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Business Process Modelling Notation – A tutorial

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Tutorial Objectives

This tutorial will cover...

- **BPMN Timeline**
- **What BPMN is, Process Modelling**
- **BPMN Essentials**
- **Orchestration, Choreography**
- **Examples**
- **Wrap Up, Future Directions**

References

- **BPMN Official Page**
<http://www.bpmn.org/>
- **BPMN Wikipedia**
http://en.wikipedia.org/wiki/Business_Process_Modeling_Notation
- **BPMN Specification (v2.0 Beta 2)**
<http://www.omg.org/spec/BPMN/Current/>
- **BPMN Specification (v1.2 Formal)**
<http://www.omg.org/spec/BPMN/1.2/>
- **BPMN Examples (v2.0 Beta 2)**
<http://www.omg.org/spec/BPMN/2.0/examples/PDF>

BPMN Timeline

- ⌚ **Business Process Management Initiative developed BPML (BPMI now part of OMG)**
 - ▣ Proposed graphical language for BPM, combined with execution semantics
- ⌚ **Implementation difficulties, semantic requirements**
- ⌚ **BPML replaced with:**
 - ▣ BPEL (or BPEL4WS) for target execution language
 - ▣ BPMN for graphical notation
- ⌚ **History**
 - ▣ August 2001 – Notation working group formed (35 companies)
 - ▣ May 2004 – BPMN 1.0 published under BPMI
 - ▣ 2005 – BPMI becomes part of OMG
 - ▣ Feb 2006 – BPMN 1.0 formalised as an OMG specification
 - ▣ Jan 2008 – BPMN 1.1 released
 - ▣ Jan 2009 – BPMN 1.2 released
 - ▣ Aug 2009 – BPMN 2.0 Beta 1 released
 - ▣ May 2010 – BPMN 2.0 Beta 2 released
 - ▣ Finalisation & Adoption

What Is BPMN?

● **BPMN is...**

- A Graphical modelling language, with symbols, relationships and attributes for the purpose of process modelling
- Expression of processes generated into executable processes (BPEL)
- Expression of processes for ‘general execution’ (Human, human-operated)
- Simple, palatable language – ‘flowchart-like’ non-IT practitioner consumption

● **BPMN is not...**

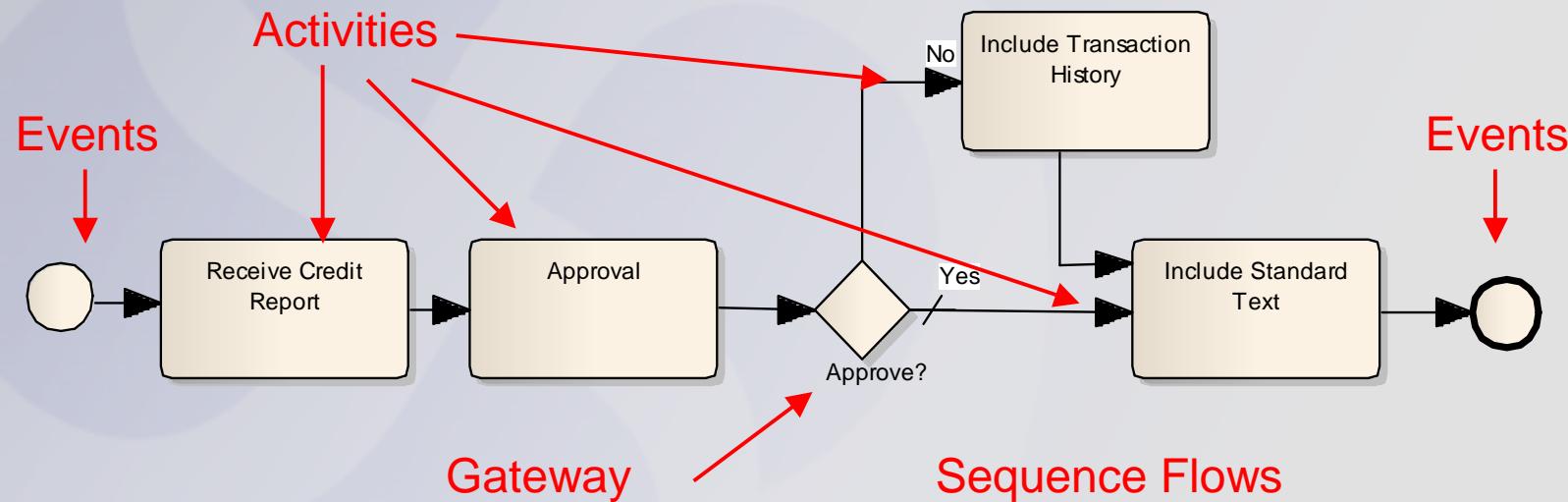
- A methodology, process, framework
- Complex, usable in subsets
- *Metamodel
- *Serialization specification

* Exists in BPMN 2.0 (“was-not, until recently...”)

BPMN & Process Modelling

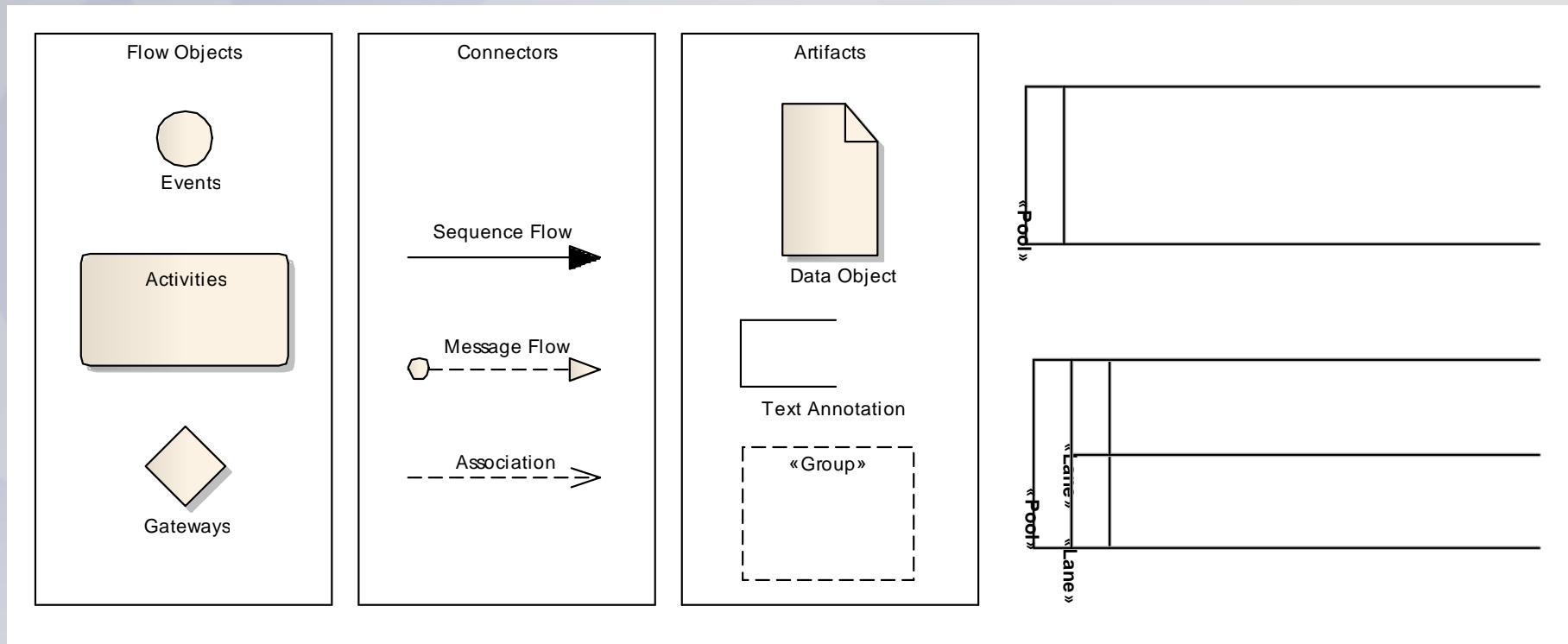
- **Process Modelling - capture of ordered sequences of business activities & info**
- **Business Processes – description of how a business pursues its objectives**
 - Process Maps: simple flow charts of high-level activities
 - Process Descriptions: flow charts with more information (not enough for full realisation)
 - Process Model: flow charts with enough information for analysis, simulation, execution
- **BPMN is flexible to handle all variants of BP**
- **...to understand the business processes of the organisation to innovate...**

BPMN Essentials

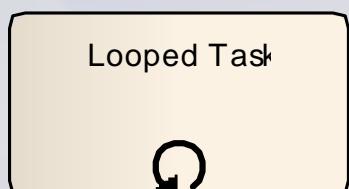
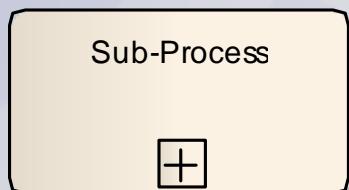
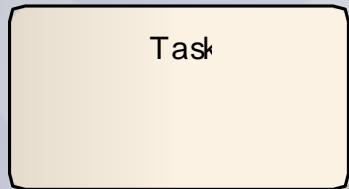


- Logical process ‘flow’, finite start and end points
- Diamond – decision point? yes/no paths for an extra step
- Rounded boxes must therefore ‘do stuff’

BPMN Essentials



BPMN Essentials - Activities



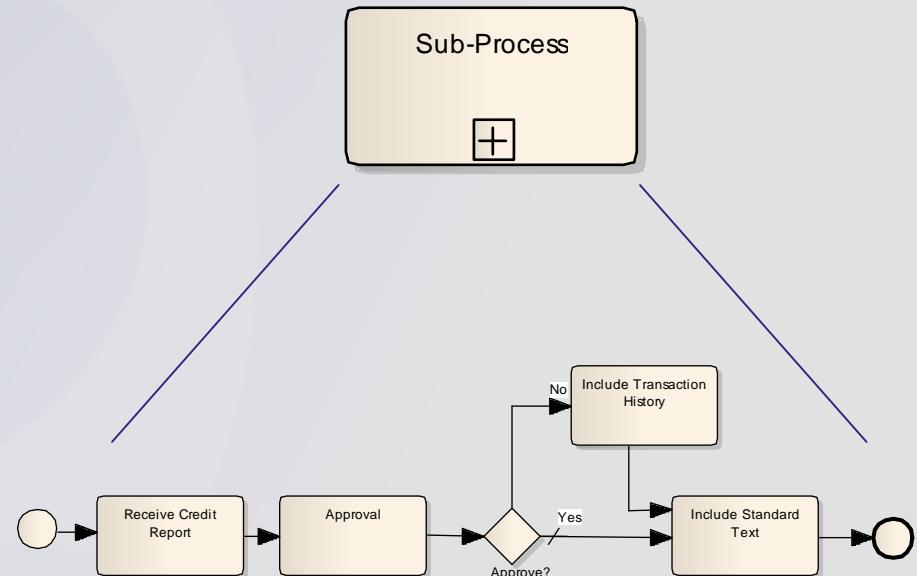
BPMN Activity

- Work performed within a business process
- Atomic or composite
- Used to model Tasks, Sub-processes
- Can iterate (loop)

BPMN Essentials - Activities

Sub-Processes

- Hierarchical process development
- Have an ‘inner working model’
- Collapse/expand to show and hide finer level of detail



Embedded, independent, reusable

BPMN Essentials - Events



Start



Intermediate



End



Events

- Something that 'happens' in a process
- Affect the flow of a process



Have a trigger or result



Boundary determines the type of event

BPMN Essentials - Events

Start Event

- Beginning of a process
- Different triggers that start the process
- ‘None’ Start Event
 - Undefined trigger to start of process
 - Entry point to a Sub Process



None



Message



Timer



Error



Rule



Link



Terminate

BPMN Essentials - Events

Intermediate Event

- Occur after a process has started, but before it ends
- Placed in the normal process flow or attached to boundary of an activity



None



Message



Timer



Error



Rule



Link



Terminate

BPMN Essentials - Events

End Event

- End of a process
- “Results” denote the ‘final step’ in the process



None



Message



Timer



Error



Rule



Link



Terminate

BPMN Essentials - Gateways



Exclusive (Data)



Exclusive (Event)



Inclusive



Complex



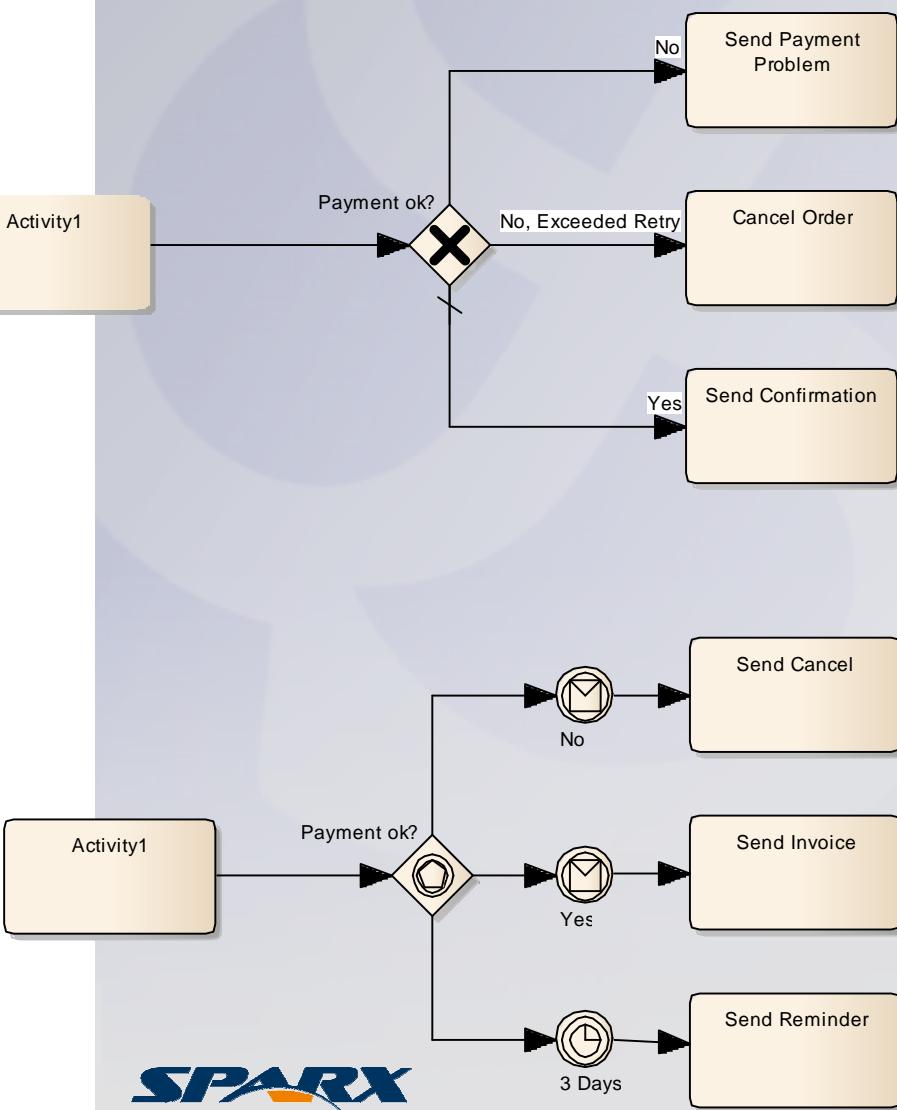
Parallel



Gateways

- Controls sequence flow within a process at a point of divergence or convergence
- Gateways split and merge flows

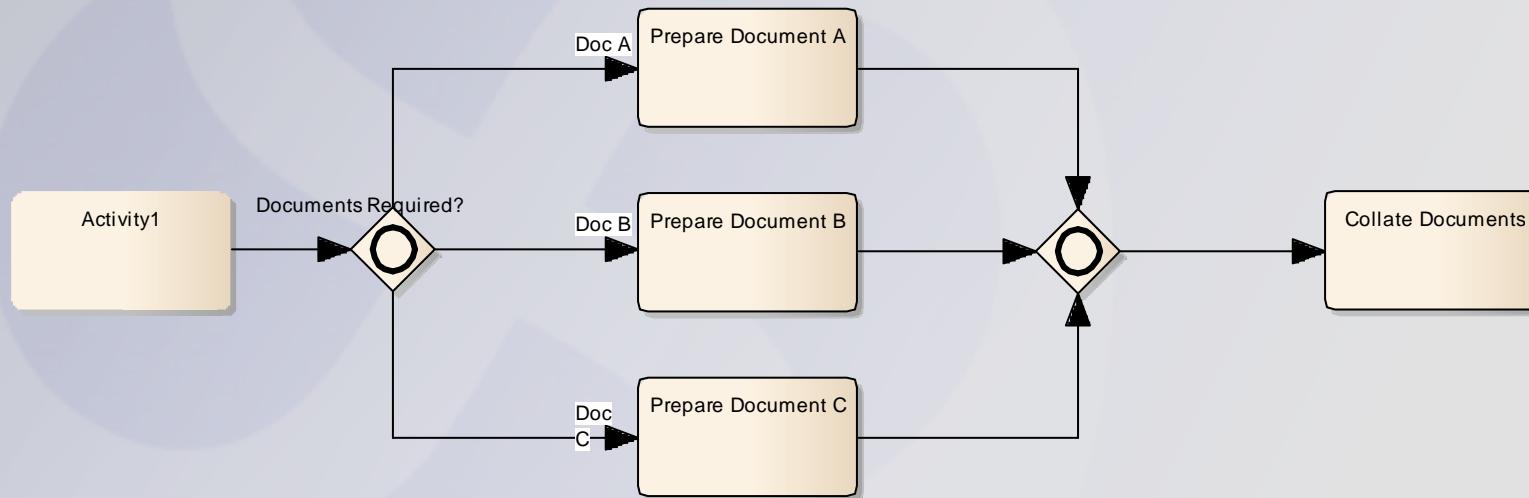
BPMN Essentials - Gateways



Exclusive Gateway

- A Decision control point
- Only one outgoing path selected
- Decision mechanisms:
 - Data – using condition expressions (first affirmative)
 - Event – receiving alternate messages (first received)

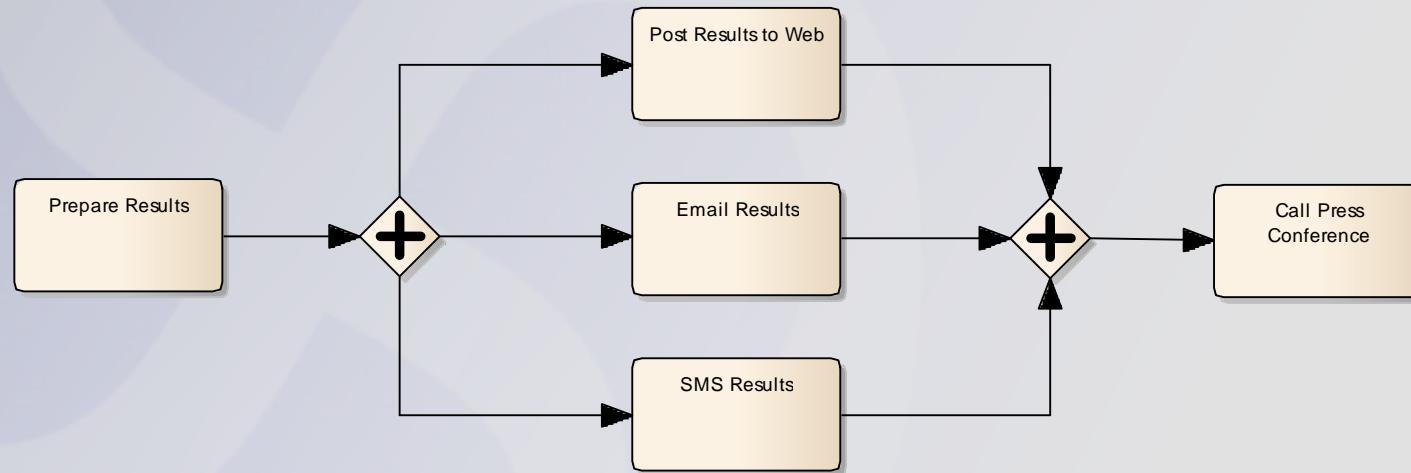
BPMN Essentials - Gateways



Inclusive Gateway

- More than one outcome possible
- Corresponding merge gateway

BPMN Essentials - Gateways



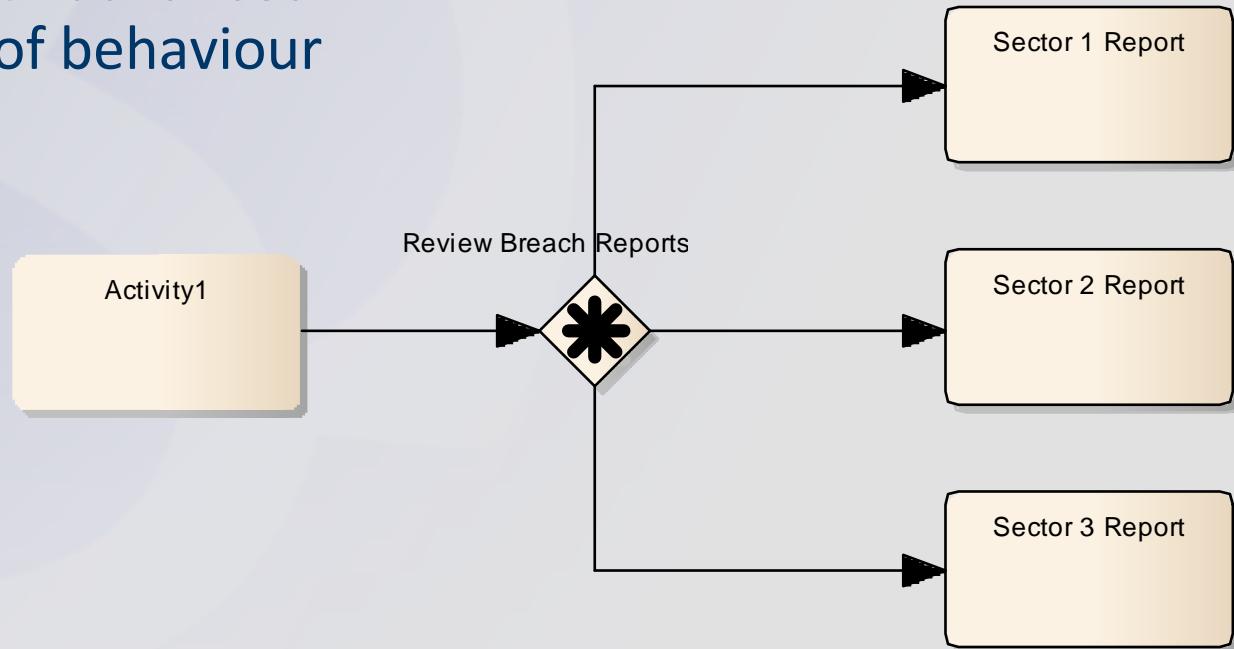
Parallel Gateway

- Multiple parallel paths are executed
- No causality on branches
- Also used as a synchronisation point

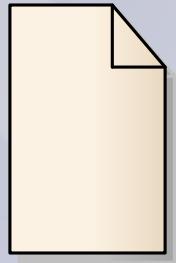
BPMN Essentials - Gateways

Complex Gateway

- Decision with advanced definitions of behaviour



BPMN Essentials - Artifacts



Data Object



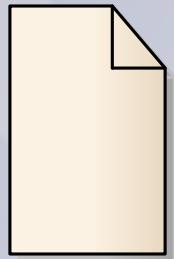
Artifacts

- Convey information beyond the process itself
- Data Objects, Groups, Annotations
- ‘Extension Point’ for BPMN

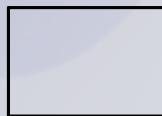


Not part of the process ‘Flow’

BPMN Essentials - Artifacts



Data Object



Data Object

- Used to show use of objects in Process
- Data – Inputs, Outputs
- Document – capturing document state within process



Text Annotation

- Callout for textual comment



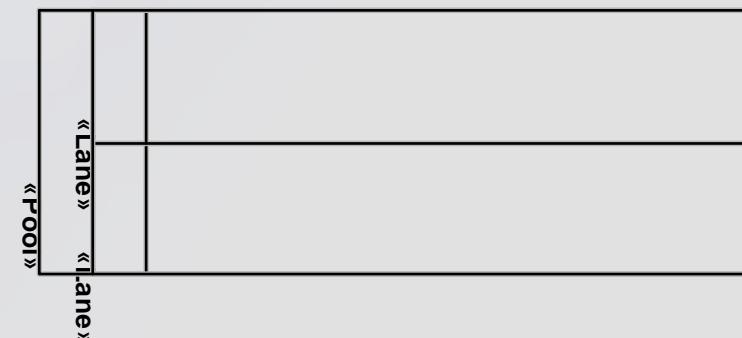
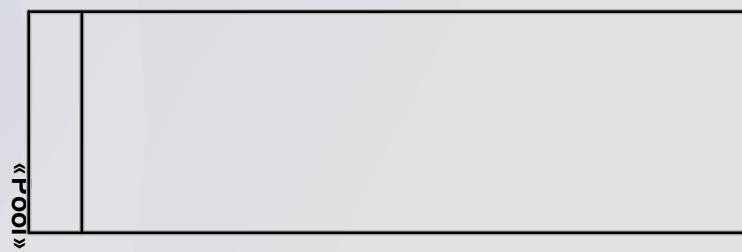
Group

- Annotation that highlights key aspects of process

BPMN Essentials - Swimlanes

Swimlanes

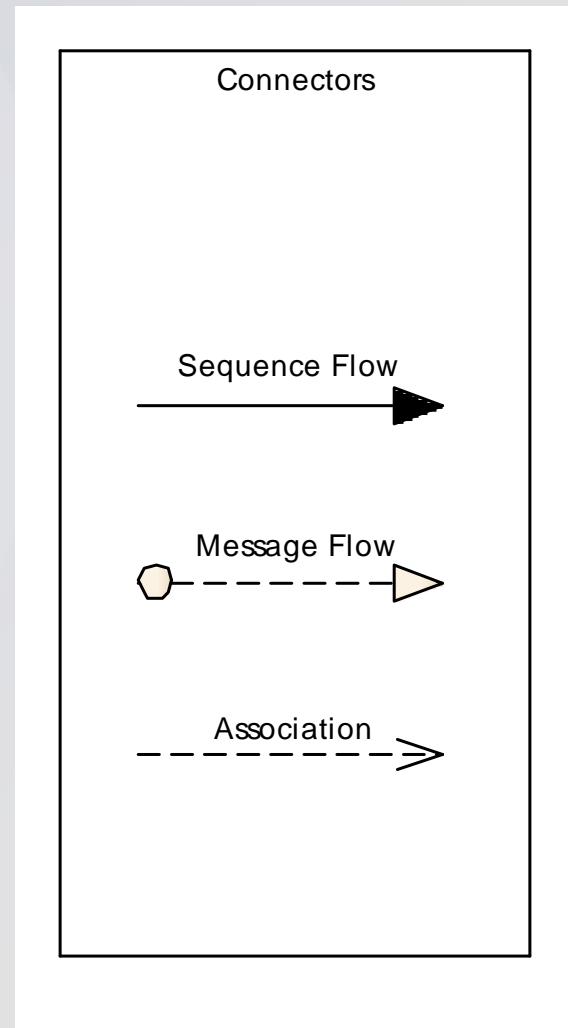
- Partition and organise activities
- Identify participants and roles
- Pools
 - Participants, Parties, Business Role
 - Interaction as flow of messages
 - Process fully contained within Pool
- Lanes
 - Sub partitions within Pool
 - Organisation roles
 - Sequence and Message interaction



BPMN Essentials - Connectors

BPMN Connectors

- Sequence Flow
 - Order that activities are performed
 - Between Events, Activities, Gateways
- Message Flow
 - Flow of messages between two entities
 - Between Participants
- Association
 - Associate data, information, artifacts with entities
 - NOT a UML Association



Orchestration and Choreography

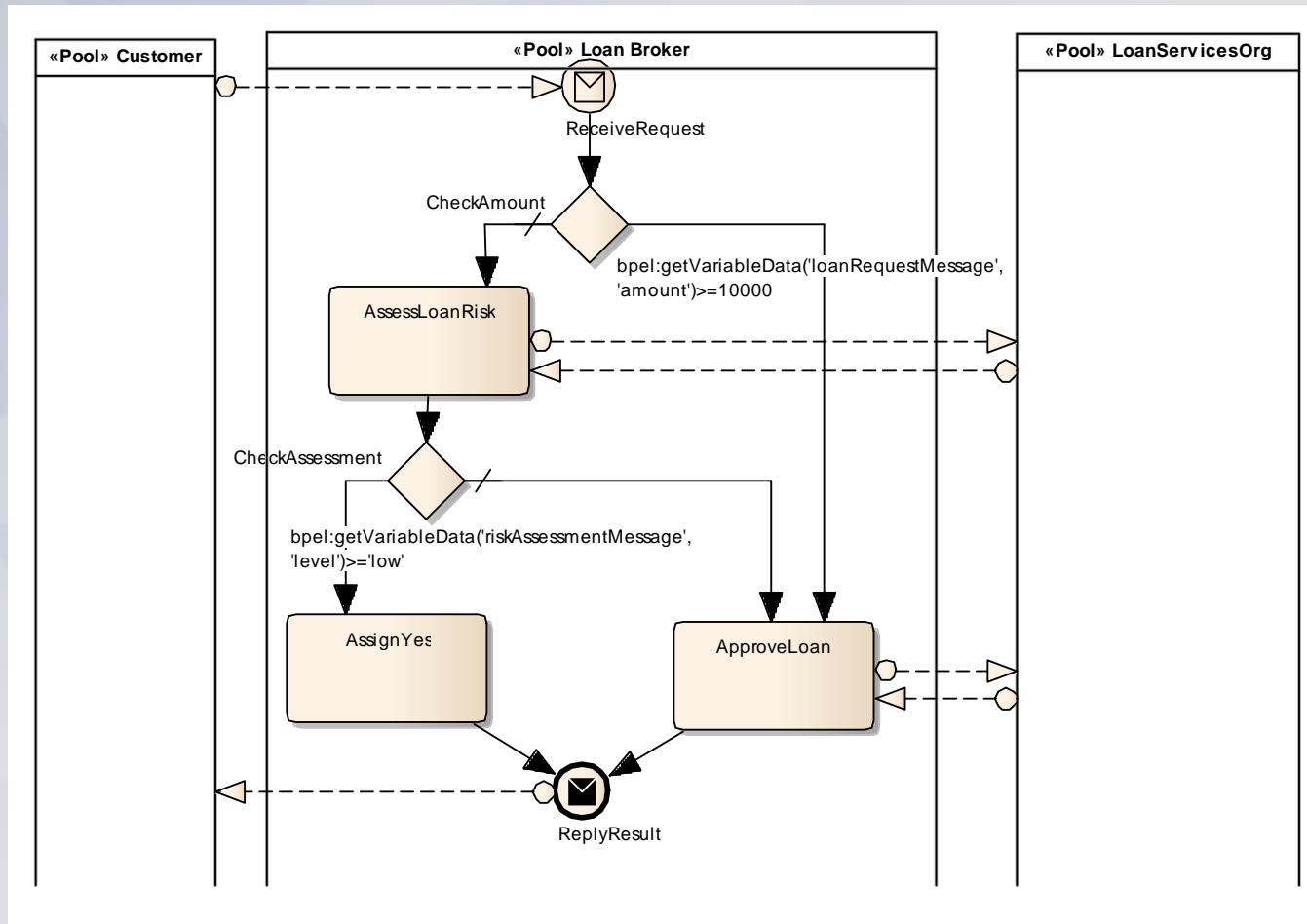
Orchestration

- Defines processes internal to a specific participant, organisation
- Private processes within pool (and between lanes)
- Sequence Flows and Message Flows

Choreography

- Defines interactions between two or more participants, organisations, B2B, global processes
- Public exchange of messages between pools in a collaboration
- Message Flows only

Orchestration and Choreography

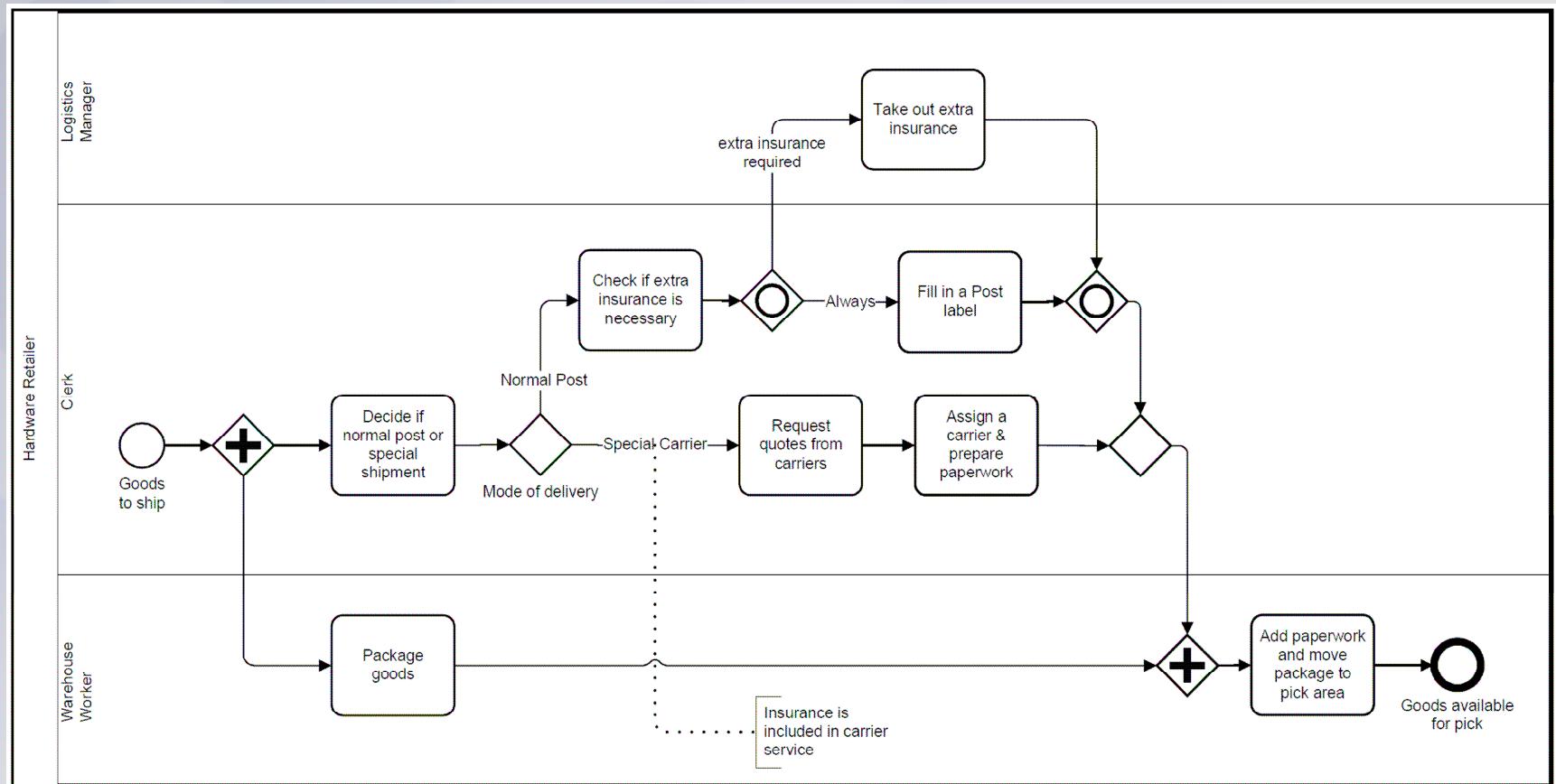


BPMN Examples

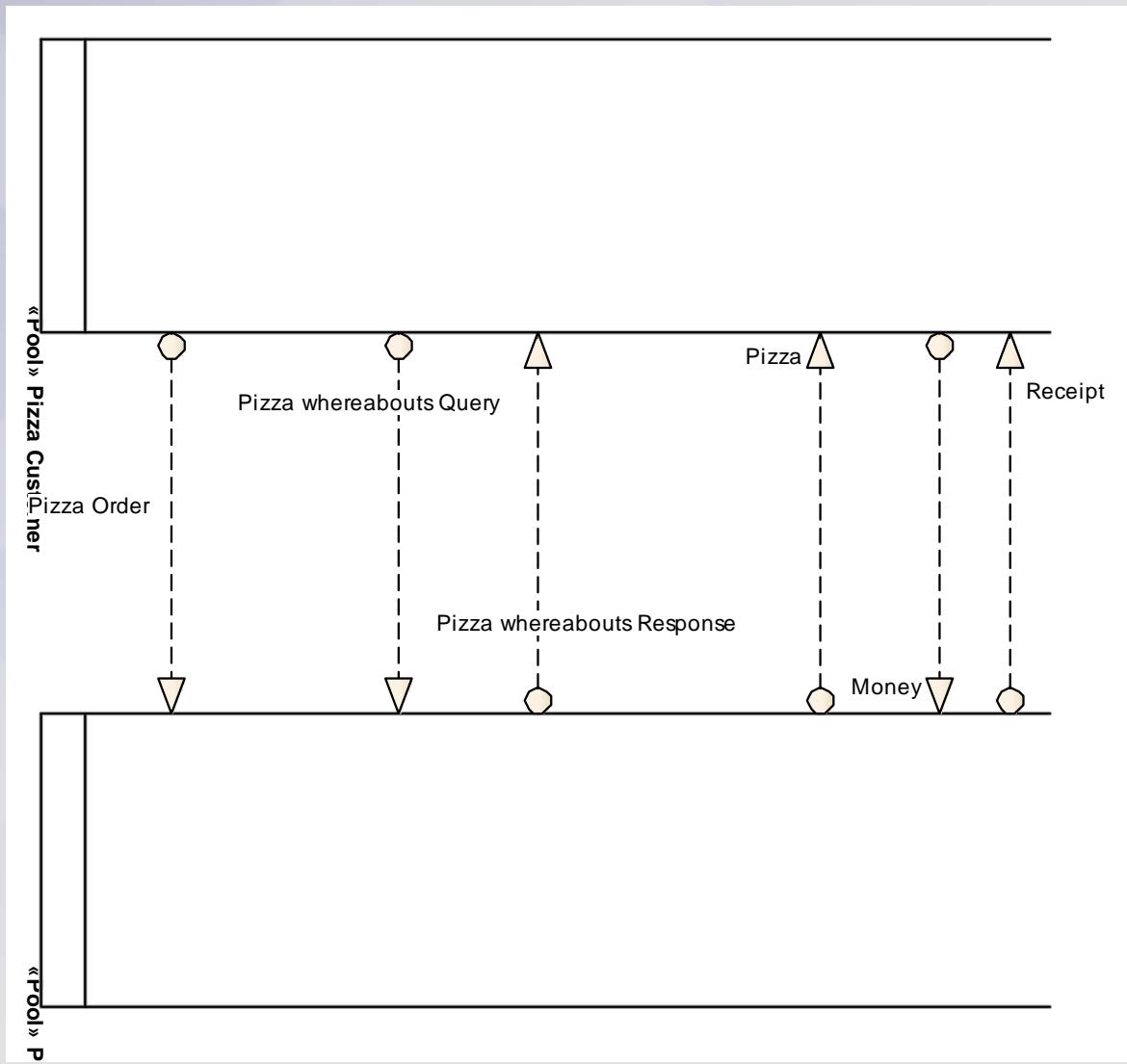
‘BPMN By Example’

<http://www.omg.org/spec/BPMN/2.0/examples/PDF>

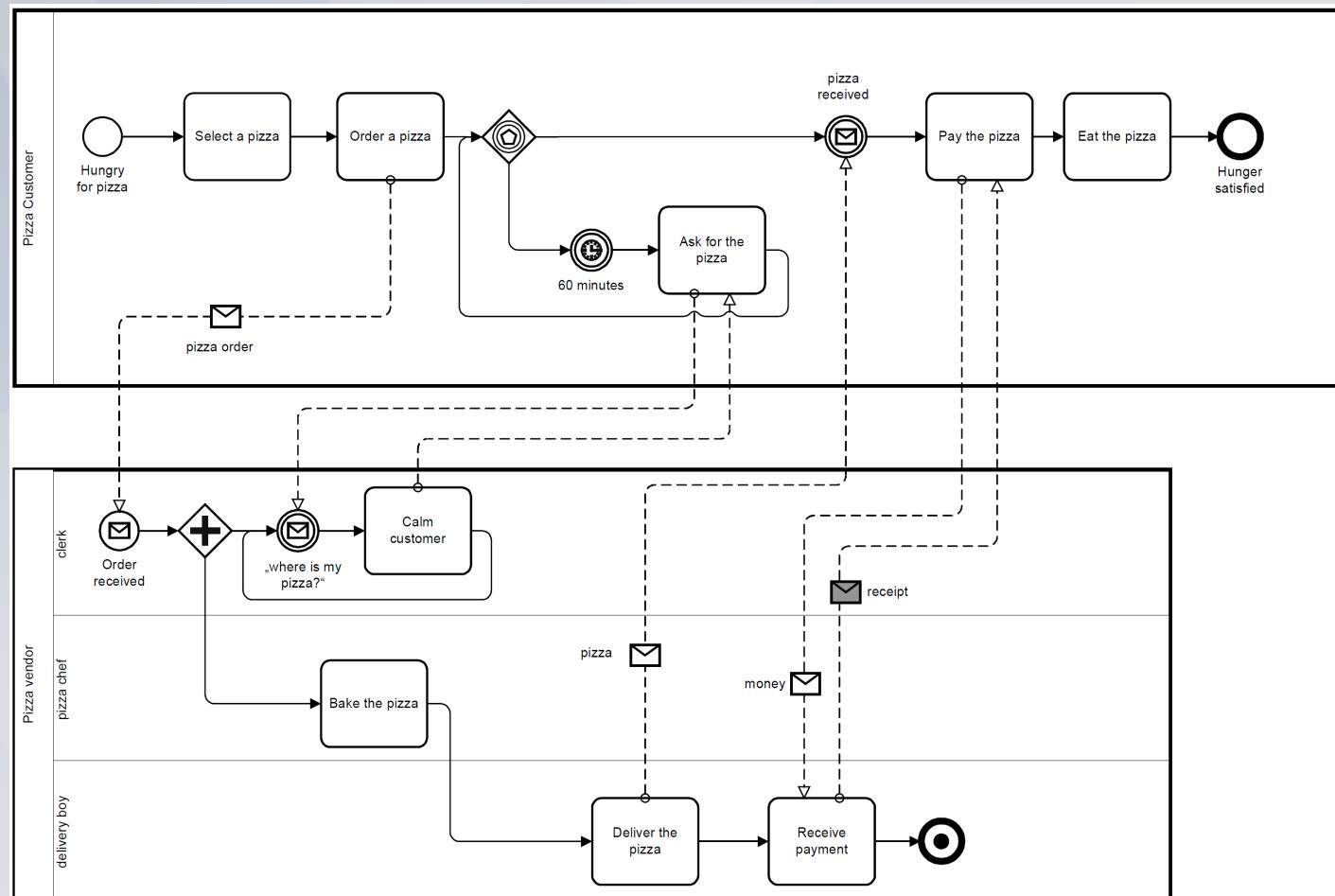
Examples – Shipment Process



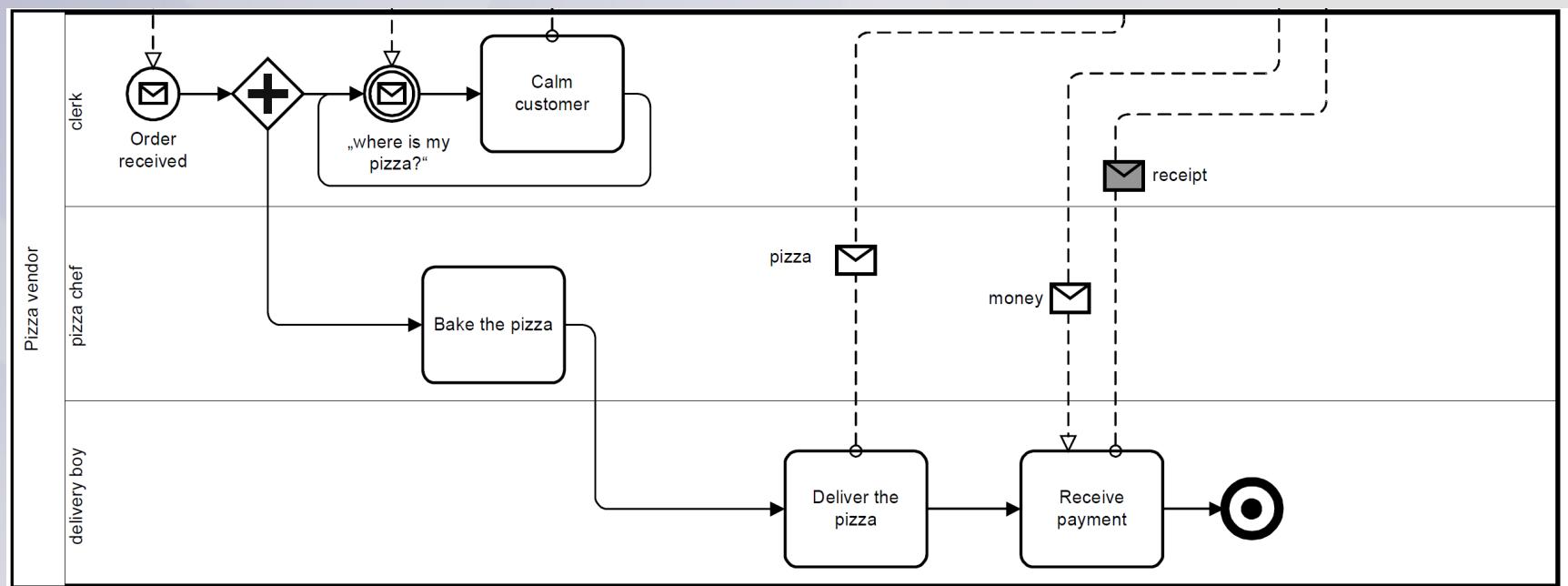
Examples – The Pizza Collaboration



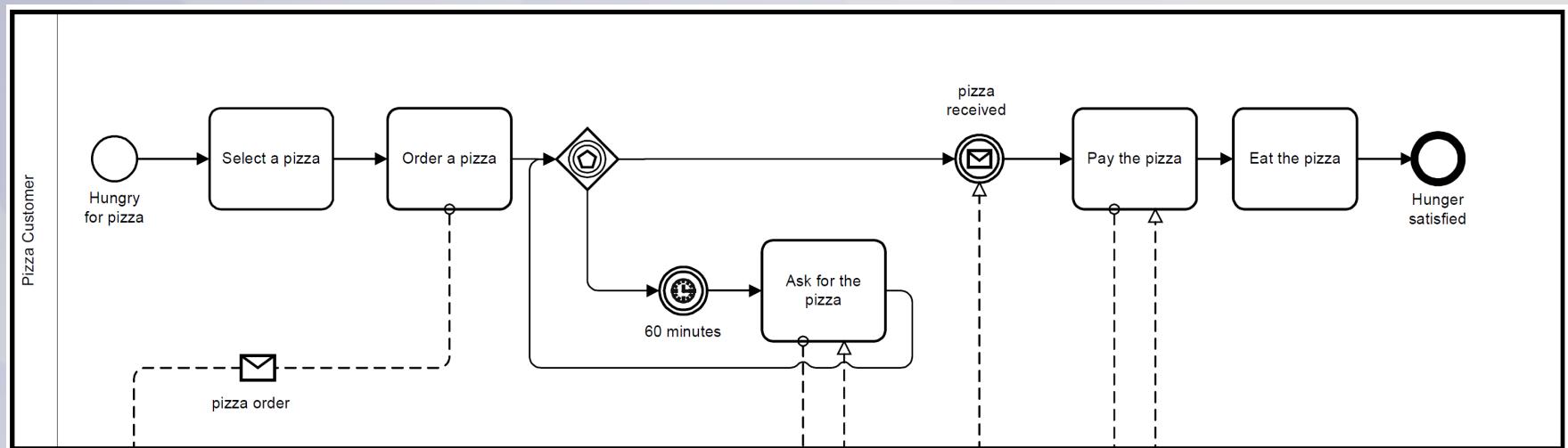
Examples – The Pizza Collaboration



Examples – The Pizza Collaboration



Examples – The Pizza Collaboration



Wrap Up

⌚ BPMN in this tutorial...

- A graphical modelling language for the purpose of process modelling
- General execution, Machine execution
- Events, Activities, Gateways, Connectors, Pools, Lanes
- Orchestration WITHIN Pool, Choreography BETWEEN Pools
- Examples

⌚ BPMN 2.0

- Formal metamodel, concrete syntax
- XMI interchange specification
- UML Profile for BPMN (initial submissions due March 2010)

⌚ Vendors

- 73 Registered implementations (4 planned)
- 9 Service providers
- http://www.bpmn.org/BPMN_Supporters.htm

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Thank you for your attention!

Questions?

Product Portfolio





thank you for your attention!