

# Process modeling

PV207 – Business Process Management

Spring 2014

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# Last lecture recap.

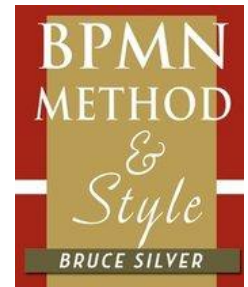
- Motivation for SOA
- Role BPM in IT management
- Core BPM architecture
- BPM – SOA relationship
- SOA concept
- SOA architecture
- SOA Governance
- SOMA
- Web Services
  - What are WS?
  - Artifacts WS
    - WSDL
    - SOAP
  - WS - standards
- WS in Java
  - Client side
  - Server side
- REST

# Lecture overview

- Why modeling?
- Process development roles
- Modeling notations
- Workflow modeling
- BPMN 1.1
- BPEL
- BPMN 2.0
- BPMN 2.0
  - Object classes
    - Activities
    - Events
    - Gateways
    - Connecting objects
    - Artifacts
  - Process types
  - Examples

# BPMN 2.0 Information sources

- BPMN method and style Bruce Silver,
  - ISBN 20099780982368107
  - 30\$, kindle 13,80\$
- BPMN 2.0 poster
  - [http://www.bpmb.de/images/BPMN2\\_0\\_Poster\\_EN.pdf](http://www.bpmb.de/images/BPMN2_0_Poster_EN.pdf)
- Signavio modeler – academic licence
  - <http://academic.signavio.com/p/login>
- BPMN official OMG website
  - <http://www.bpmn.org/>



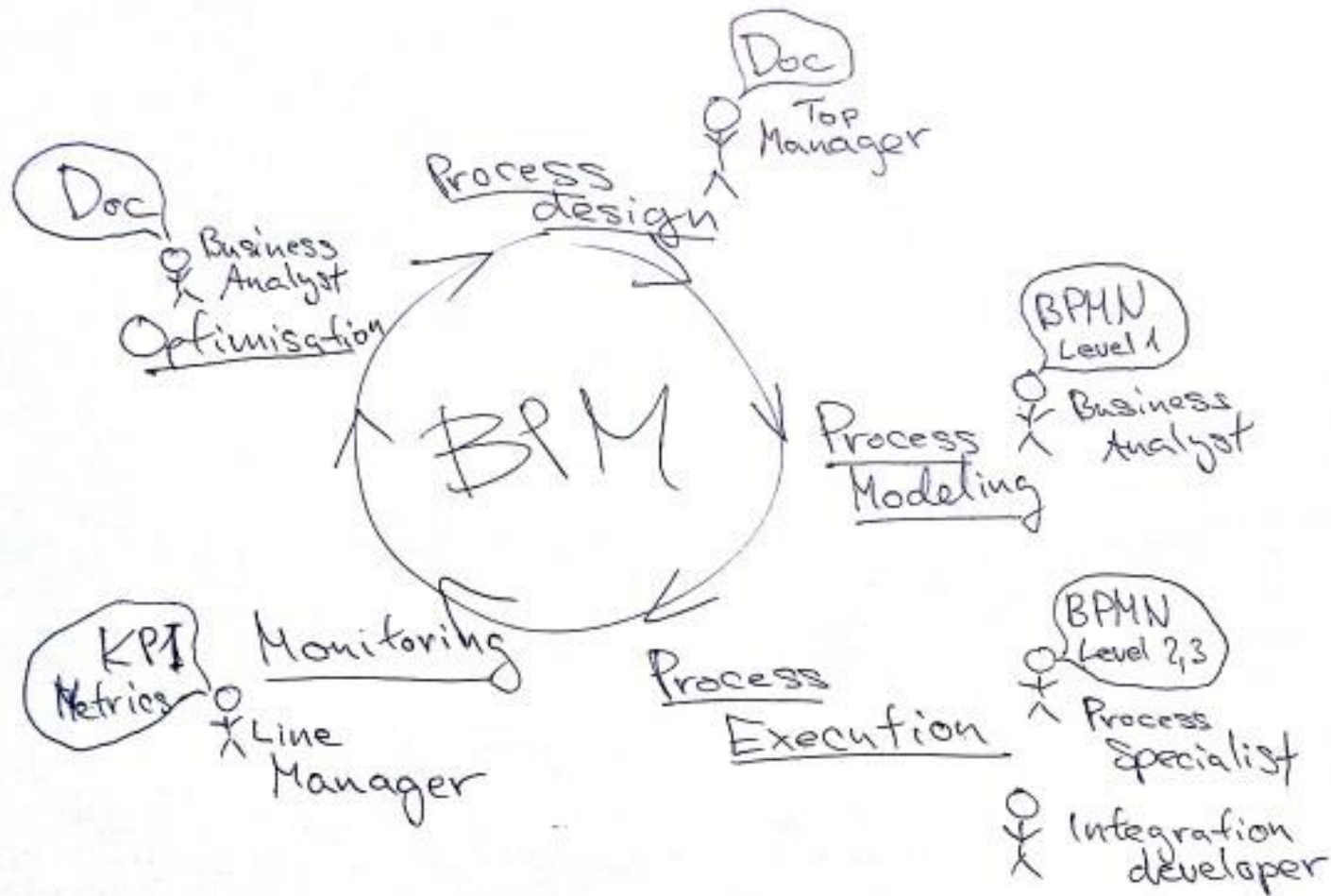
# Why process modeling?

- Elegant way to express process structure
- Visual models are easily understandable
  - Understandable by process participants
  - Bridge gap between process description and it's executable implementation
- Easy to express nested structure (sub-processes)
- Process models easily understandable by all roles in development cycle

# Roles in development cycle

- **Business Analyst**
  - Sum business strategy
  - Describe goals & objectives, KPIs
  - Describe processes
  - Design BPMN diagrams (Level 1)
- **Process specialist**
  - Design BPMN diagrams (Level 1,2,3)
  - Design monitoring models
- **Process developer**
  - Detail BPMN Level 3
  - Implement services and deploy processes

# Roles in development cycle



# Modeling notations

- **BPMN 1.0 – 1.1**
  - Analytical modeling, not tight with semantics, not executable
  - XPDL semantics
- **BPEL**
  - Technical modeling, very detailed
  - service orchestration, executable
- **BPMN 2.0**
  - Analytical modeling (Level 1,2)
  - Defined semantic – executable (Level 3)



# BPMN 2.0 Three levels

- **Level 1 (Structure)**
  - Capture basic structure of the process
  - Good for both business and technical people
- **Level 2 (Analytical)**
  - Add more details to Level 1 diagrams
  - Good for process analysts
- **Level 3 (Executable)**
  - Specify all used services and activity tasks
  - Allow execution

# Process domains for teamwork

- Artificial domains

- Hospital
- Bank
- Insurance company
- Airlines
- Real estate agency
- Court
- Package delivery
- Software company
- IT support center
- Car manufacturer

- Custom domain

- ++ exam advantage
- Your own work experience
- Proper opportunity required !!
- Backup plan needed

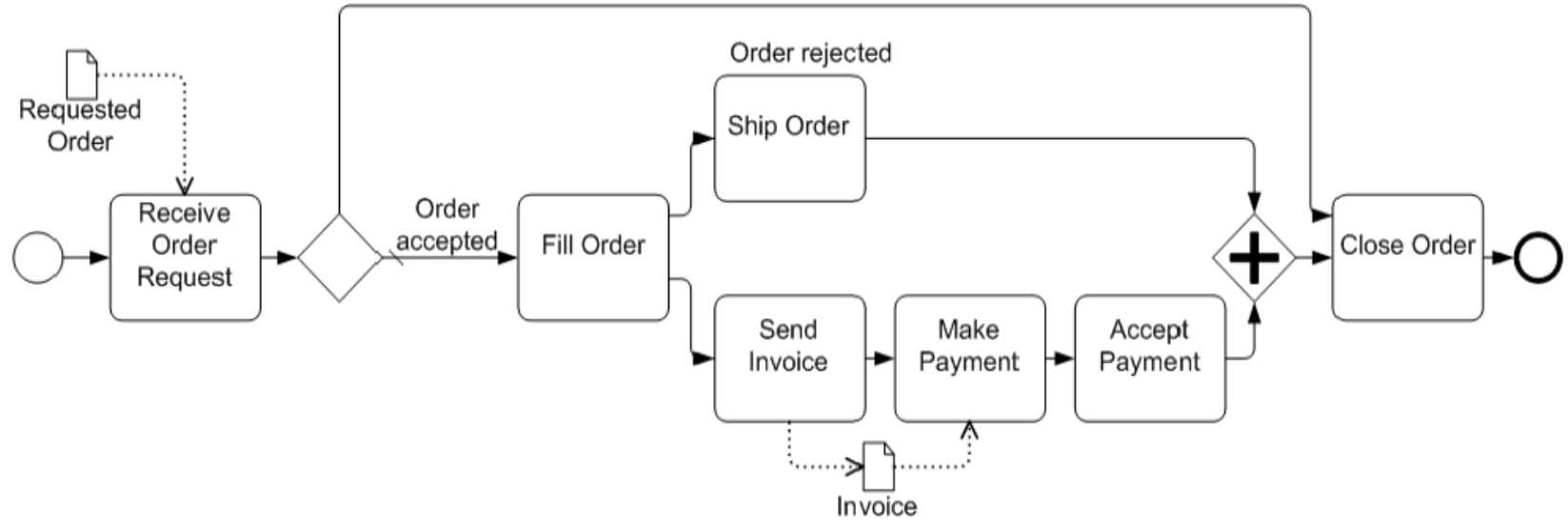
**Questions?**  
**Break 10mins**  
**Feedback**

# BPMN 2.0 (Level 1)

## Object classes

- Flow Objects
  - Event
  - Activity
  - Gateway
- Connecting Objects
  - Sequence Flow
  - Message Flow
  - Association
- Artifacts
  - Data Object
  - Group
  - Annotation
- Swimlanes
  - Pool
  - Lane

# BPMN 2.0 – Process example



# Flow object - Activity

- Represent certain step, an activity

- Types of activity

- Atomic activity = Task
- Complex activity = Subprocess







- Types of task

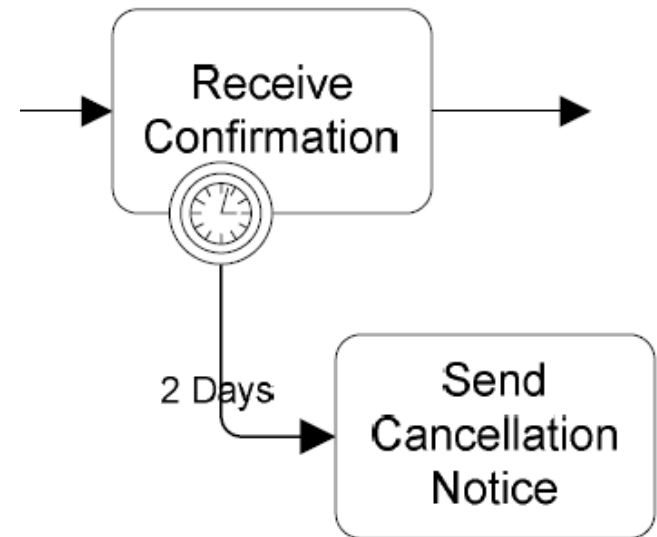
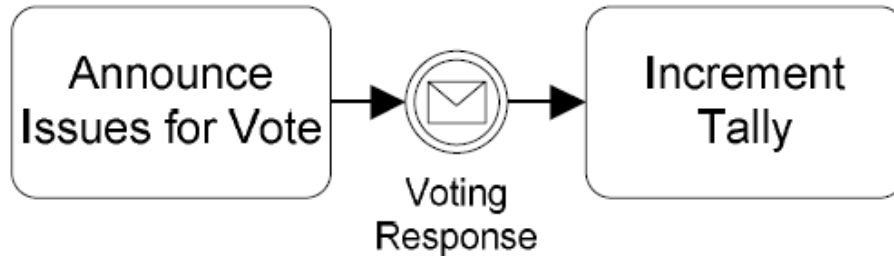
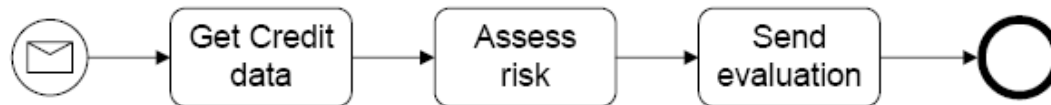
- Service task
- User task
- Manual task
- Script



# Flow object - Event







- Represent event that occur in a process
- Have impact on process flow
- Types
  - Start 
  - Intermediate 
  - End 
  - Extending elements 

# Flow objects - examples

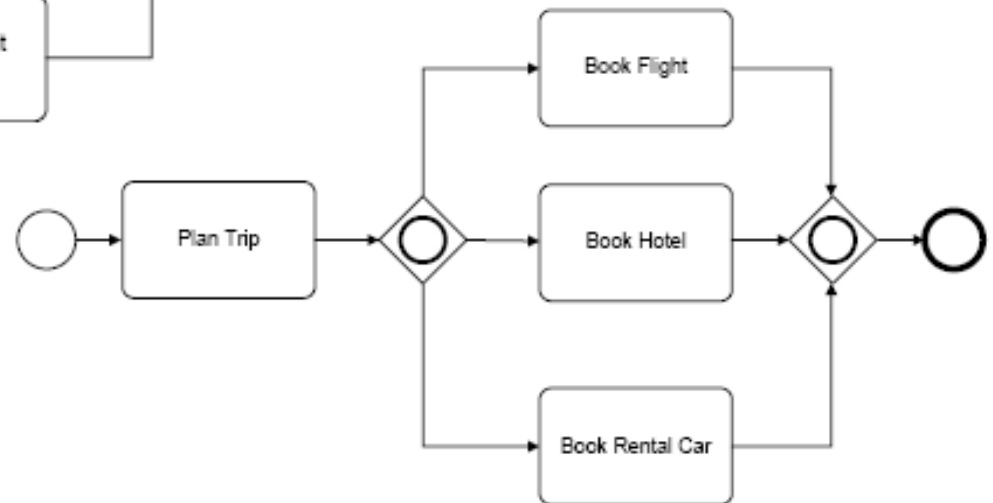
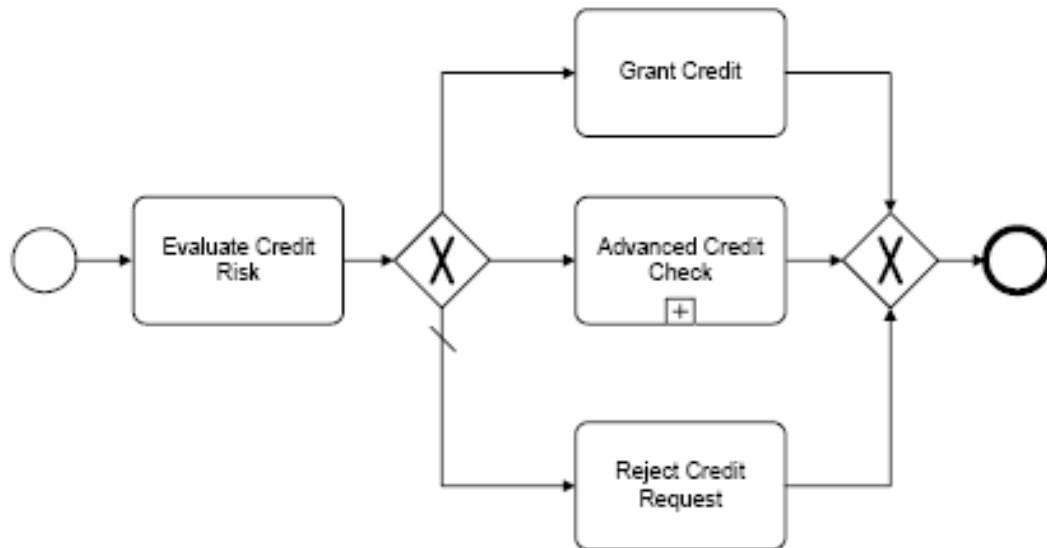




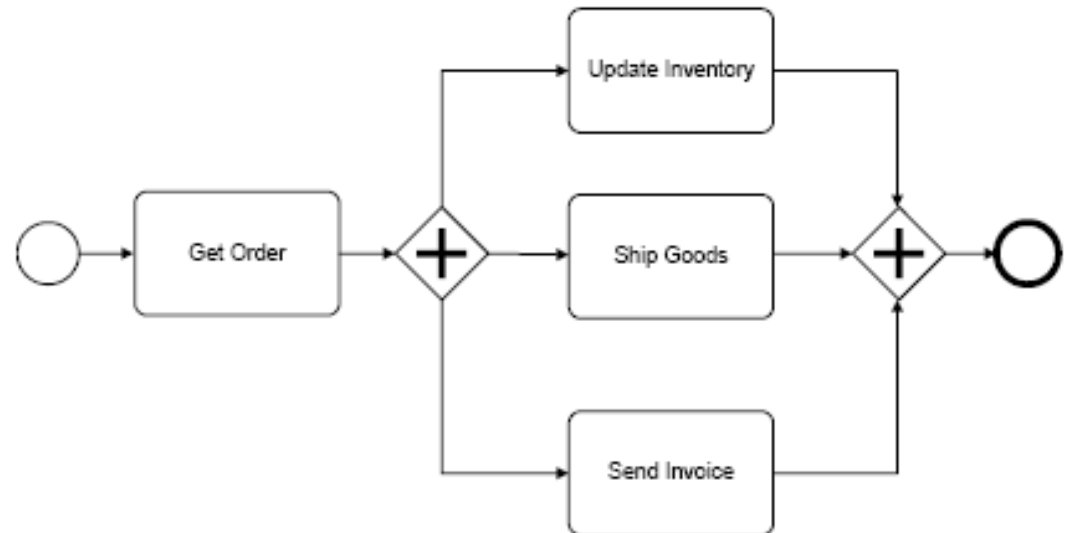
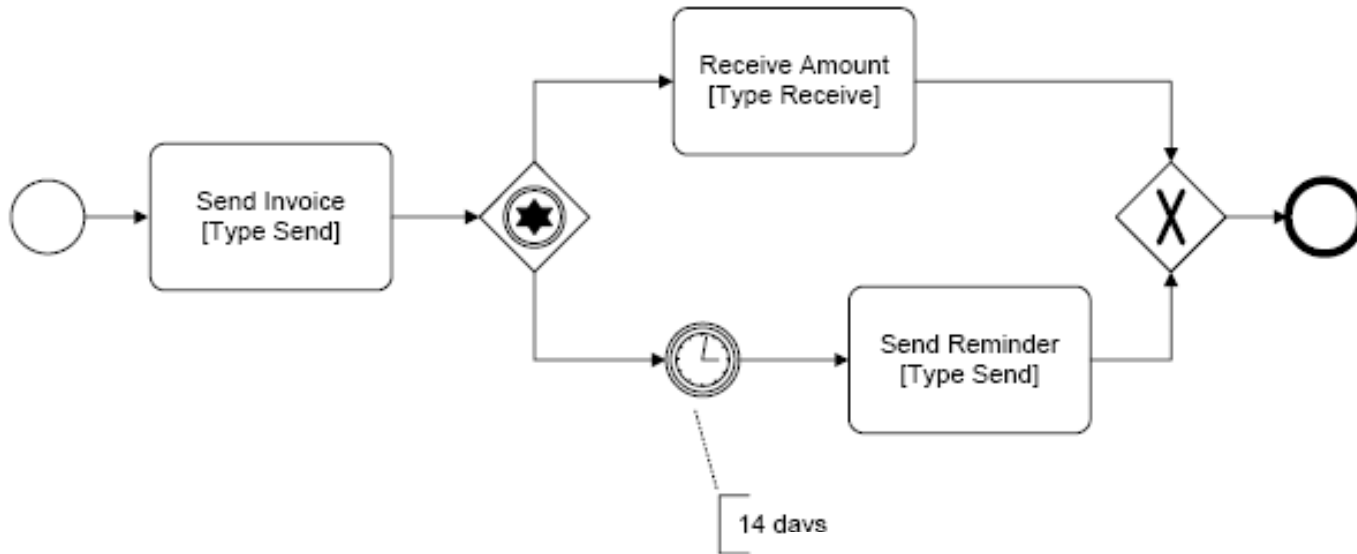
# Flow object - Gateway

- Stands for flow branching or join of branches
- Types
  - **Exclusive data-based (XOR)** 
  - Exclusive event-based 
  - Inclusive 
  - **Parallel** 
  - Complex 
- Default branch 

# Gateway examples



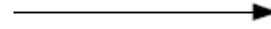
# Gateway examples II



# Connecting Objects

- Sequence flow

- Define order of activities



- Message flow

- Message flow between two objects



- Association

- Connect objects with artifacts (labels, data objects..)



# Artifacts

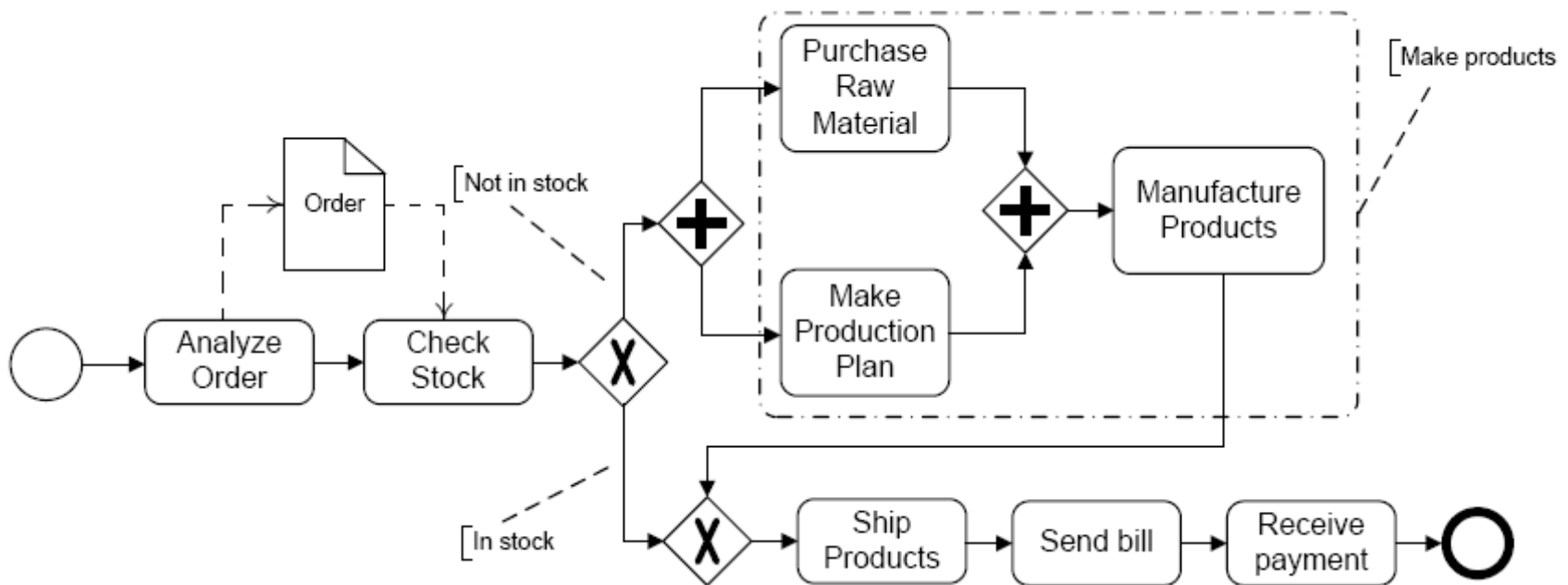
- Additional information
- Do not affect flow
- Data Objects
  - Data used in activities
  - Inputs and outputs of activities
- Annotation
  - Label, additional information
- Groups
  - Grouping of objects  
(analytical/documentation reasons)



Text Annotation Allows a  
Modeler to provide  
additional information



# Artifacts - examples

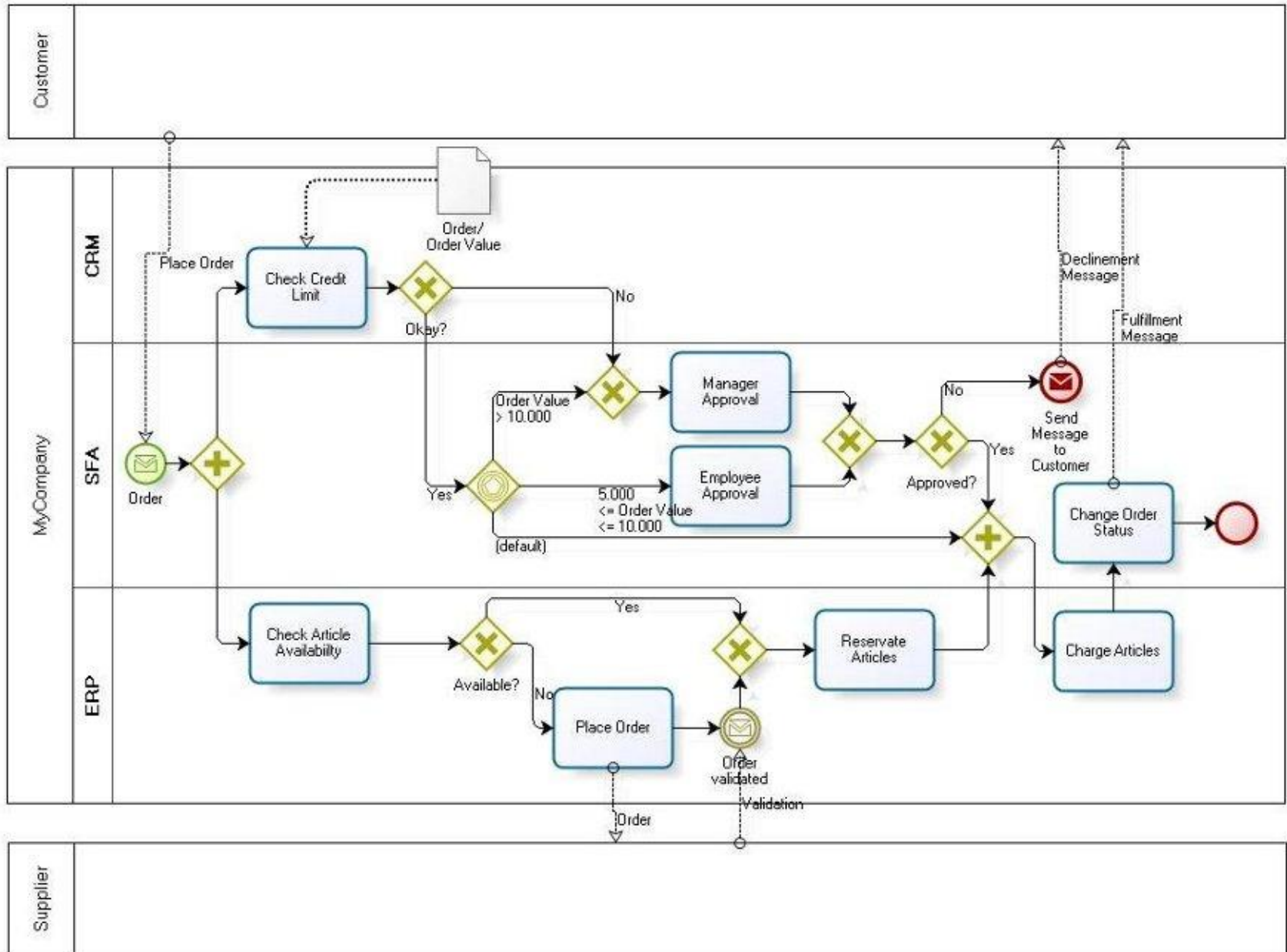


# Swimlanes – Pools/Lanes

- Pool
  - Represent a participant in a process
  - Show message flows between participants
- Lane
  - Subdivision of pool
  - Express roles, departments or actors in a process

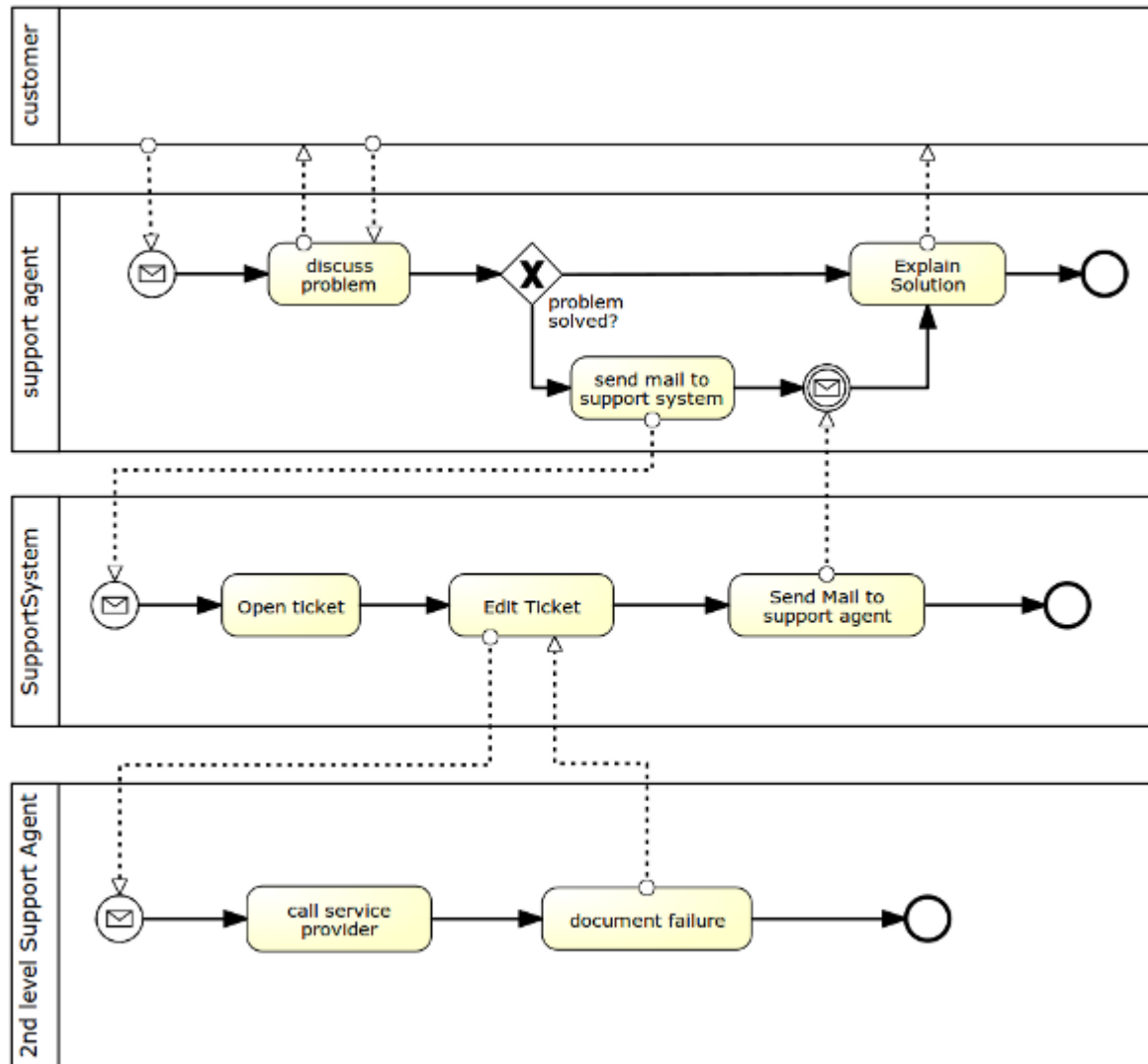


# Pool/examples



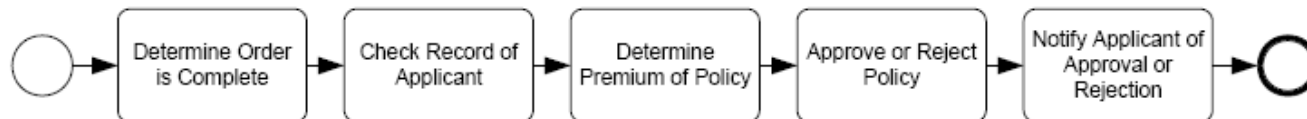


# Pool/examples



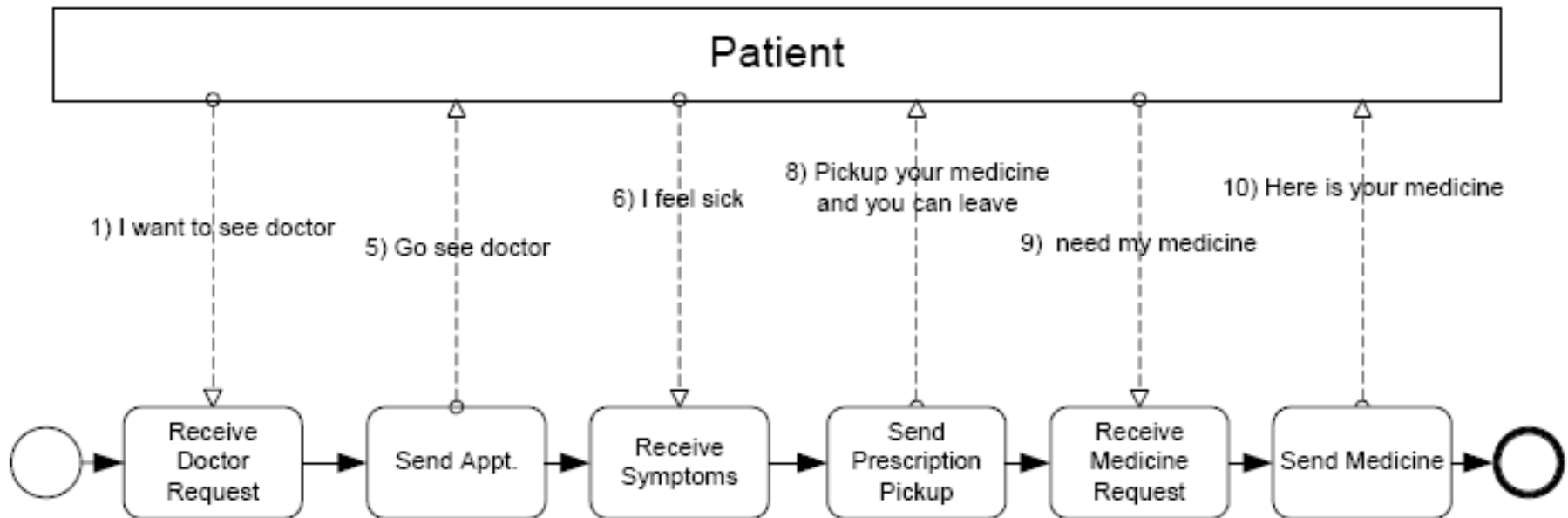
# Private (Internal) Process

- From point of view of one organisation
- Activities are not visible to outside world
- One pool (if used)



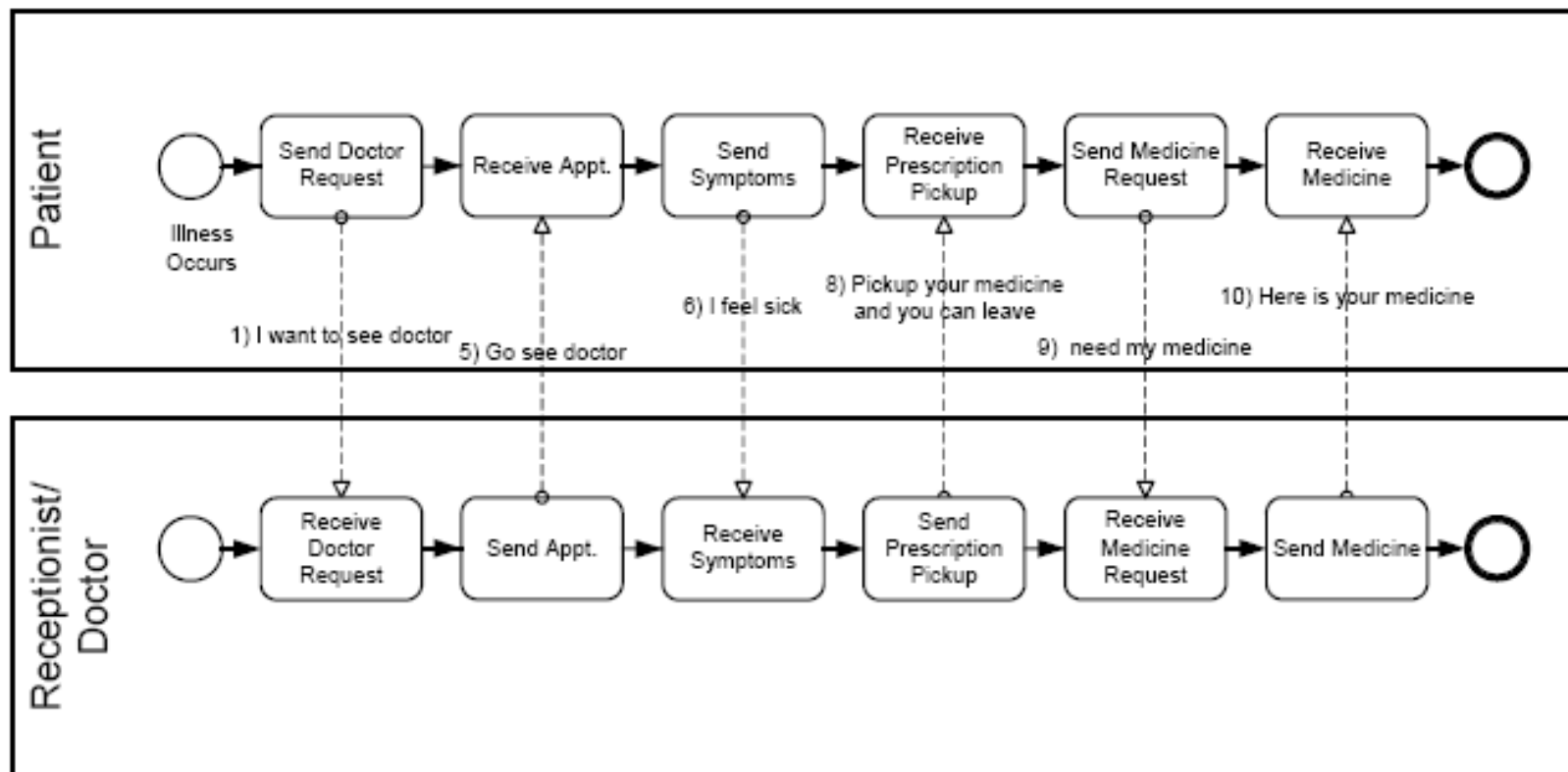
# Abstract (Public) Process

- Only activities that send/receive messages
- Communication visible to outside world



# Collaboration (Global) Process

- Collaboration between more business entities
- Activities represent message exchange



# Assignment (Homework)

- Create one BPMN process model (Level 2) **from your team's domain**
  - 8+ activities
  - 4+ gateways, 2 different types
  - 3+ events, 2 different types (beside start a end)
  - 1+ data object
  - 2+ text annotations
  - 2+ pools, 1 as „blackbox“, 2+ roles (swimlanes)
  - 1+ exception and handling
- Submit **printed version** to the box called "PV207" next to entrance to room D1, **before** 31.3. 20h
- Submit **electronic version**
  - Export to PNG in Signavio, submit to IS MUNI to folder "homeworks" **before** 31.3. 20h as <surename>\_bpmn.png

# Hands-on: Teamwork process

- PV207 process
  - First BPMN session
    - Students form teams
    - Team choose process field for their team
    - Students each of students create one process model
  - Second BPMN session
    - Lecturer check process from last session
      - IF the process is ok
      - IF not, they rework it until next week

# FIN

## Questions?

PV207 – Business Process Management

Spring 2012

Jiří Kolář