN elements..

Process involving multiple
“internal” participants (Branch,
Credit Factory, Back Office)

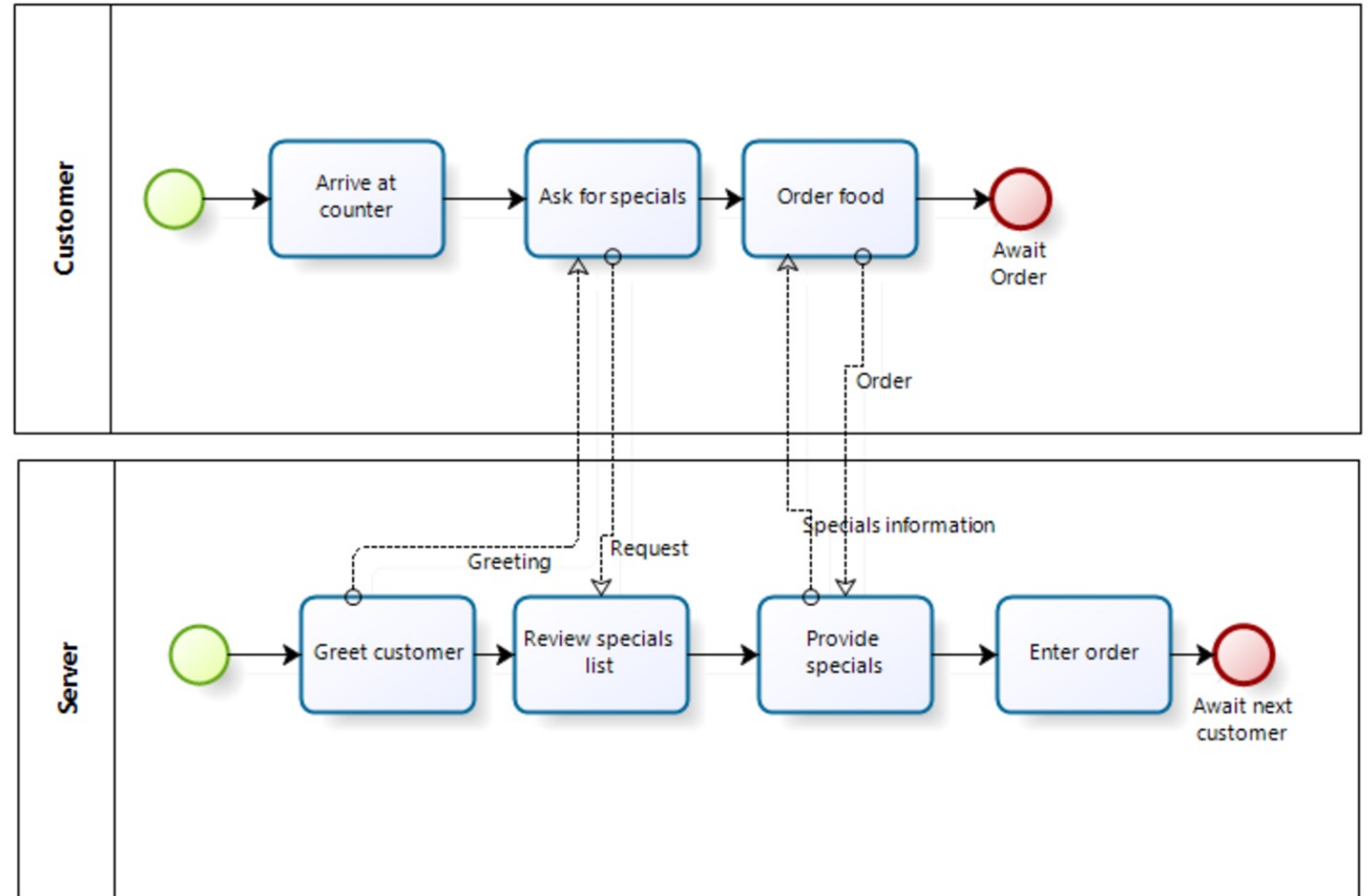


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Business Process Modelling Notation (BPMN): some examples

Interactions across different
pools...

“Order Food”

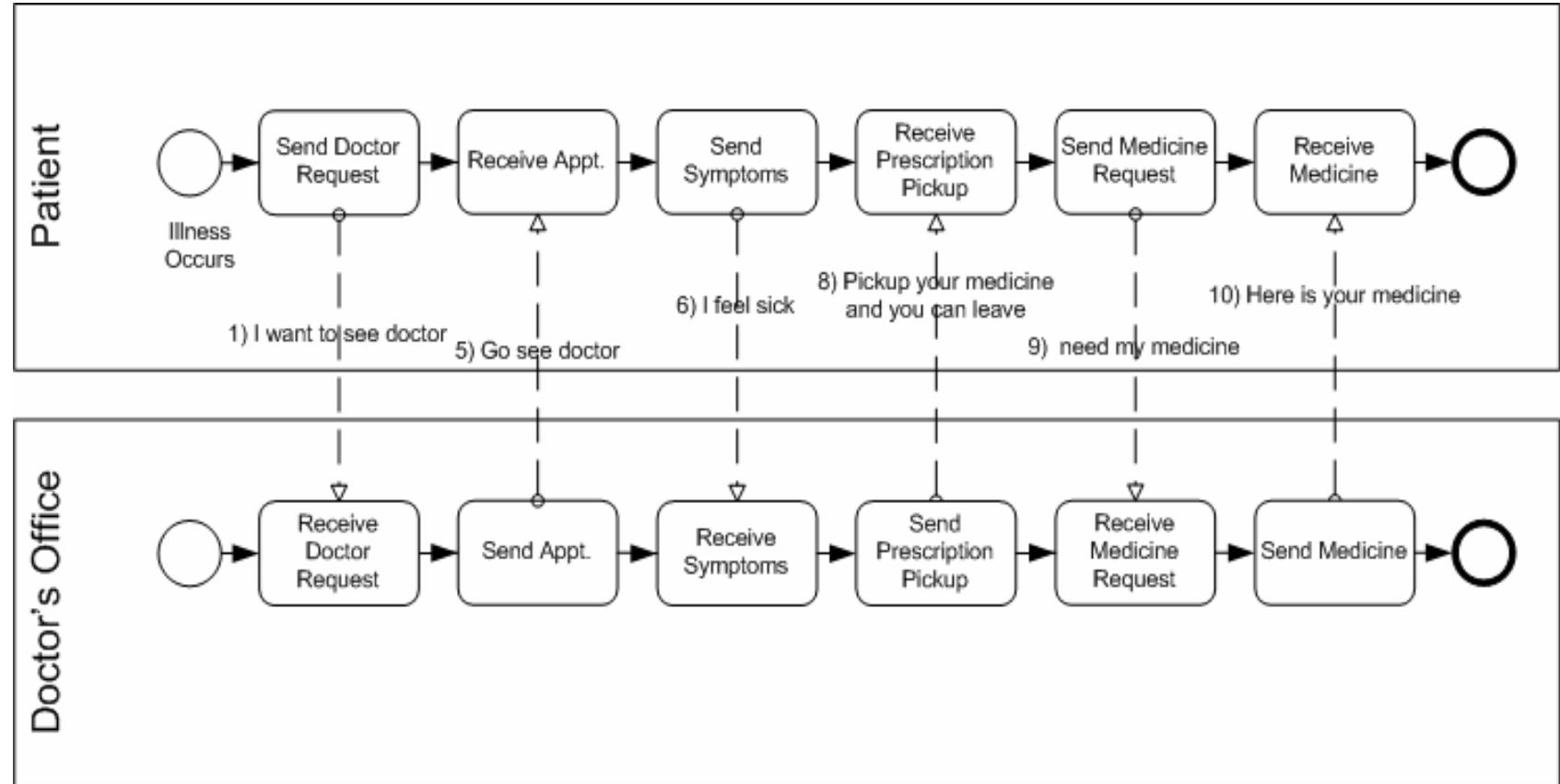


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Business Process Modelling Notation (BPMN): some examples

Interactions across different
pools...

Patient/Doctor

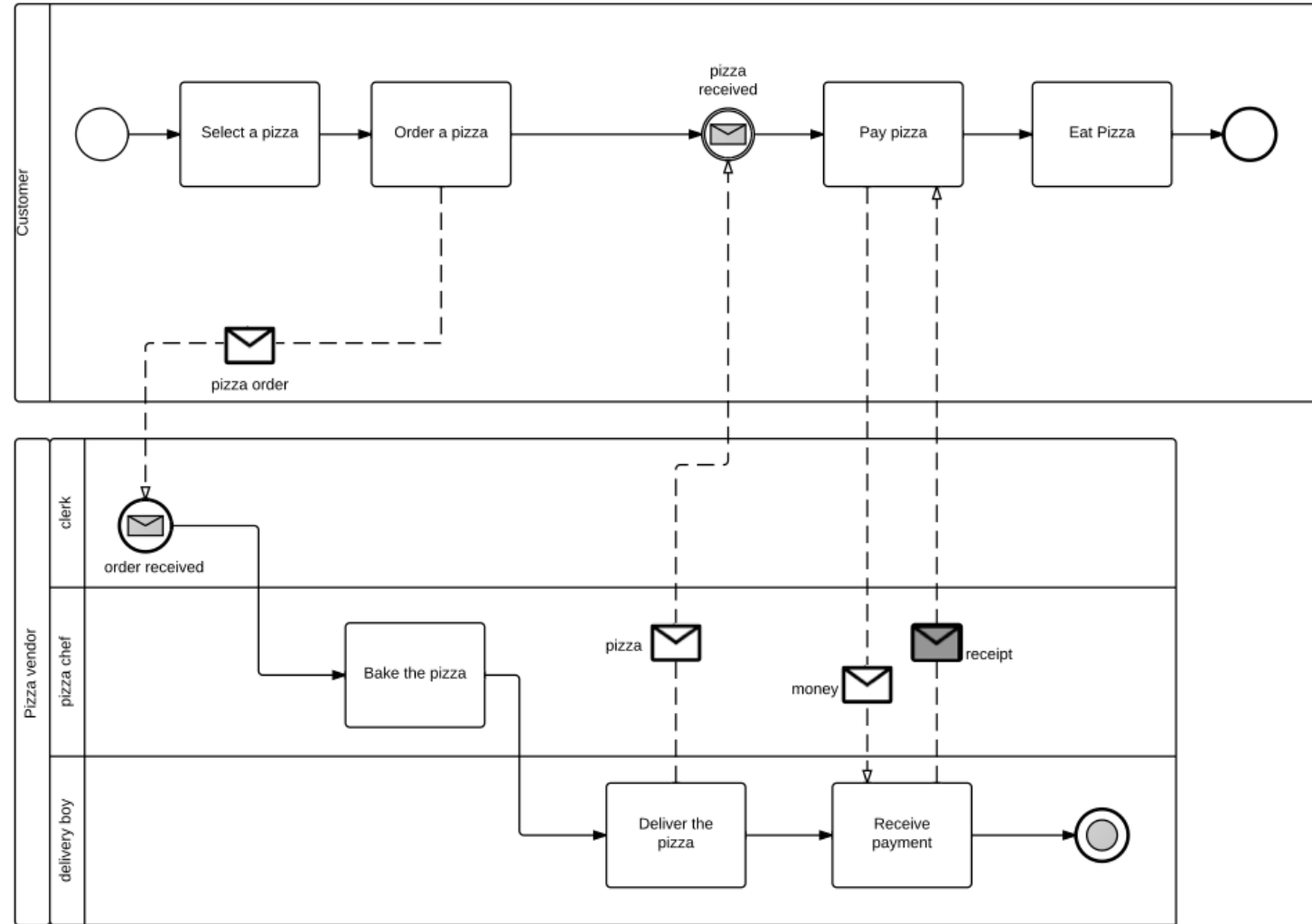


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Business Process Modelling Notation (BPMN): some examples

Data Object

Patient/Doctor



Thank You!