

Process modeling II

PV207 – Business Process Management

Spring 2014

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Last lecture summary

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

Last exercise sessions:

- Process domains chosen by teams
- Example process modeled
- Home assignment assigned
 - Next session (24.3.) - first check, consultations
 - After 31.3. – homework deadline
- Teamwork organization explained

Recap: 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

Recap: 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



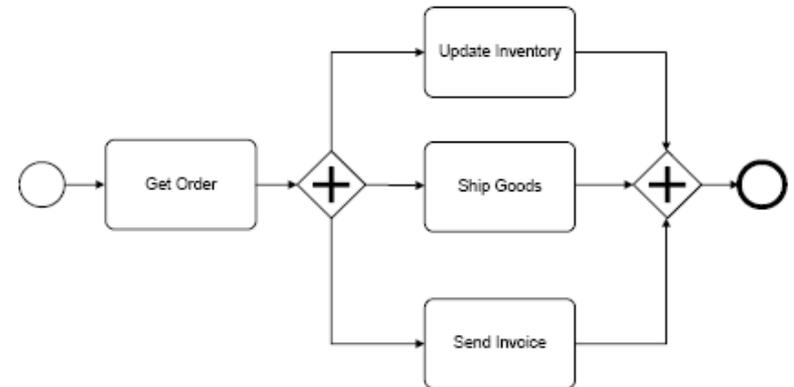
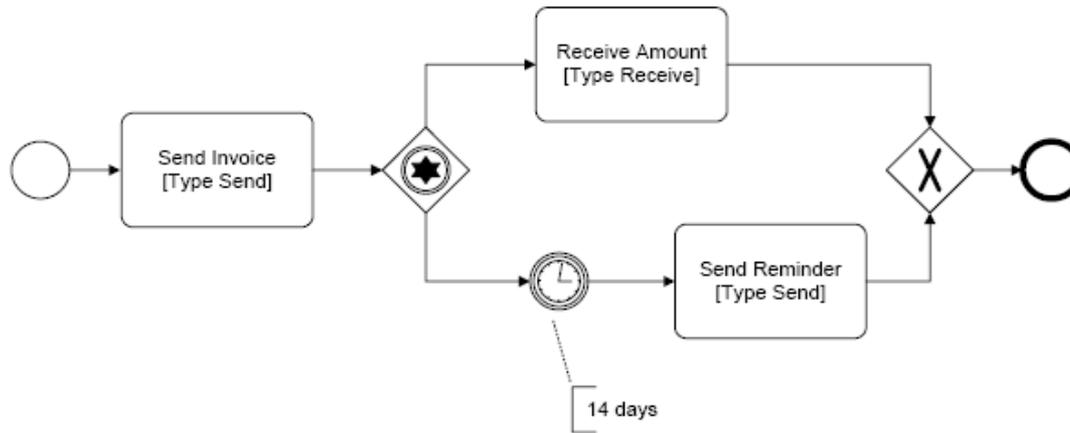
Recap: Gateway

- Stands for flow branching or join of branches
- Types:
 - ◆ **X Exclusive data-based (XOR)**
 - ◆ **★ Exclusive event-based**
 - ◆ **○ Inclusive**
 - ◆ **+ Paralell**
 - ◆ *** Complex**

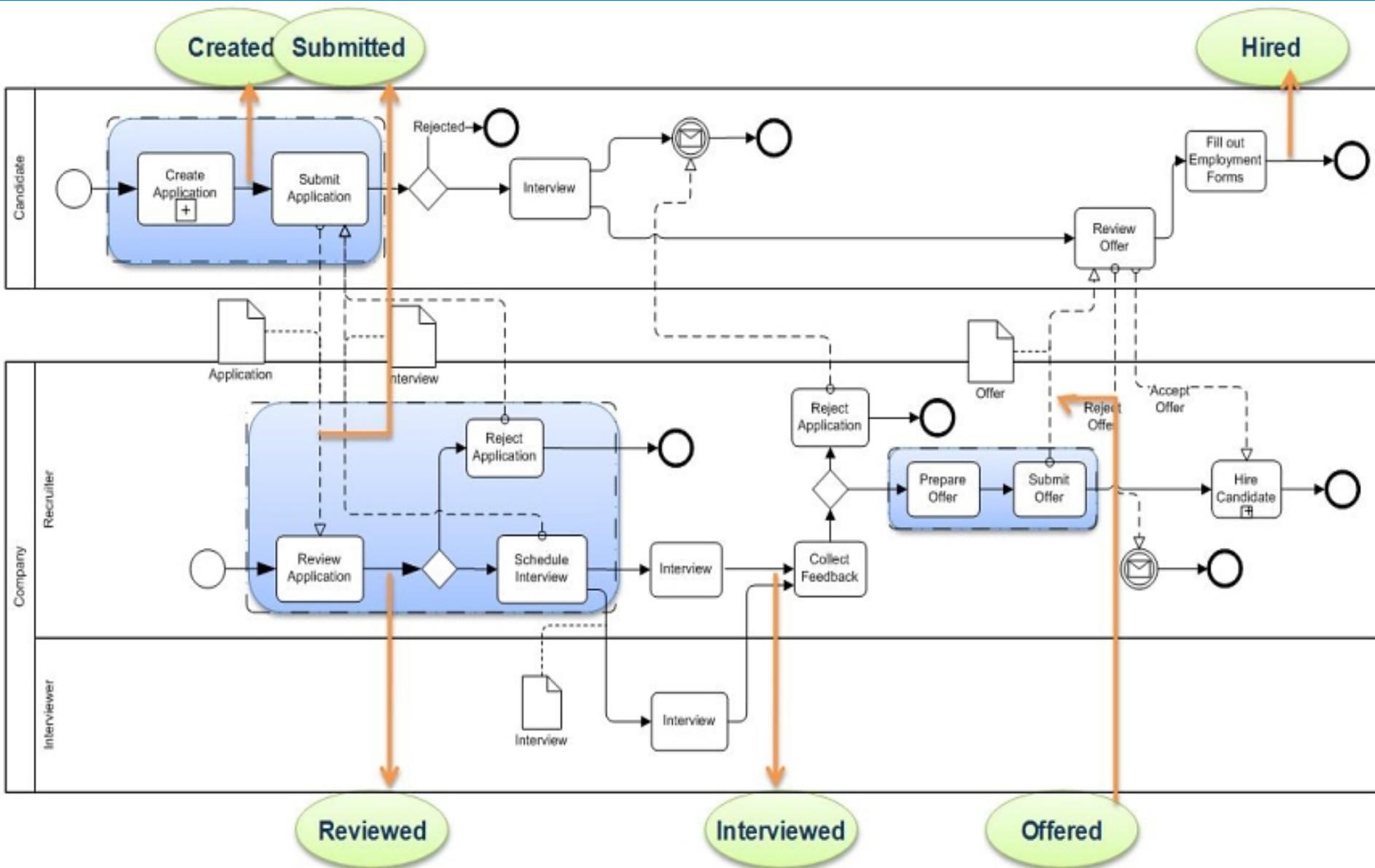
Default branch



Recap: Gateway examples



Recap: Pools/swimlanes



Lecture overview

- Information sources
- From L1 to L2
- L2: timing precision
- BPMN 2.0 Level 2:
 - Subprocess
 - Activity call
 - **Events**
 - Messages
 - Signals
 - Errors
 - Escalations
 - Gateways
 - BPMN 2.0
summary

Information sources

- **BOOK: BPMN method and style / Bruce Silver**
 - ISBN:9780982368107, Library FI, Amazon 33\$
- **BPMN 2.0 poster**
 - 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>

BPMN 2.0: from L1 to L2

- Level 1

- Flowcharting
- Only order is important
- No simulation possible
- No nesting
- Simple events

- Level 2

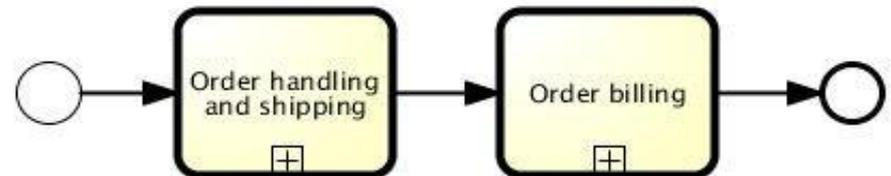
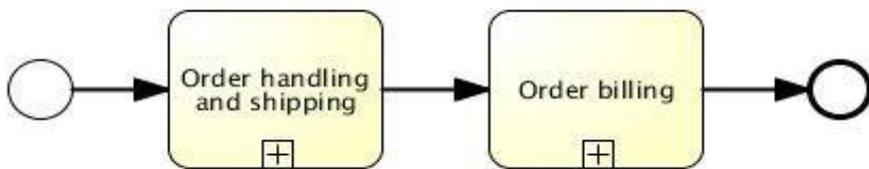
- Analytical BPMN model
- Precise activity execution timing
- Allow simulations and process optimization
- Subprocess nesting
- Events and signals
- Exception handling

Level 2: timing precision

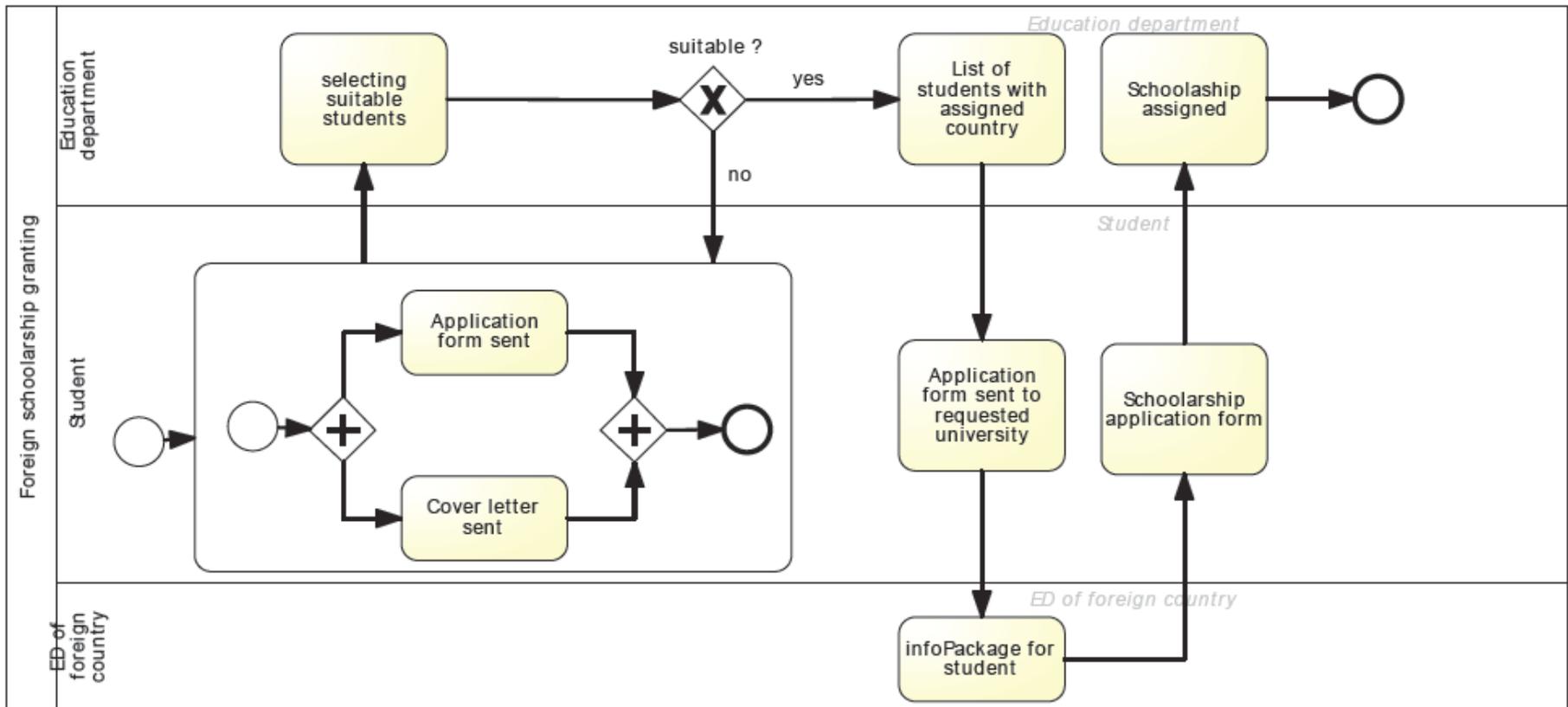
- Each activity has exact start and completion
- Service task
 - Starts immediately when reached
 - Being performed immediately and completed
- User task
 - Starts immediately when reached
 - Being performed once user open it in a "worklist" = task "claim"

Subprocess vs Call activity

- Subprocess
 - Expandable (nested) part of the process
 - Defined inside process
 - Nested for better readability
- Activity call
 - Call of global task or process
 - Defined as separate process - imported
 - Reusable in other processes



Subprocess vs Call activity



Events

Downloaded from: <http://frapu.de/blog/index.php?m=07&y=09&d=01&entry=entry090701>

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Events

	Top-Level	Start Event Sub-Process Interrupting	Event Sub-Process Non-Interrupting	Catching	Intermediate Boundary Interrupting	Boundary Non- Interrupting	Throwing	End
None: Untyped events, indicate start point, state changes or final states.								
Message: Receiving and sending messages.								
Timer: Cyclic timer events, points in time, time spans or timeouts.								
Escalation: Escalating to an higher level of responsibility.								
Conditional: Reacting to changed business conditions or integrating business rules.								
Link: Off-page connectors. Two corresponding link events equal a sequence flow.								
Error: Catching or throwing named errors.								
Cancel: Reacting to cancelled transactions or triggering cancellation.								
Compensation: Handling or triggering compensation.								
Signal: Signalling across different processes. A signal thrown can be caught multiple times.								
Multiple: Catching one out of a set of events. Throwing all events defined								
Parallel Multiple: Catching all out of a set of parallel events.								
Terminate: Triggering the immediate termination of a process.								

Explicitly modeled occurrences

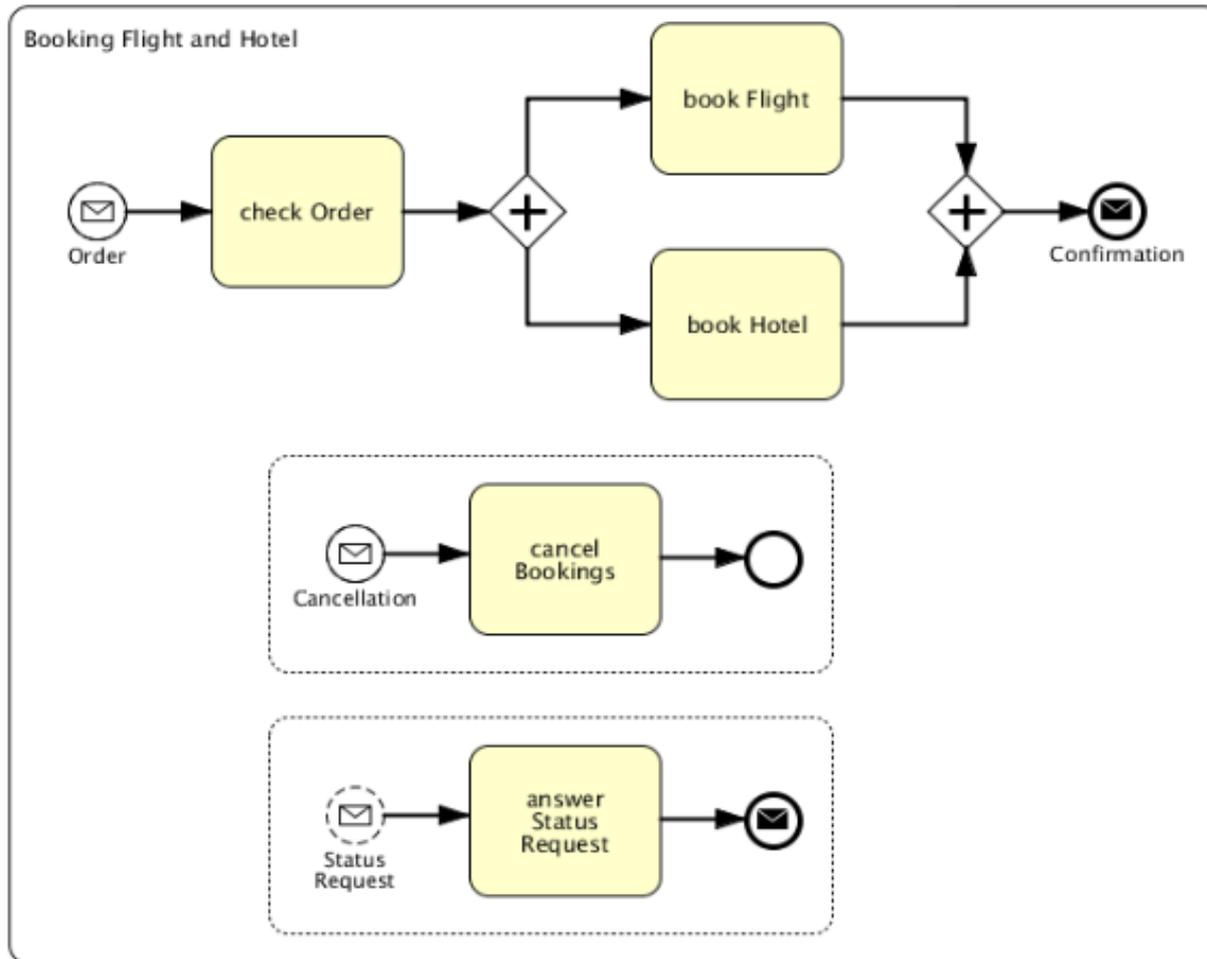
Questions?
Break 10mins
Feedback

Events

- **Start events**
 - Event initiate process/subprocess
 - One (or more in special cases)
 - Always catching
- **Intermediate events**
 - Occur during process
 - Can be thrown or caught
 - Can be used for gateway decision
- **End events**
 - Occur at the end of process flow
 - Always throwing
 - End affect only one branch (vs Terminate)

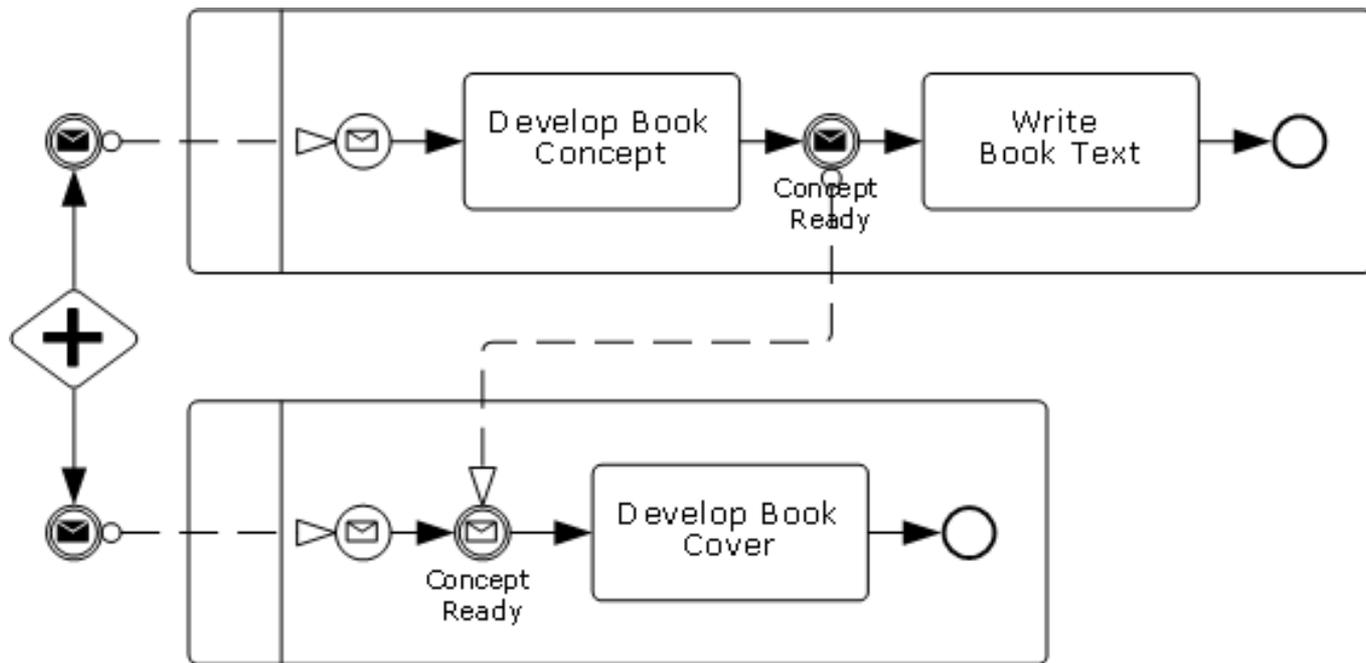
Start Events

- Interrupting/Non-interrupting



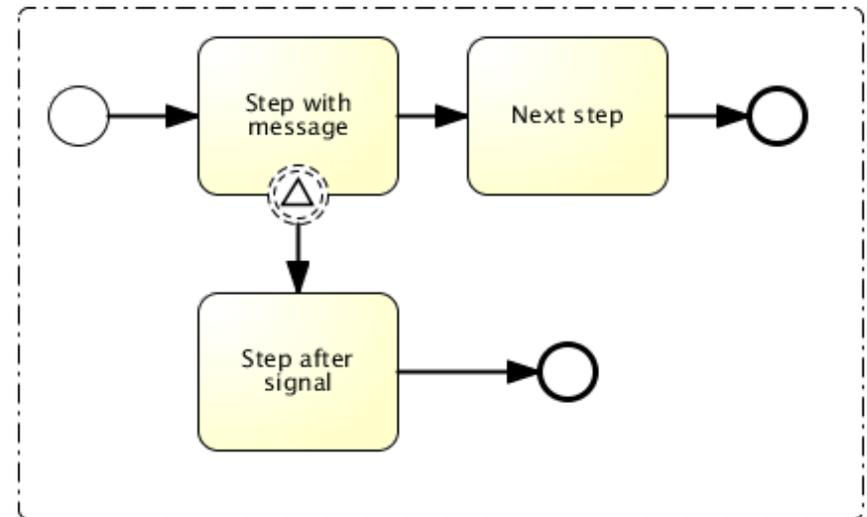
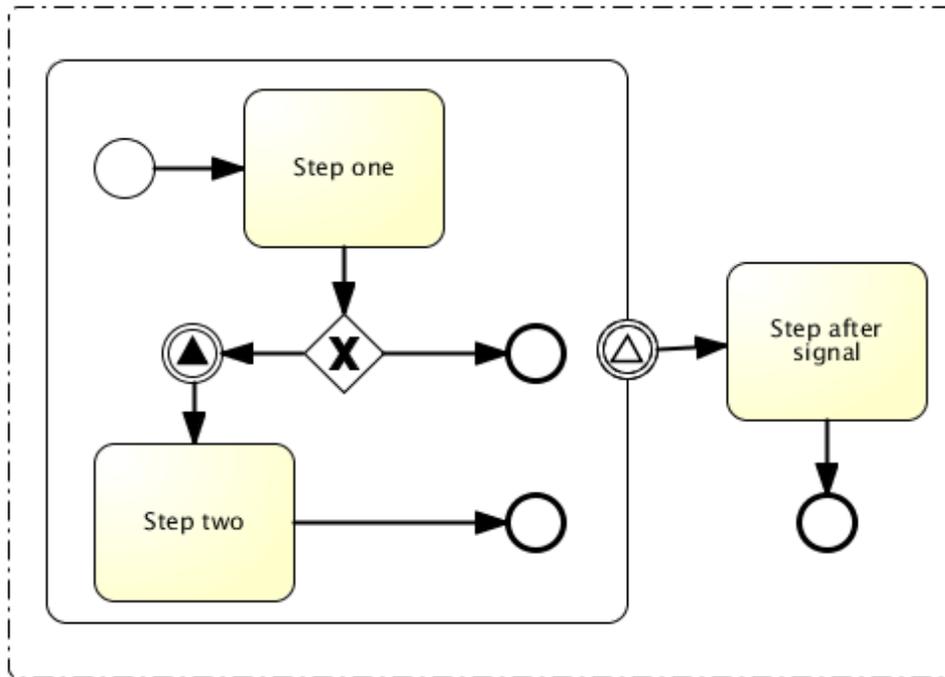
Intermediate Events

- Catching/Throwing

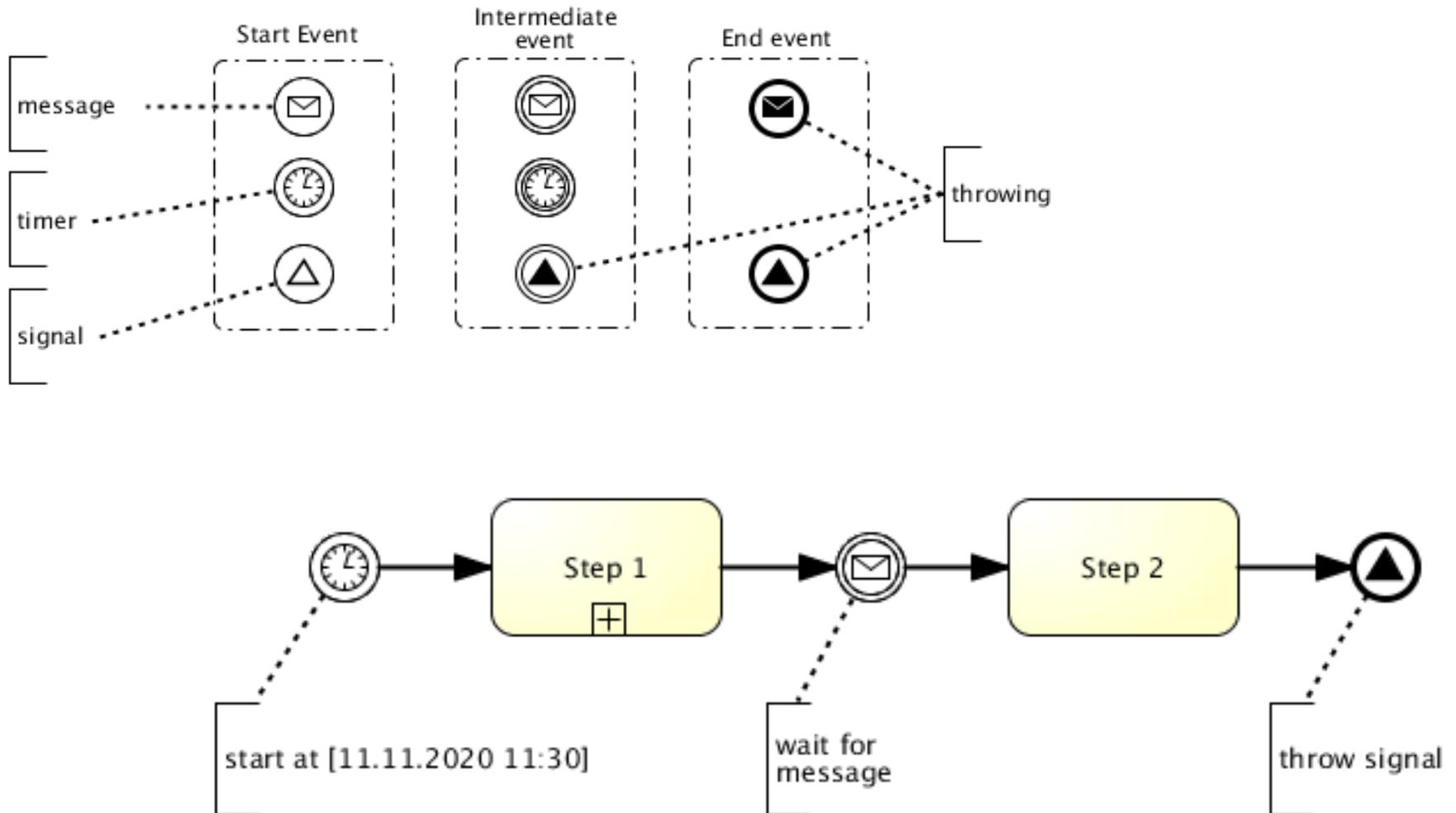


Intermediate Events cont.

- Boundary - interrupting/non-interrupting



Examples - BPMN2



Events

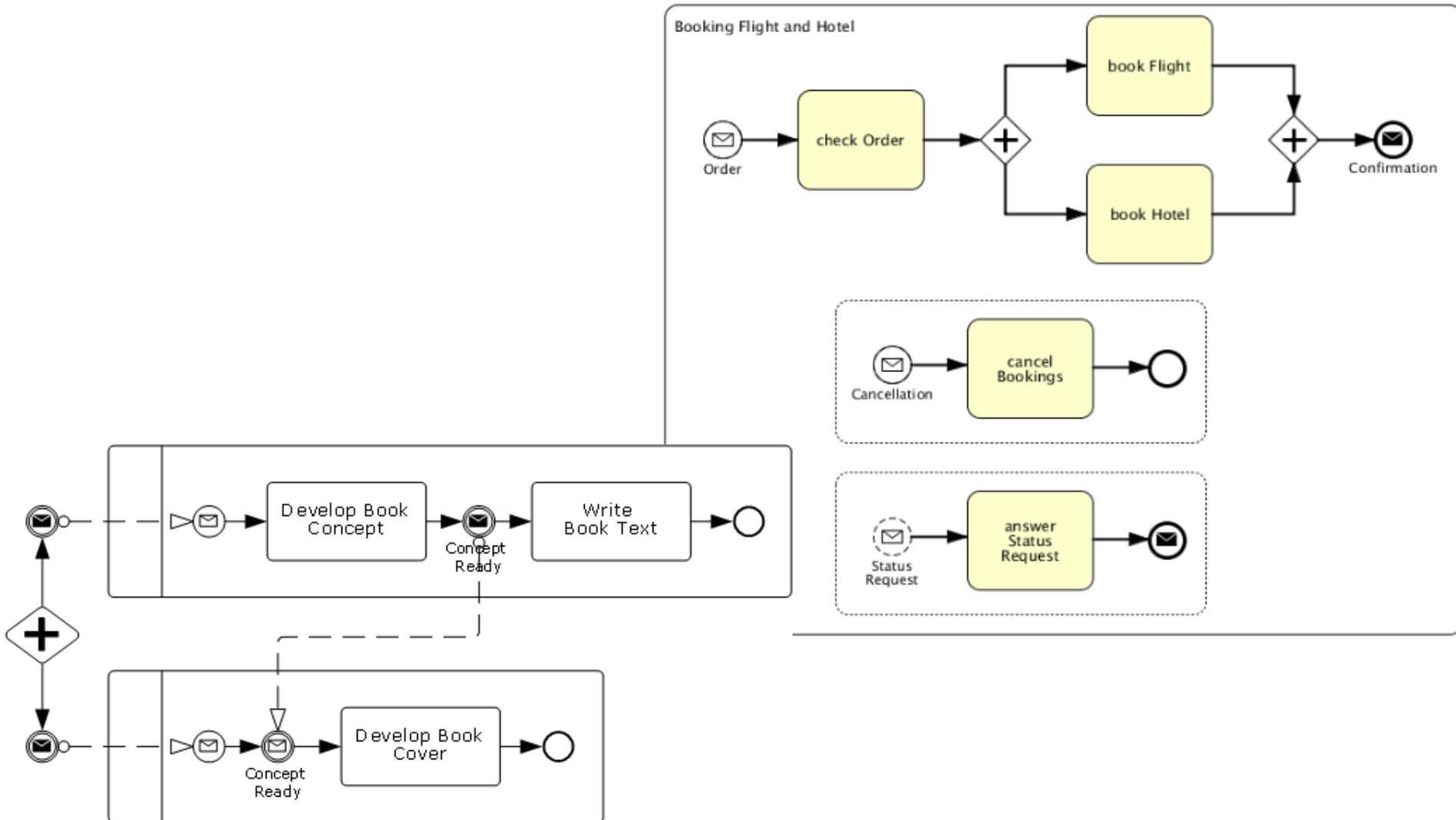
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Messages

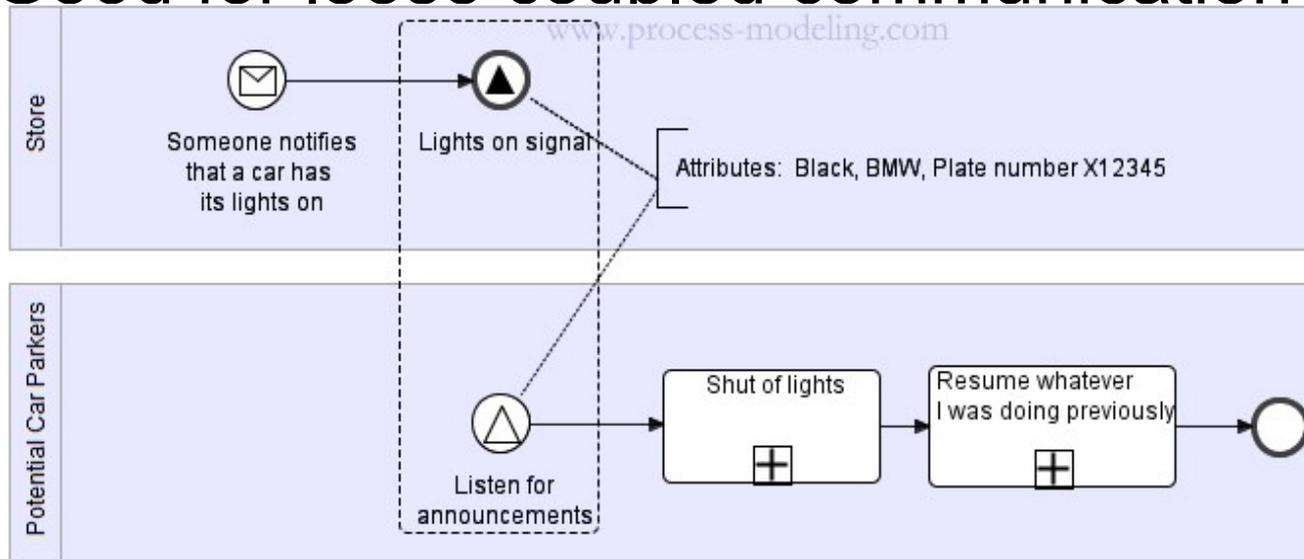
- Message represents a message send by external entity (Pool, Lane etc.)
- Message does not have to be JMS, SOAP etc. but it can be fax, mail, SMS etc.
- Message can:
 - Be received and start process
 - Occur as intermediate event
 - Be send during end of process

Message examples



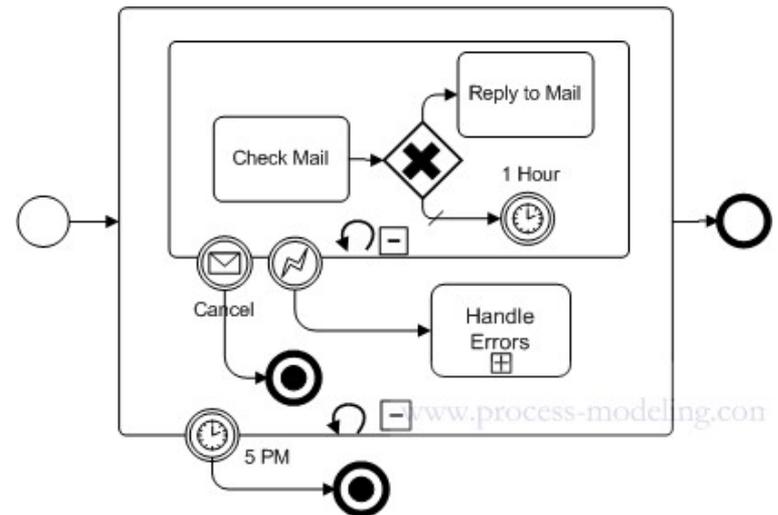
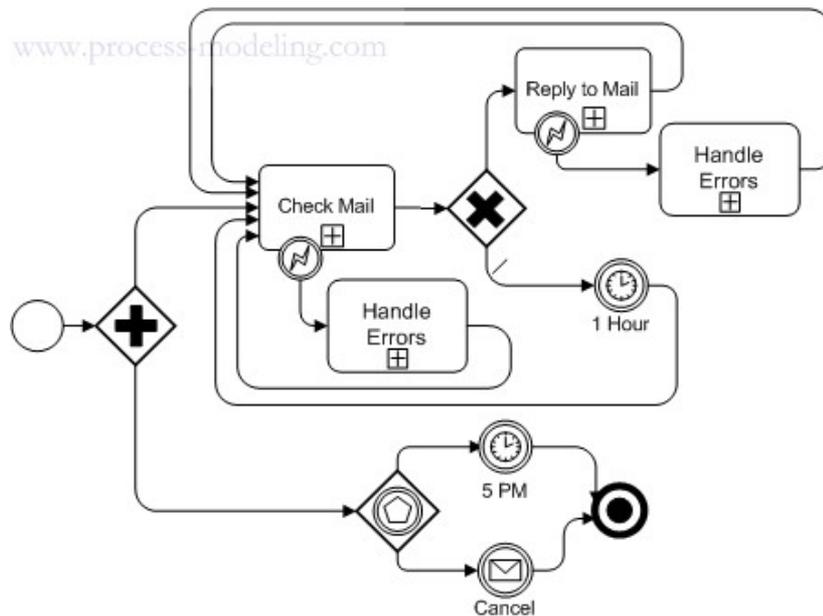
Signals

- Signal is same as message but
 - Is given by external entity
 - Is not addressed to any particular consumer
 - Entity giving signal does not know who is listening
 - Good for loose coupled communication



Errors

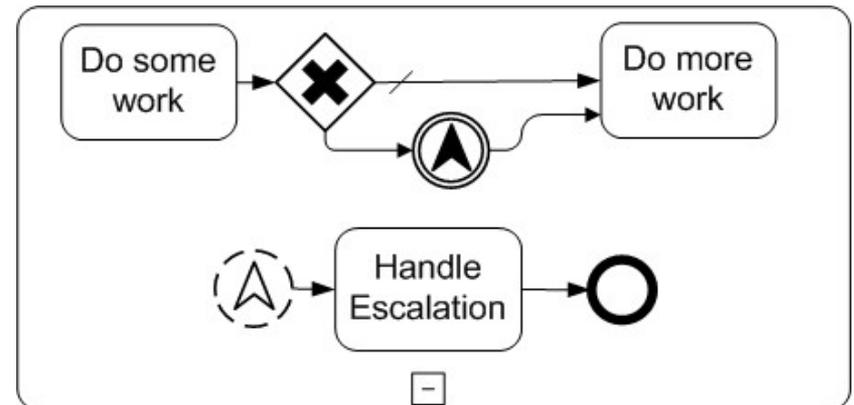
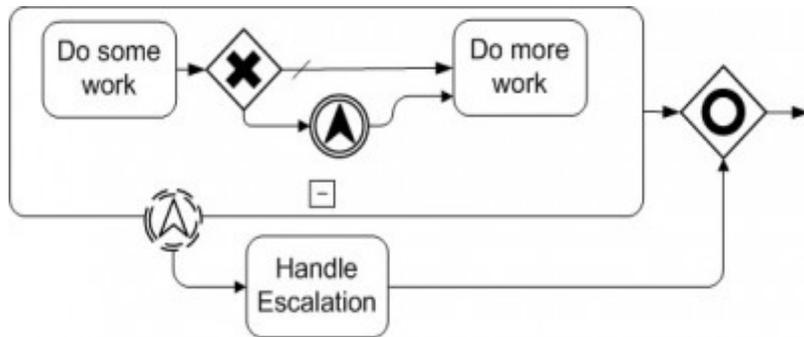
- Express some serious problem in process
- Throw - catch mechanism
- Always interrupt the process
- Always boundary event



Escalations

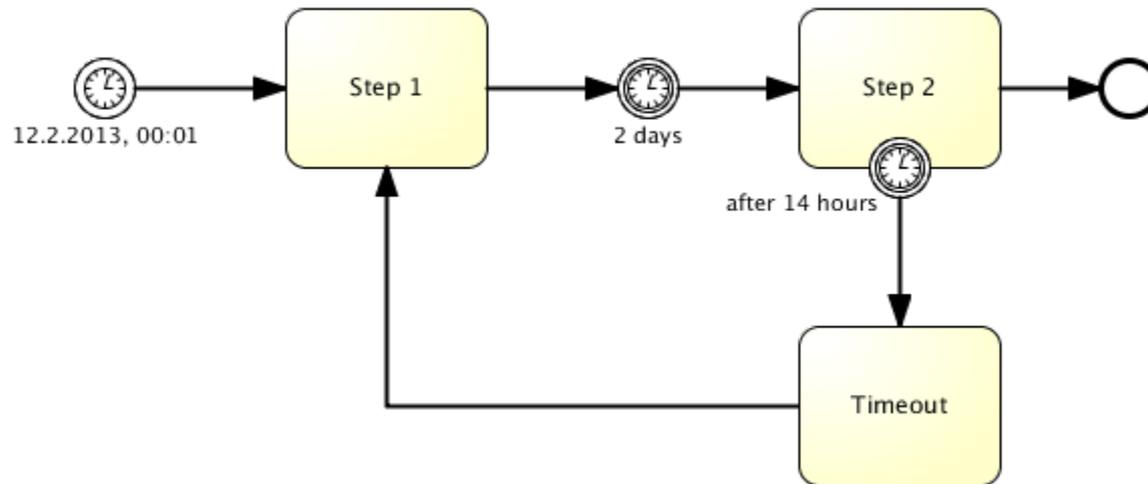


- Escalation is allowing non-interrupting/interrupting flow to be executed
- Used for additional steps to be done
- Parallel activities to be done

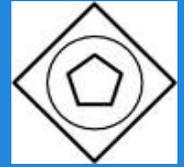


Timer

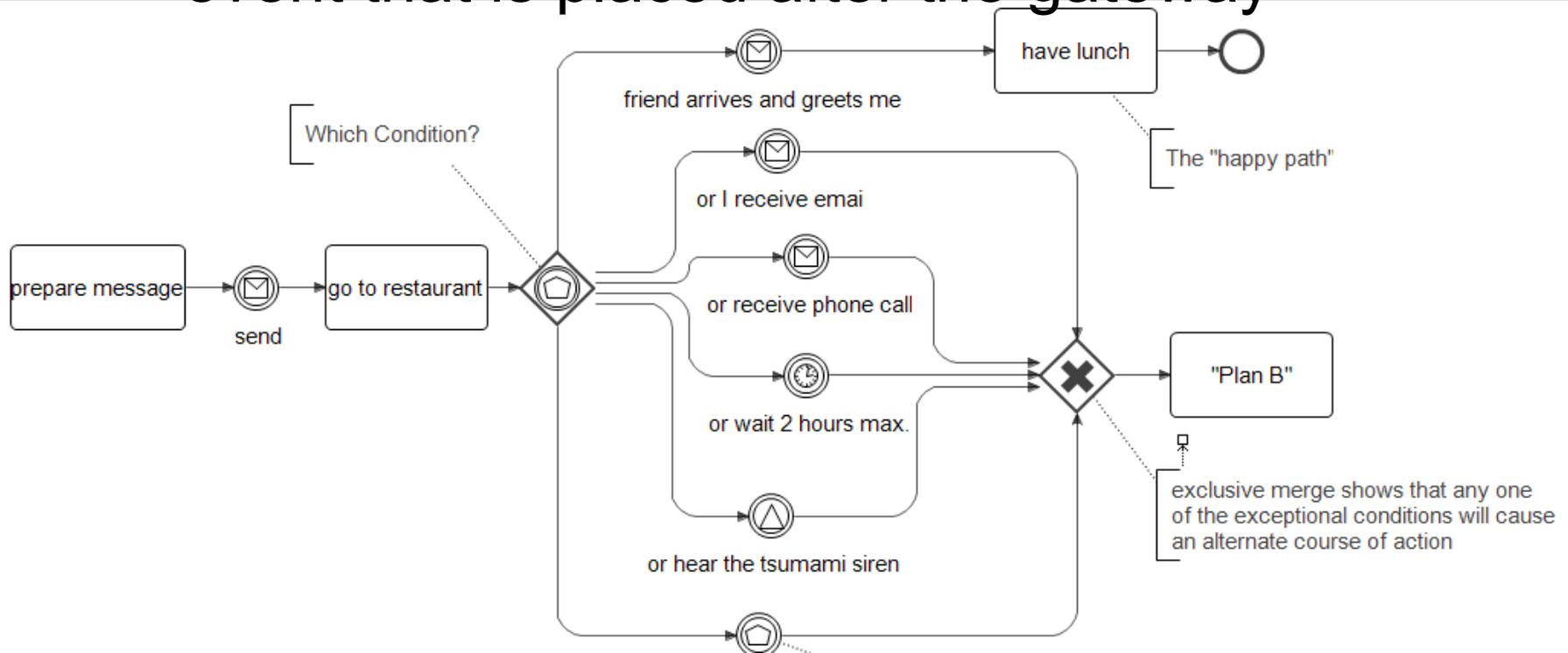
- Cyclic events
- Points in time
- Timeouts



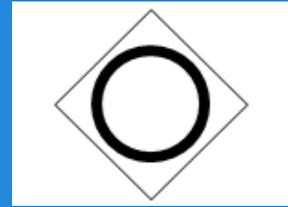
Event-based gateway



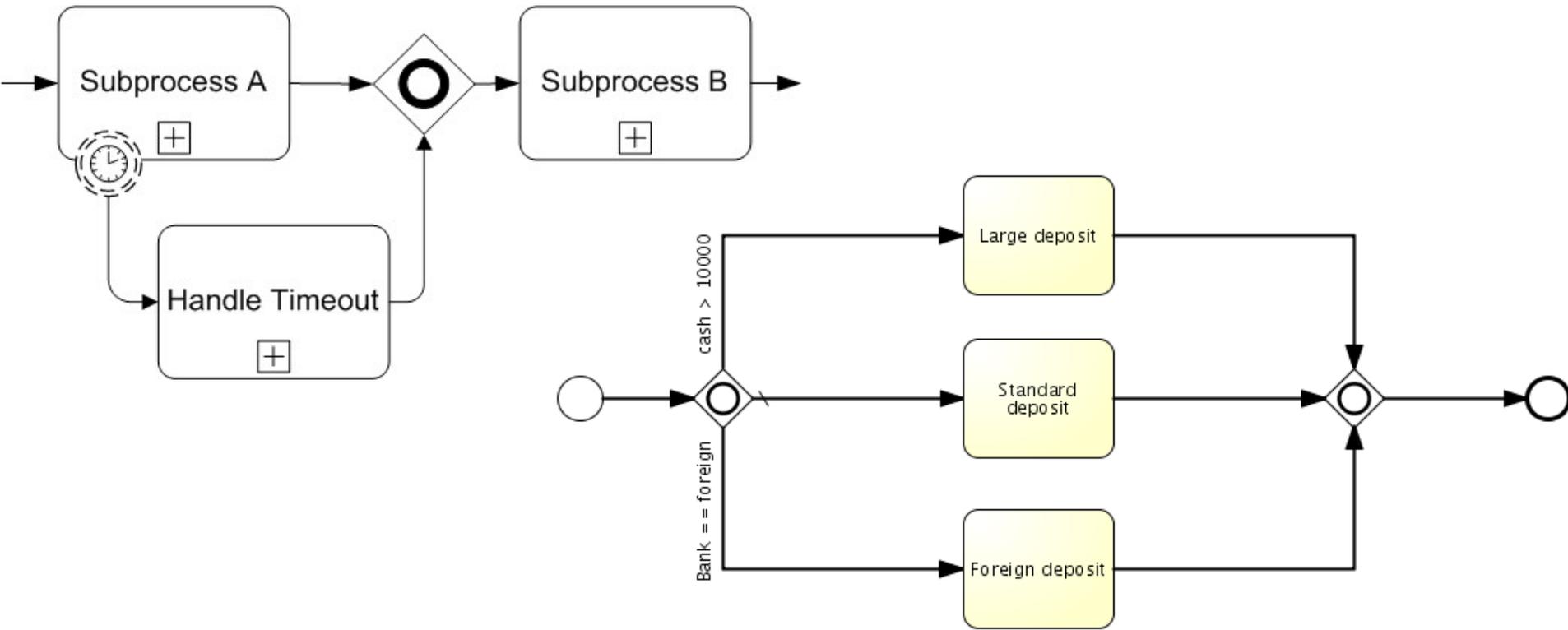
- Event-based gateway
 - Branching according to event
 - Different semantics – branched according to event that is placed after the gateway



Inclusive OR-gateway



- One or more branches can be performed
- Depends on conditions
- Branches performed in parallel

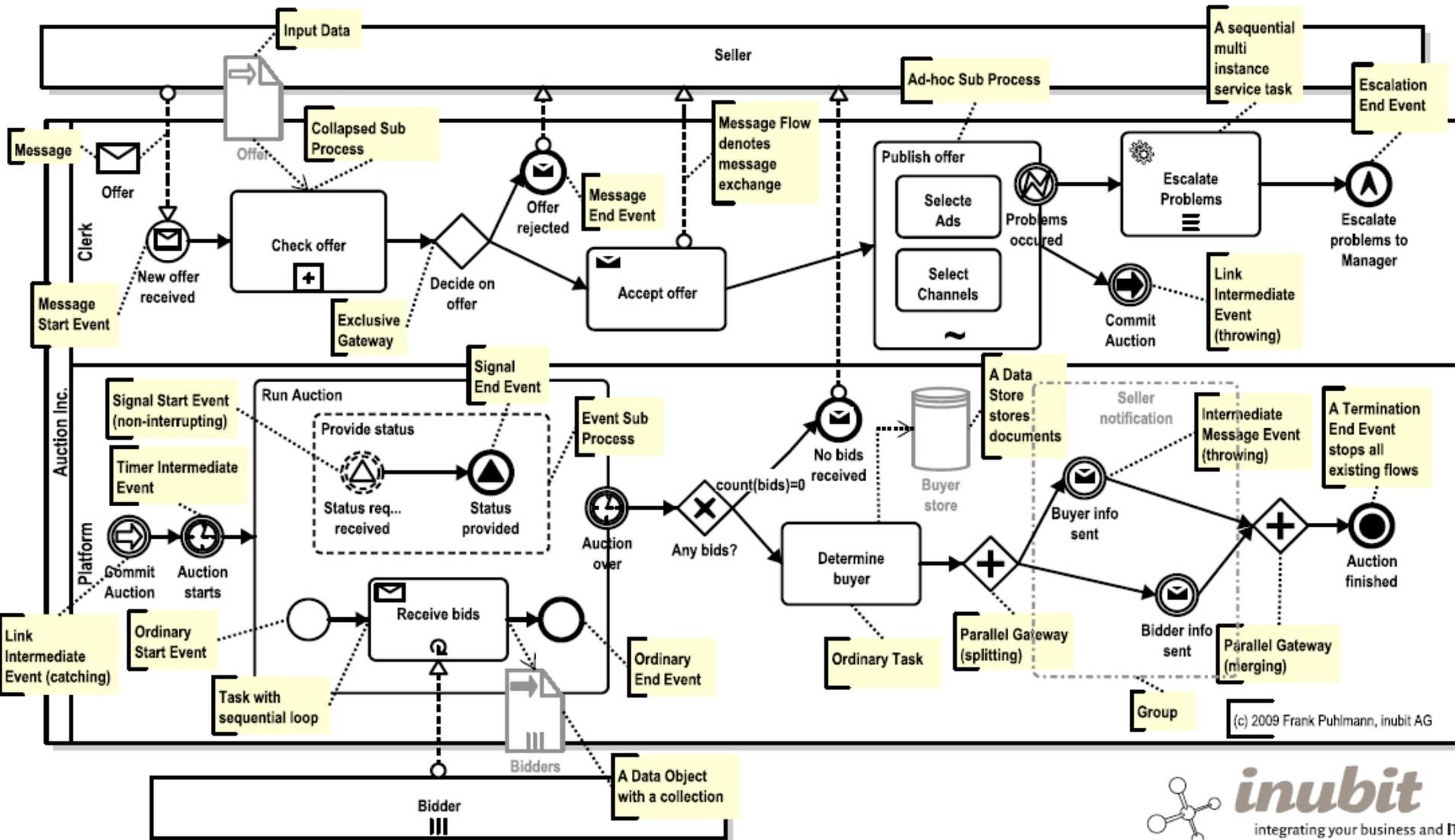


What is in not covered here

- Transactional subprocesses
 - Compensations
 - Cancel events
- Extended looping
- Multi-instances
- Other diagrams covered in BPMN 2.0 specs
 - Choreography diagrams
 - Conversation diagrams

BPMN summary

Downloaded from: <http://rapu.de/blog/index.php?m=07&y=09&d=01&entry=entry090701-211320>



Assignment (Homework)

- Create one BPMN process model (Level 2) from your in your team 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** 1.4. 20h
- Submit **electronic version**
 - Export to PNG in Signavio, submit to IS MUNI to folder "homeworks" **before** 1.4. 20h as <surname>_bpmn.png

FIN

Questions?

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Spring 2012

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