

MTAT.03.231
Business Process Management (BPM)
(for Masters of IT)

Lecture 2: Introduction to BPMN

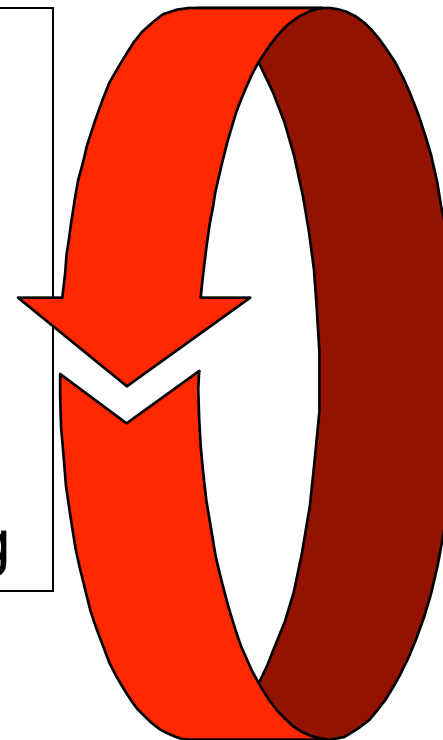
Marlon Dumas

marlon.dumas@ut.ee



How to engage in BPM?

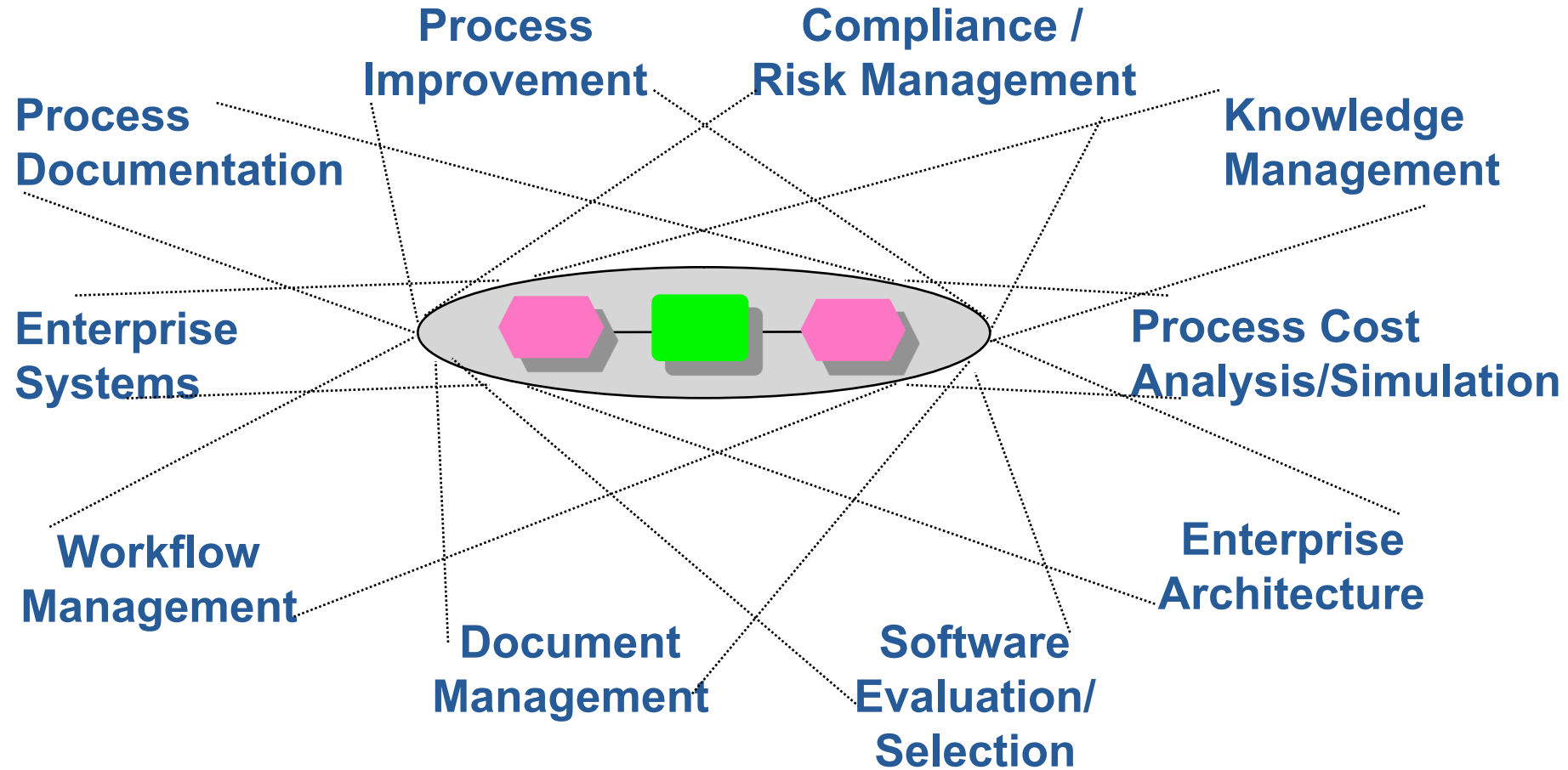
1. Opportunity assessment
2. **Process modelling (as-is)**
3. Process analysis
4. Process re-design (to-be)
5. Process implementation
6. Process monitoring/controlling



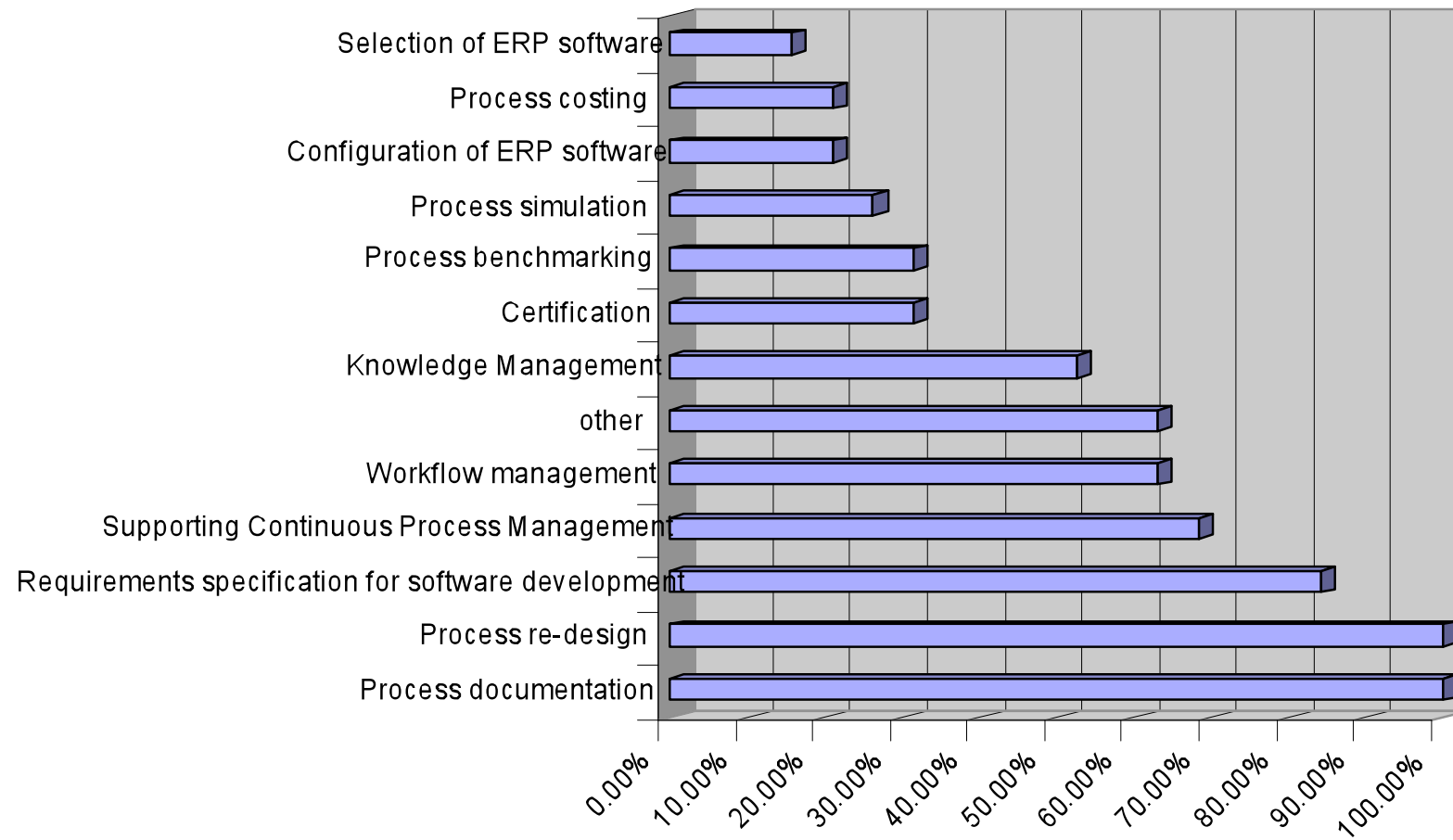
**Process
Modeling
Tools**

**Process
Management
Systems**

Purposes of Process Modeling



Popular Process Modelling Purposes

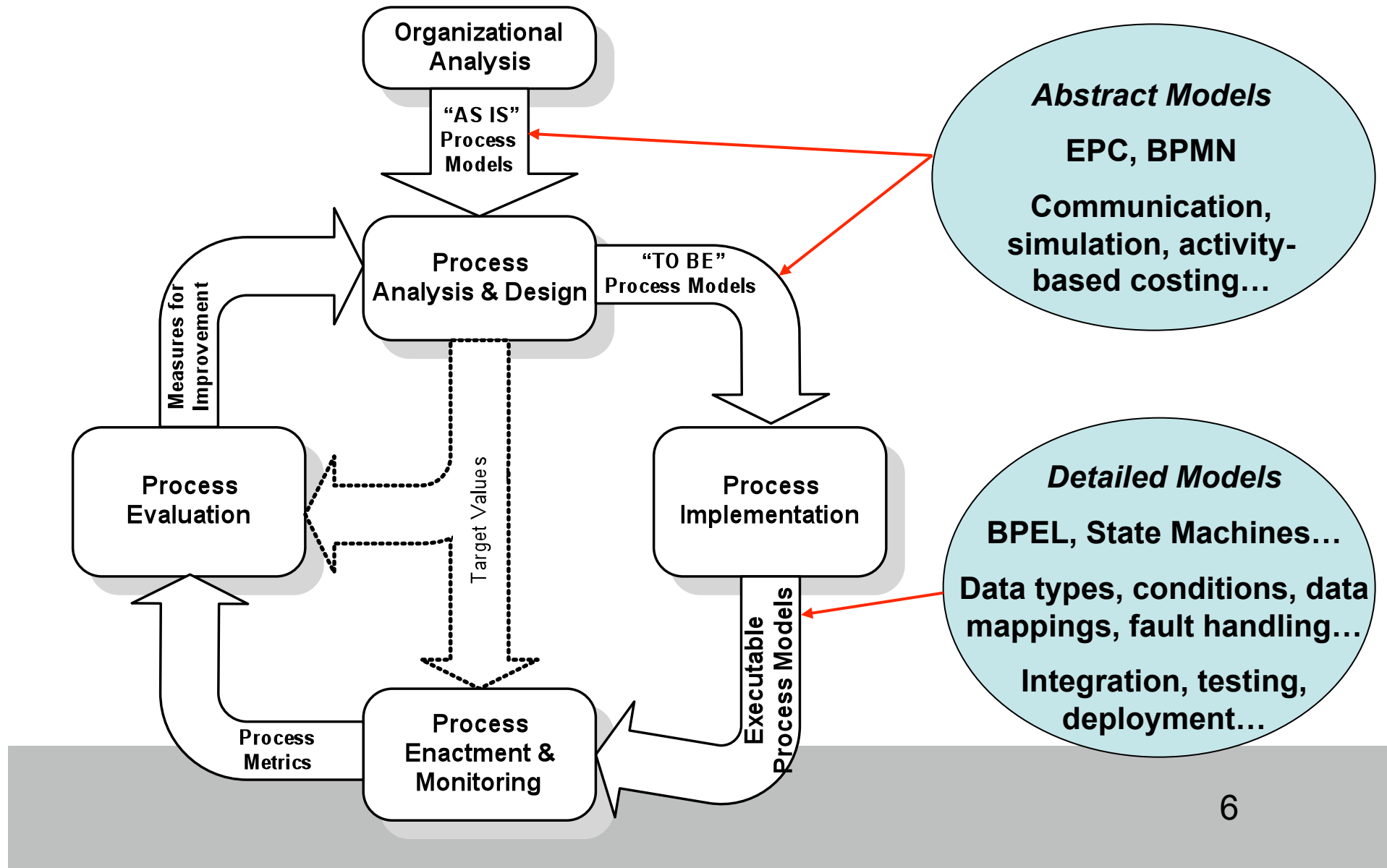


Process Modeling Languages

- For business analysts
 - Business Process Modelling Notation (BPMN)
 - Event-driven Process Chains (EPC)
 - IDEF0, IDEF3
 - Flowcharts, data-flow diagrams (system analysis)
 - UML Activity Diagrams (system analysis)
- For business programmers
 - Business Process Execution Language (BPEL)
 - Yet Another Workflow Language (YAWL)
 - State machines and variants

And many, many more...

Purposes of Process Modeling



Business Process Modeling Notation (BPMN)

- OMG Standard, supported by many tools:
 - Bizagi Process Modeller (free download for Windows)
 - Signavio (<http://www.signavio.com/>)
 - TIBCO Business Studio (free download, quite large)
 - IBM Websphere Business Modeler
 - ARIS
 - Oracle BPA
 - Business Process Visual Architect (Visual Paradigm)
 - Metastorm ProVision
 - Savvion Business Modeller (Progress Software).
- For simple drawing, you can use:
 - Visio (available through MS Academic Alliance)
 - yEd (http://www.yworks.com/en/products_yed_about.html)

BPMN from 10 000 miles...

- A process model in BPMN is called a Business Process Diagram (BPD)
- A BPD is essentially a graph consisting of four types of elements (among others):



Event



Task

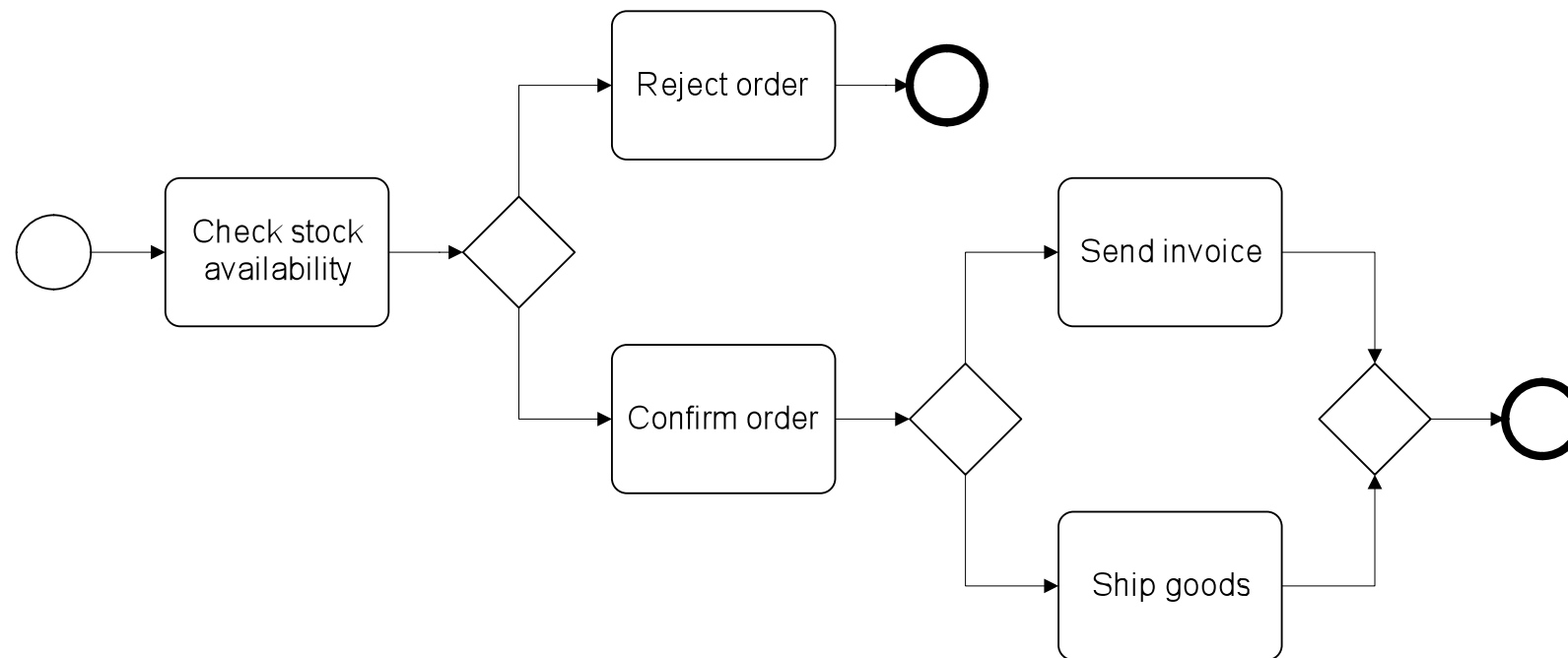


Flow



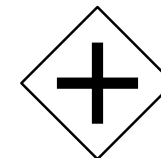
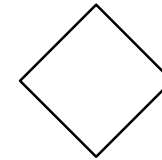
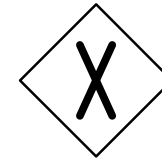
Gateway

Order Management Process in BPMN

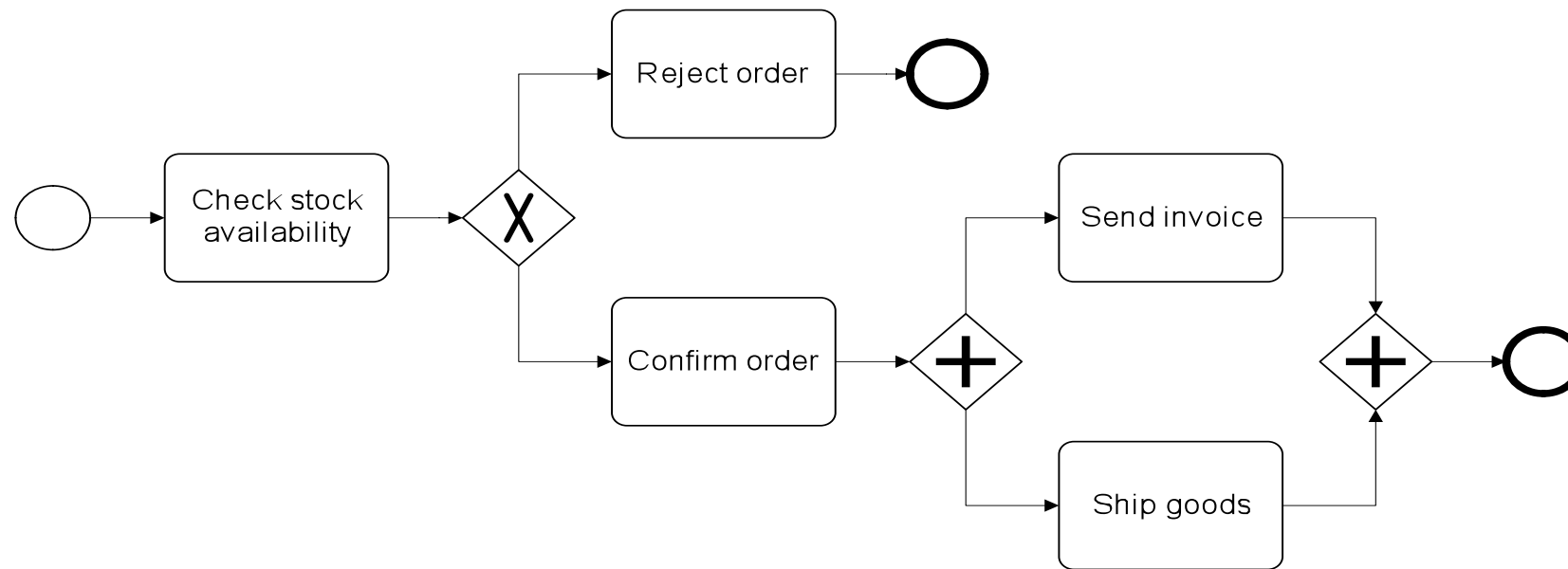


A little bit more on Gateways ...

- Exclusive Decision / Merge
 - Indicates locations within a business process where the sequence flow can take two or more alternative paths.
 - **Only one** of the paths can be taken.
 - Depicted by a diamond shape that *may* contain a marker that is shaped like an “X”.
- Parallel Fork / Join
 - Provide a mechanism to synchronize parallel flow and to create parallel flow.
 - Depicted by a diamond shape that *must* contain a marker that is shaped like a plus sign.



Revised Order Management Process



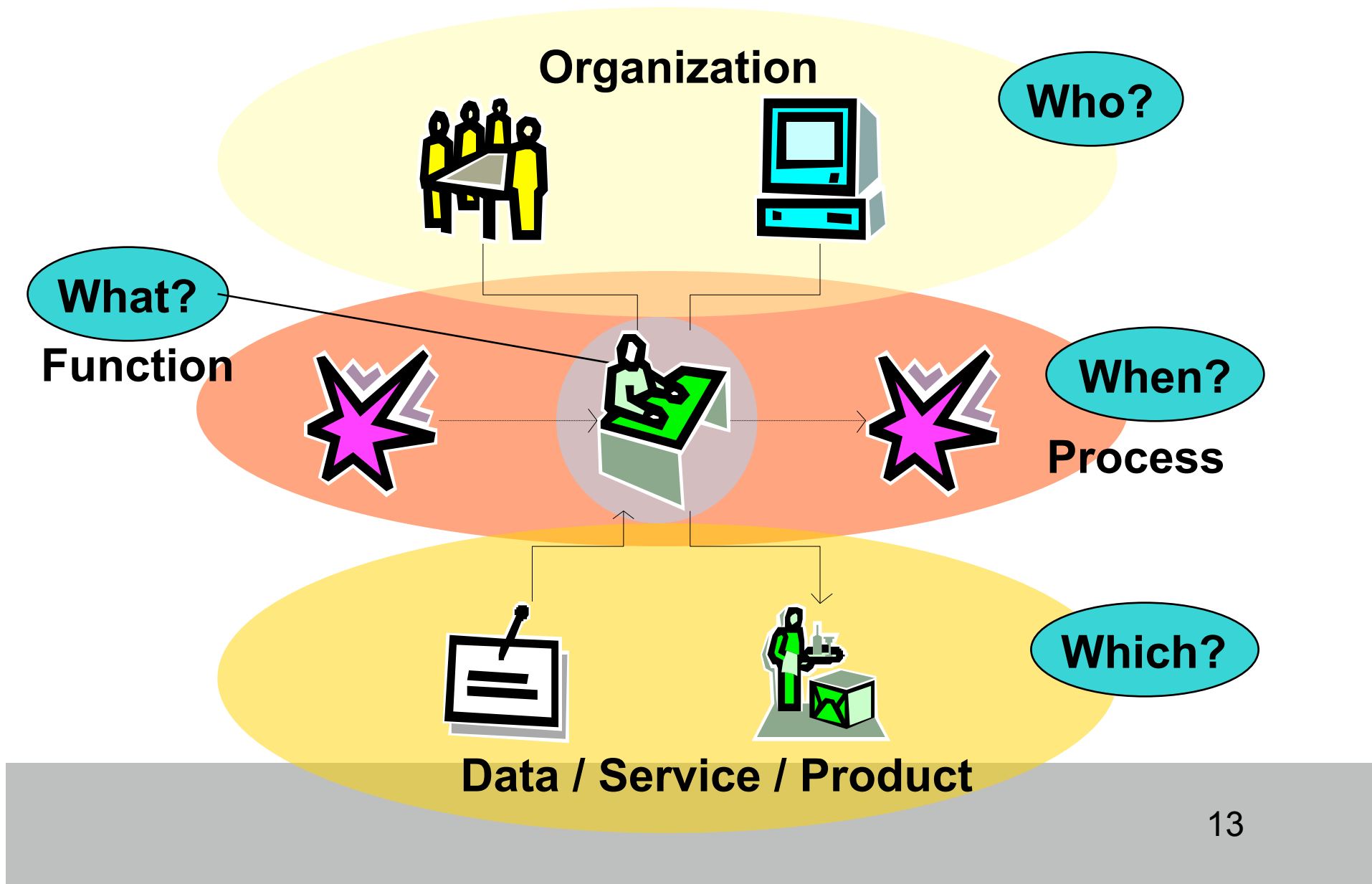
BPMN Exercise 1: Simplified Insurance Claim Registration

When a claim is received, it is first checked whether the claimant has a valid insurance policy. If not, the claimant is informed that the claim is rejected due to an invalid policy.

Otherwise, the severity of the claim is evaluated. Based on the outcome (simple or complex claims), relevant forms are sent to the claimant. Once the forms are returned, they are checked for completeness.

If the forms are complete, the claim is registered in the Claims Management system and the evaluation of the claim may start. Otherwise, the claimant is asked to update the forms. Upon reception of the updated forms, they are checked again.

Process Modelling Viewpoints



Organisational Elements in Process Models

Two basic abstractions:

- **Resource** (participant, actor, user, agent)
A resource can execute certain tasks for certain cases.
Human and/or non-human (e.g. printer): limited capacity.
- **Resource class**: Set of resources with similar characteristics

A *resource class* is typically either a:

- **Role** (skill, competence, qualification)
Classification based on what a resource can do or is expected to do
- **Group** (department, team, office, organizational unit)
Classification based on the organization.

Organisational Modelling in BPMN

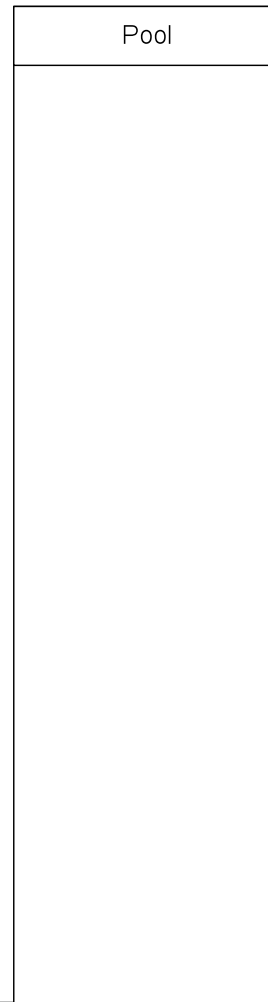
Bad news:

- BPMN does not support the concepts previously discussed
- Organisational modelling in BPMN =
 - Lanes
 - Pools
 - *Performers*
- So: Use pools and lanes to capture *resource classes*

Resource Modelling in BPMN

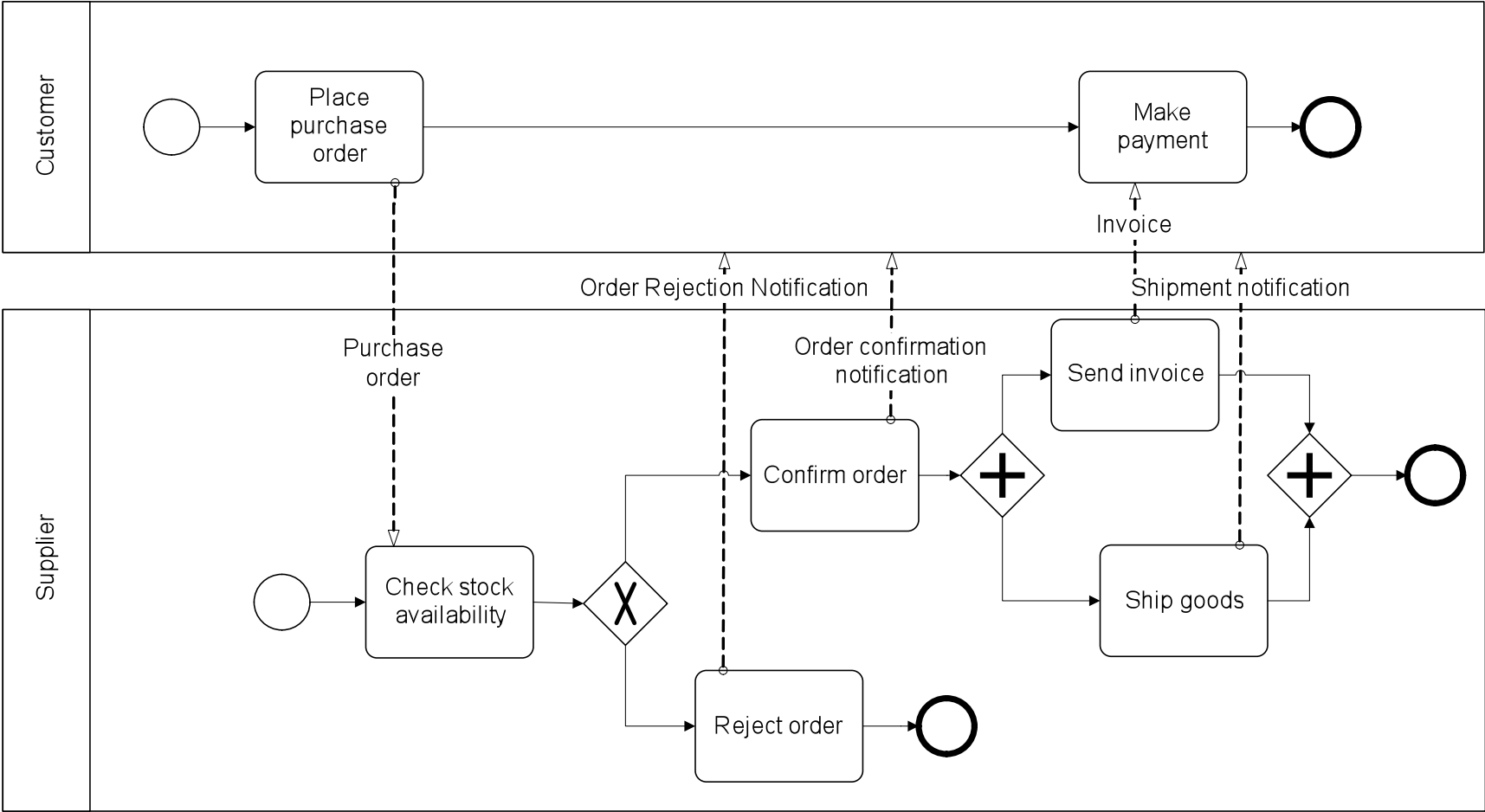
- In BPMN, resource classes are captured using:
 - Pools – independent organisations or organizational units (e.g. customer, supplier, East-Tallinn Hospital, Tartu Clinic)
 - Lanes – tightly connected roles or groups (e.g. Sales Department, Marketing Department, Clerk, Manager, Engineer, ...)

BPMN Elements – *Pools*



- ***Pools* represent business process participants. They are used to partition a set of activities.**
 - **Can be a business *entity* or a business *role*.**
- **Sequence flows cannot cross the boundaries of a Pool.**
- **Interaction between Pools are captured through *Message Flow* (*dashed lines with an arrow*)**

Order Management BPD with Swimlanes

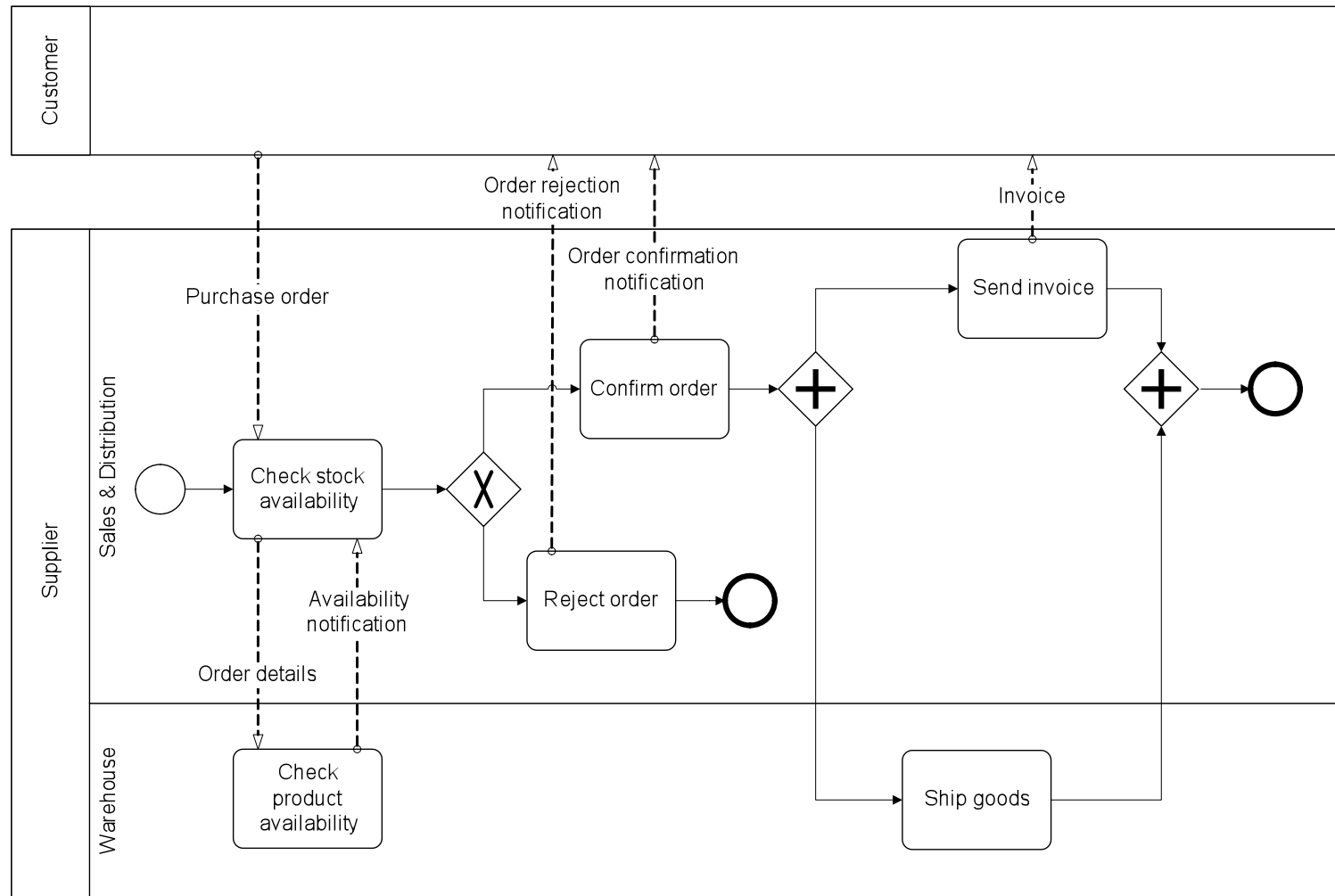


BPMN Elements – *Swimlanes*



- *Lanes* represent sub-partitions *within* a pool. They are used to organize and categorize activities.
 - Horizontal vs. vertical
 - Lanes are typically used for internal roles (e.g., Manager, Associate) or an internal department (e.g., shipping, finance).
- Lanes can also be used to represent automated information systems (e.g. an Enterprise System), although sometimes Pools are used for this purpose or sometimes such systems are only implicitly captured in the model.

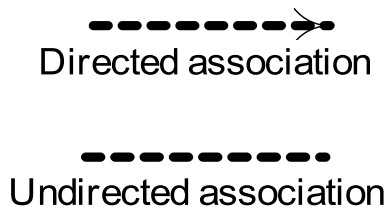
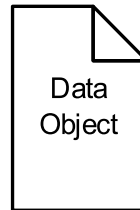
Corresponding BPD



BPMN Exercise: Lanes, Pools

- Claims Handling process at a car insurer
 - A customer submits a claim by sending in relevant documentation. The Customer Service department checks the documents for completeness and registers the claim. The Claims Handling department picks up the claim and first checks the insurance policy. Then, an assessment is performed. If the assessment is positive, a garage is phoned to authorise the repairs and the payment is scheduled (in this order). In any case (whether the outcome is positive or negative), an e-mail is sent to the customer to notify the outcome.

BPMN Artifacts



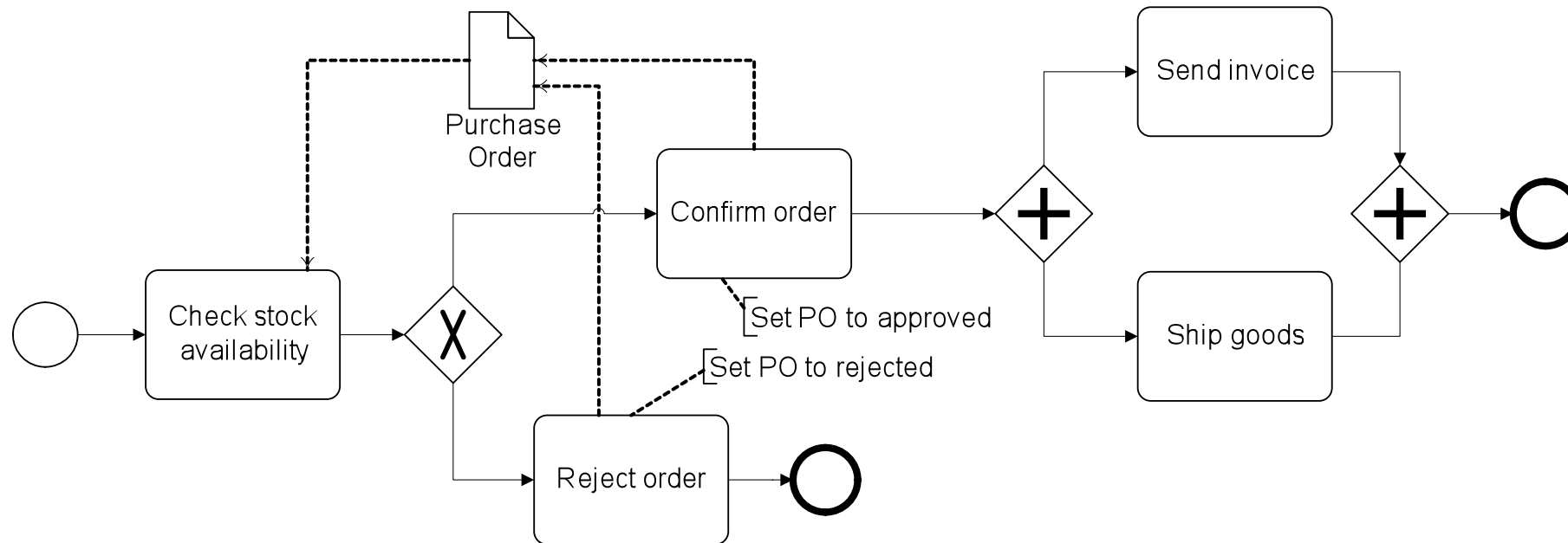
- *Data Objects* are a mechanism to show how data is required or produced by activities.
 - Are depicted by a rectangle that has its upper-right corner folded over.
 - Represent input and output of a process activity.
- Associations are used to link artifacts such as text or data objects with flow objects.
 - Are depicted by a dotted line.
 - Can be directed or undirected.
 - They are used to show inputs and outputs of activities.

Interlude: Annotations



- A picture is worth a thousand words
- But some words in a picture can be worth a thousand pictures
- *Annotations* are a mechanism for the modeller to provide additional text information to the diagram reader.
 - Are depicted by open-ended rectangles.
 - Text annotations do not affect the flow of the process.

Order Processing Model with Artifacts



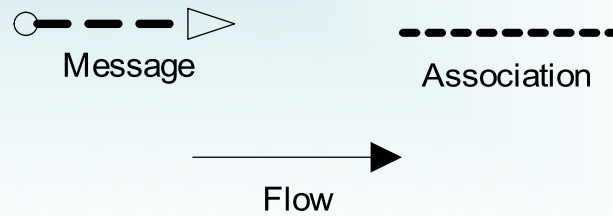
BPMN Exercise 3: Artifacts

When a claim related to a major car accident is evaluated, a clerk first retrieves the corresponding car accident report in the Police Reports database. If the report is retrieved, it is attached to the claim file. The claim file and the police report serve as input to a claims handler who calculates an initial claim estimate. Then, an “action plan” is created based on a “checklist”. Based on the action plan and the initial claims estimate, a claims manager negotiates a settlement with the customer. After this negotiation, the claims manager makes a final decision, updates the claim file to record this decision, and sends a letter to the claimant to inform him/her of the decision.

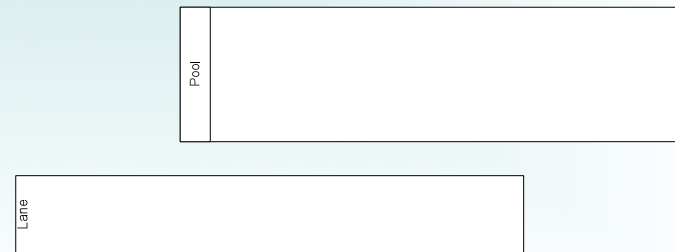
Please depict all relevant documents in the model.

BPMN Main Elements - Recap

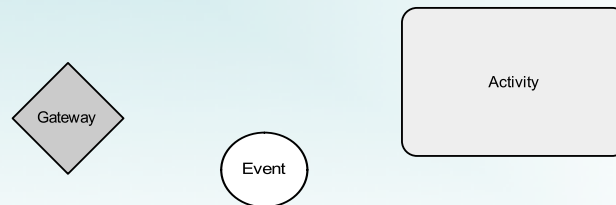
Connections



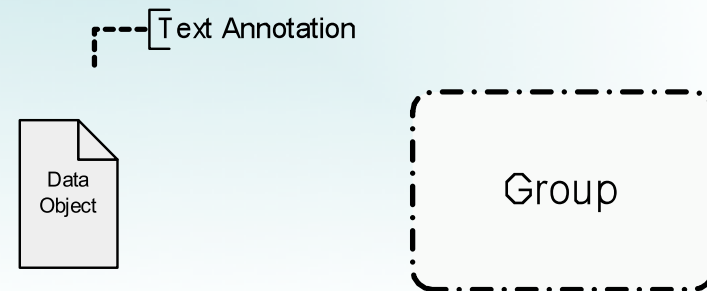
Swimlanes



Flow Objects



Artifacts



BPMN Flow Elements – Recap

