Process modeling II

PV207 – Business Process Management

Spring 2018

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Last lecture recap

- Why process modeling?

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- Why process modeling?
- BPMN L1, L2, L3

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- BPMN L1, L2, L3
- Quality aspects of process model

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Last lecture recap

- Why process modeling?
- BPMN L1, L2, L3
- Quality aspects of process model
- Process interactions
  - Private process
  - Abstract process (Black box/Collapsed Pool)
  - Collaboration (Global) process

Last lecture recap

- Pool and Lane
- Task (User, Service, Abstract/None)
- Subprocess (Collapsed, Expanded)
- Call Activity
- Start Event (None, Message, Timer)
- End Event (None, Message, Terminate)
- Gateway (Parallel, Exclusive)
- Sequence Flow
- Message Flow
- Data Object (Data store, Message)
- Text Annotation
- Link Event Pair

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
  - Business experts <=> analysts/developers
  - The goal is to express simple activity sequences
  - Minimum of nesting and interprocess interactions
  - Simple events only
- Level 2
  - Analytical BPMN model
  - Process analysts <=> Process developers
  - Precise activity execution timing
  - Subprocess nesting and interprocess interactions
  - 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”

Activity states

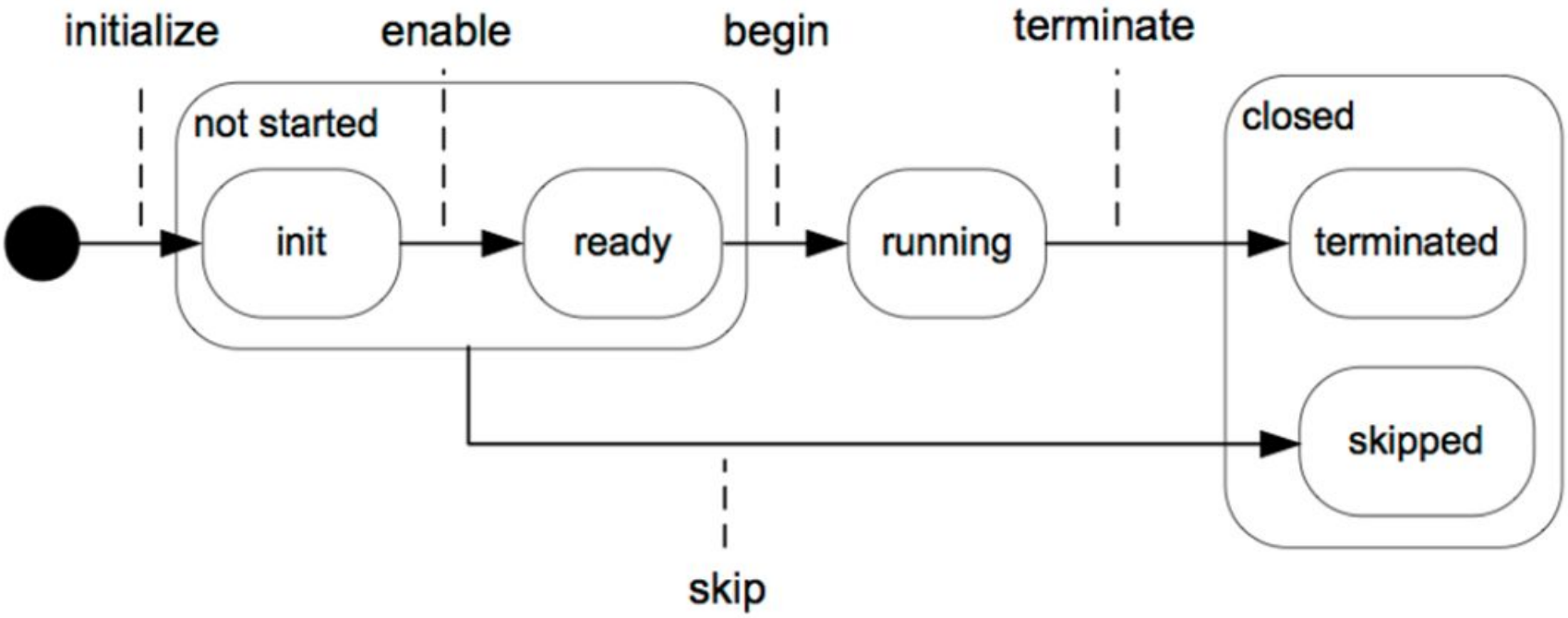
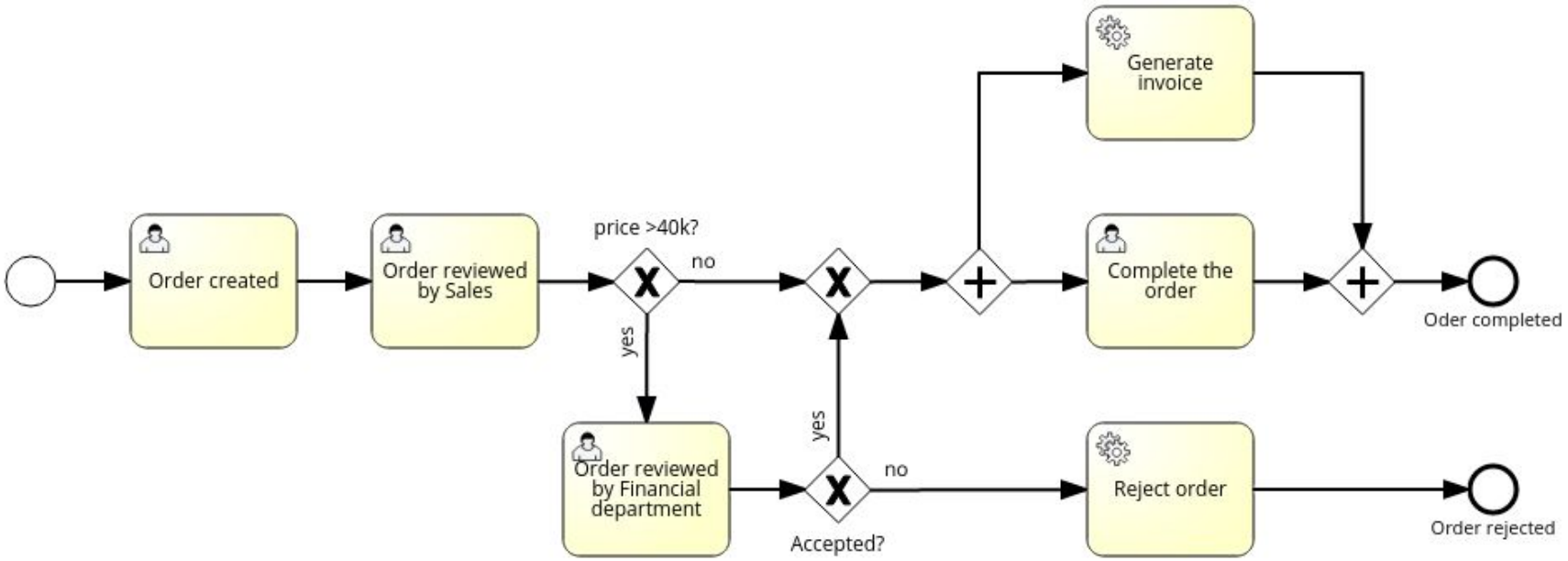


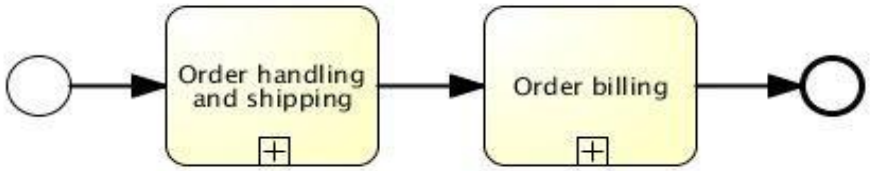
Fig. 3.9. State transition diagram for activity instances

Level 2: timing precision example

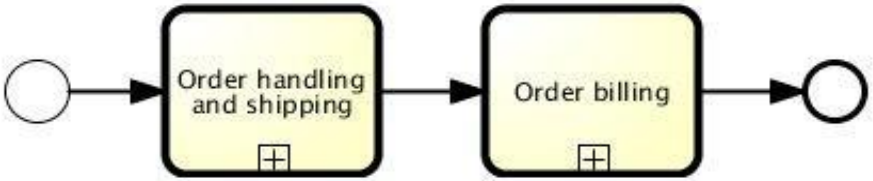


Subprocess vs Call activity

- Subprocess
  - Expandable (nested) part of the process
  - Defined inside process
  - Nested for better readability



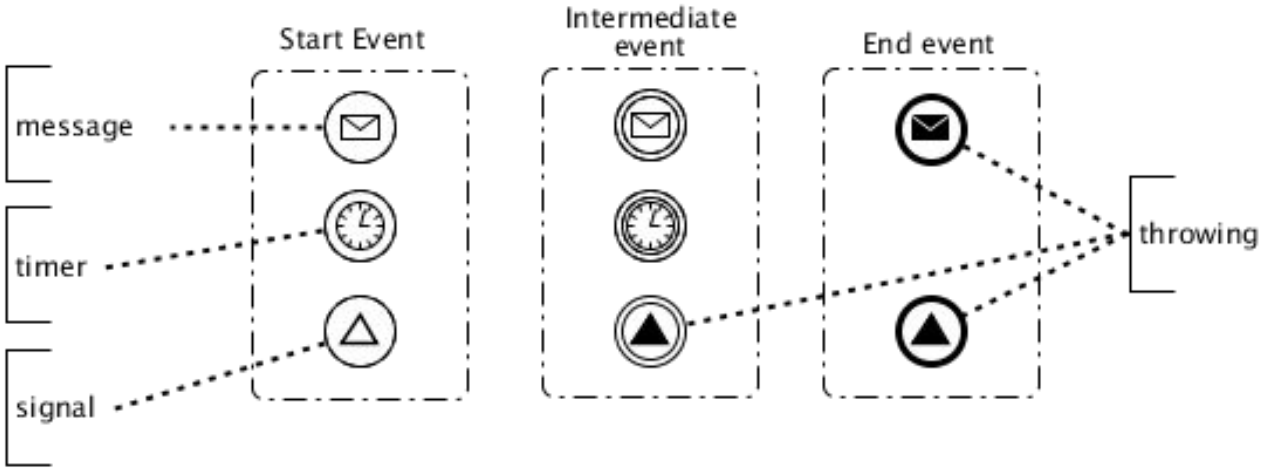
- Activity call
  - Call of global task or process
  - Defined as a separate process, then imported
  - Reusable in other processes

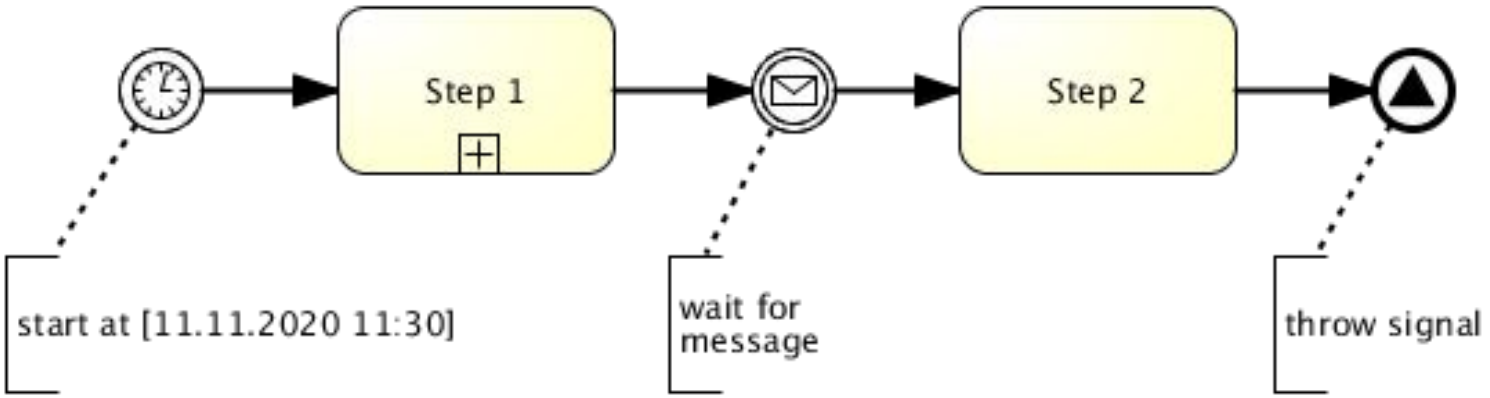


Event types: Basic types

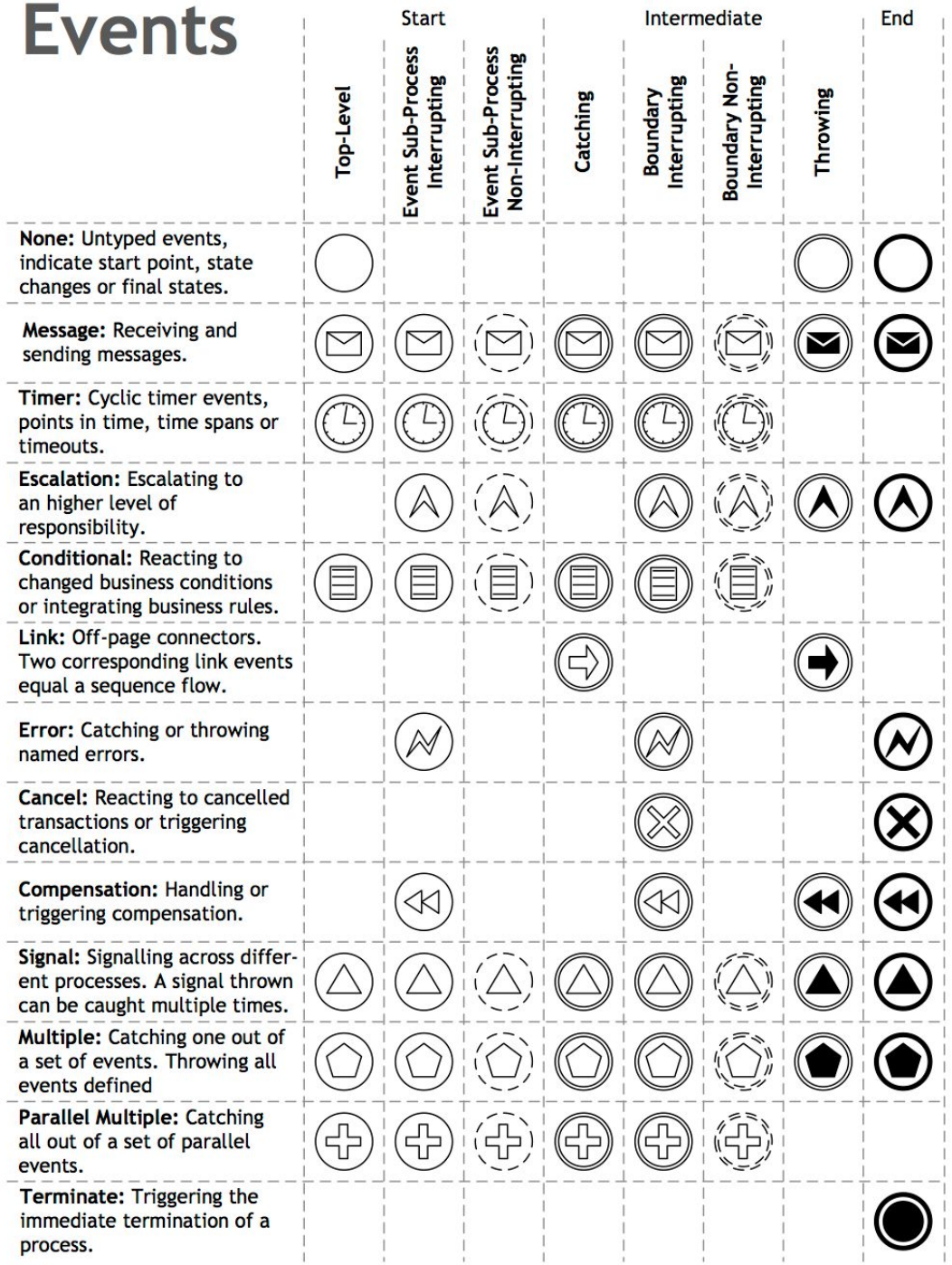
- Start events
  - Event initiate process/subprocess
  - One (or more in special cases)
  - Always catching
- Intermediate events
  - Occur during process
  - Can be throwing or catching
- End events
  - Occur at the end of process flow
  - Always throwing
  - End affect only one branch (except Terminate)

Event types - Examples



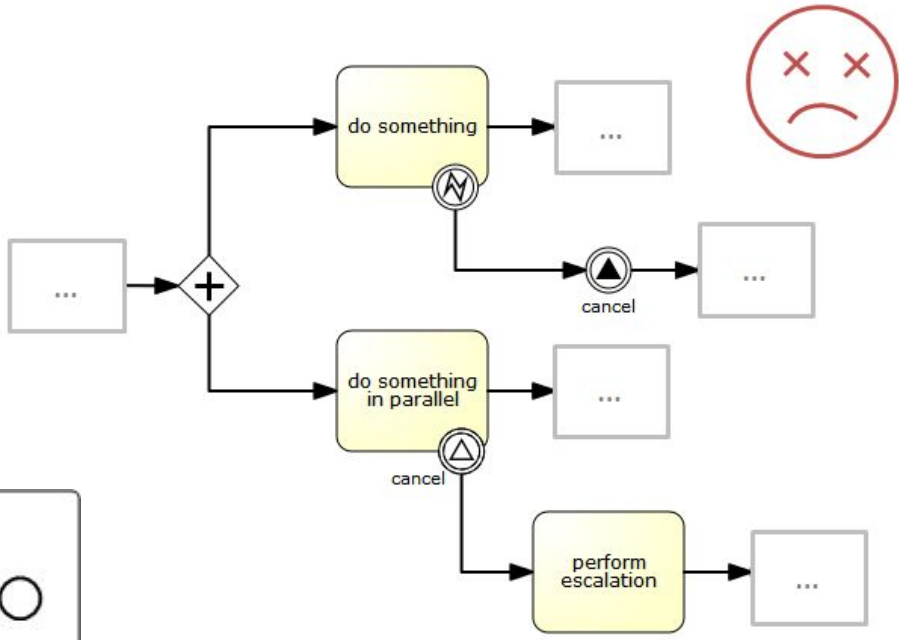


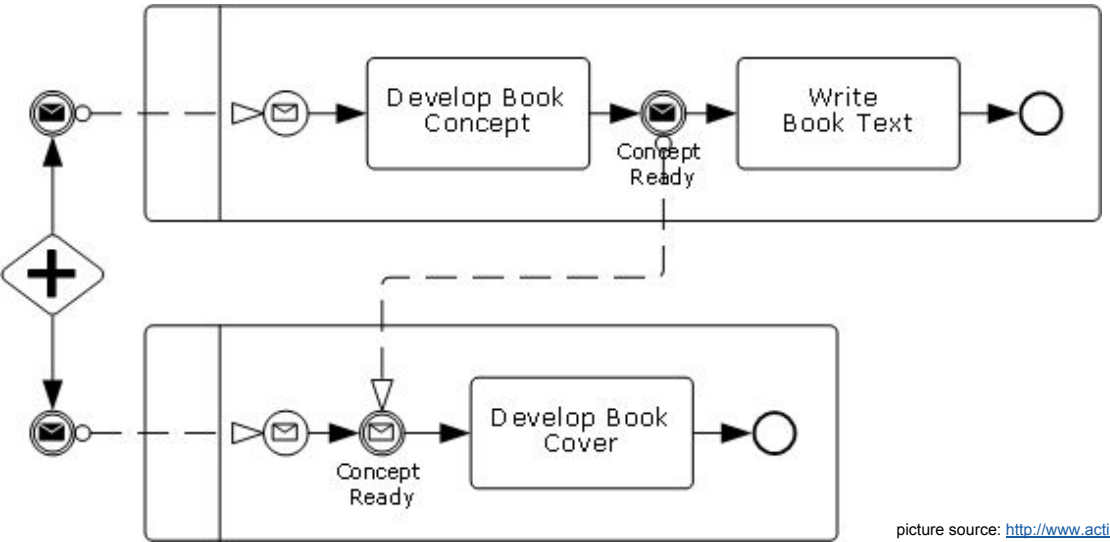
Events



Event types: Catching vs. Throwing

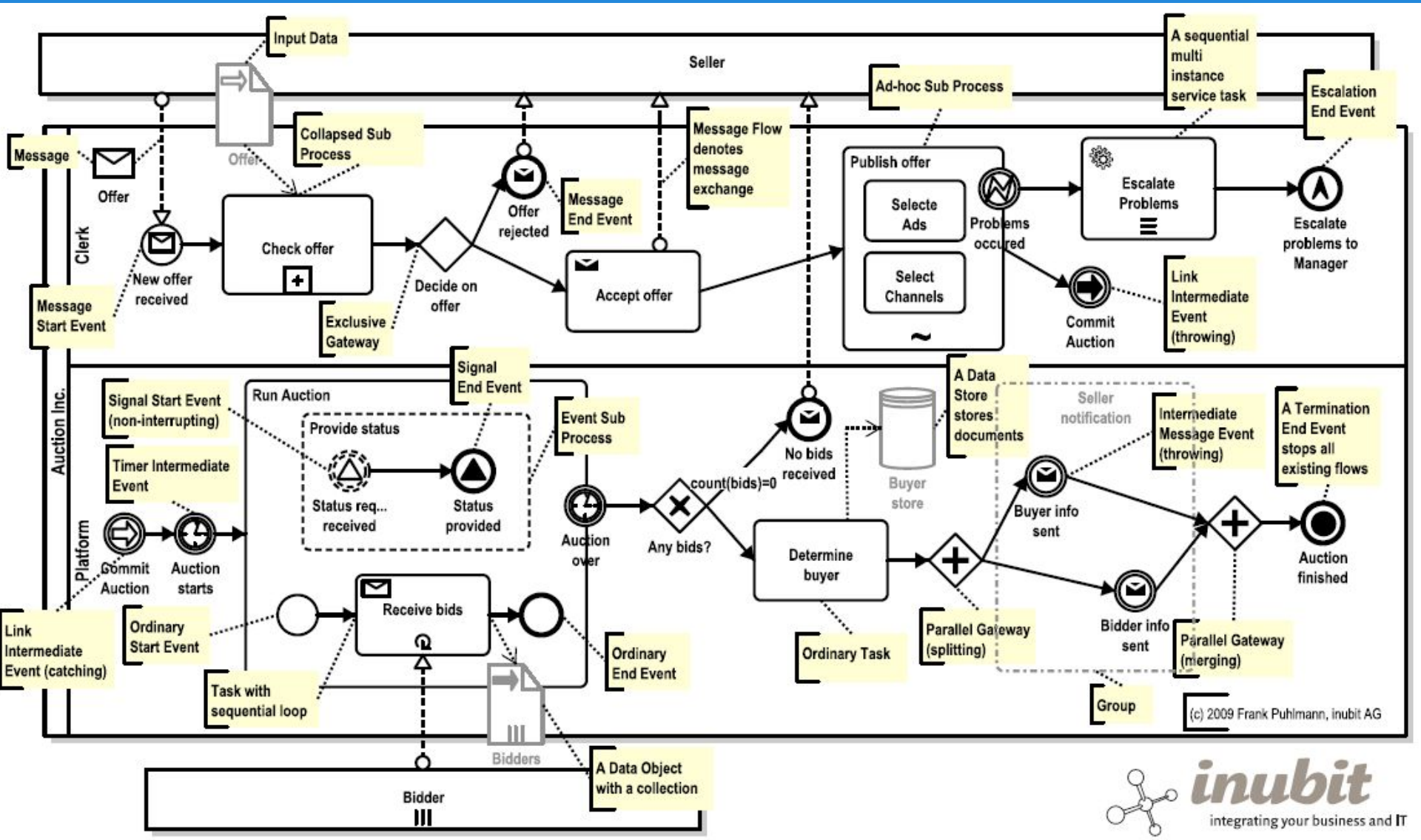
- Throwing
  - Emits the event
  - Flow continues immediately
- Catching
  - Catch the event
  - Flow waits for the event





picture source: http://www.activiti.org/userguide/, http://mainthing.ru/wp-content/uploads/2010/11/message-e.png

Break 10mins



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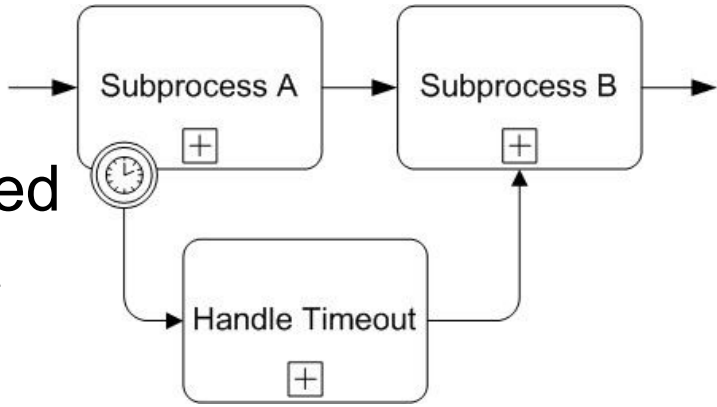
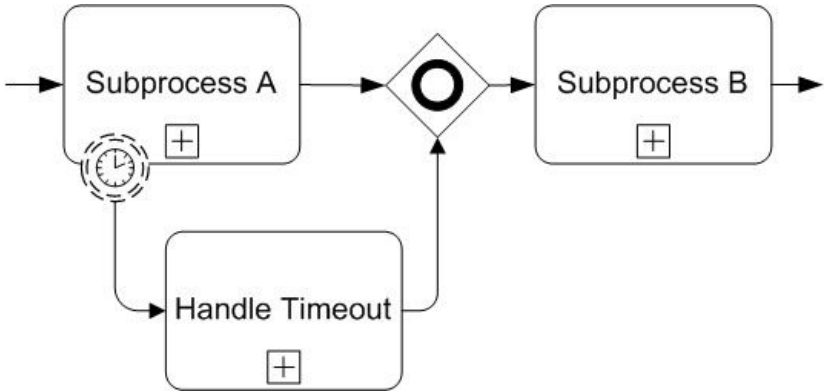
Event types: Interrupting vs non-interrupting

- Interrupting
  - Standard process flow is interrupted
  - Flow is directed through the event

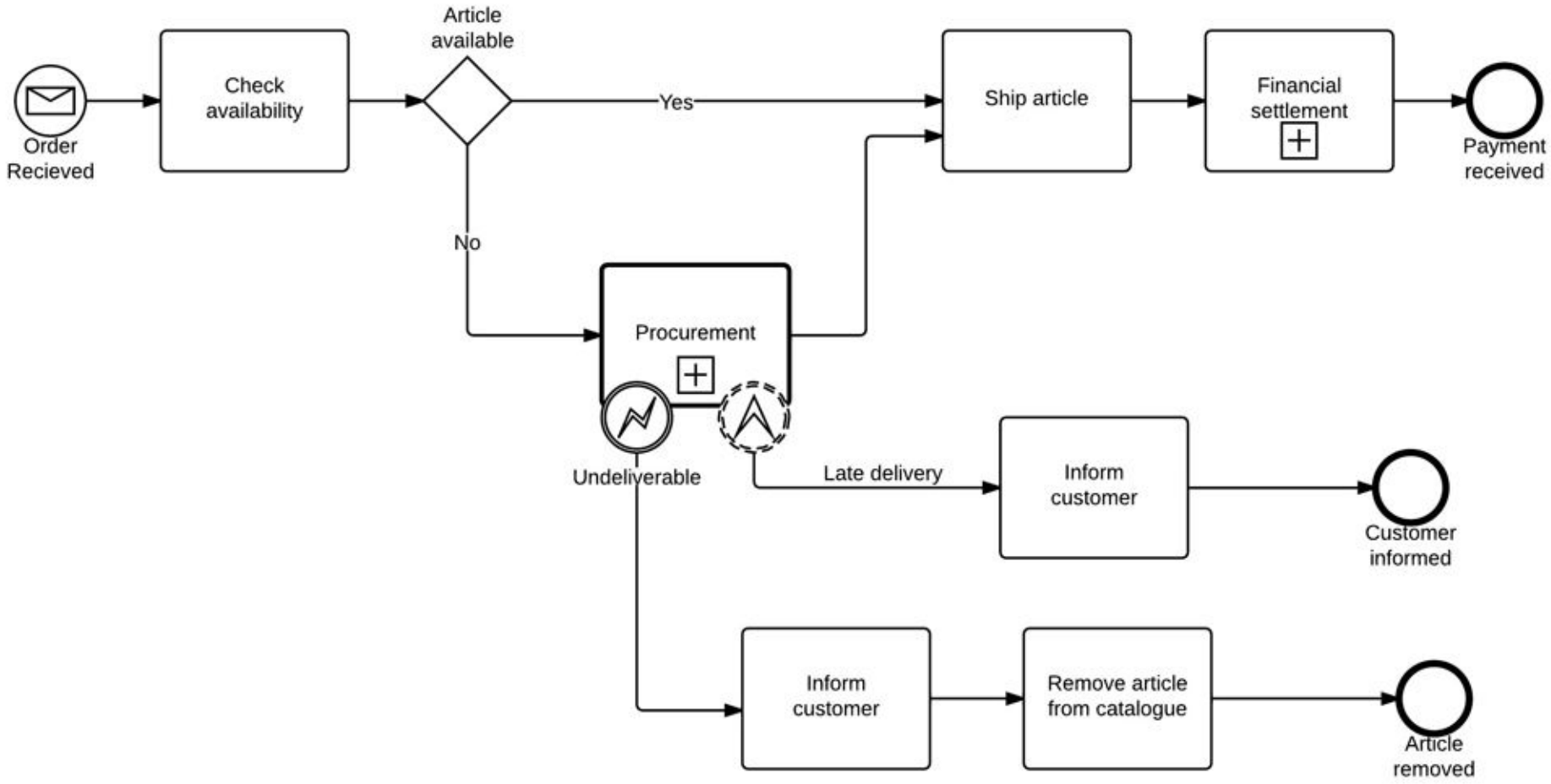


- Non-interrupting
  - Standard flow continues normally
  - Parallel flow is directed through the event



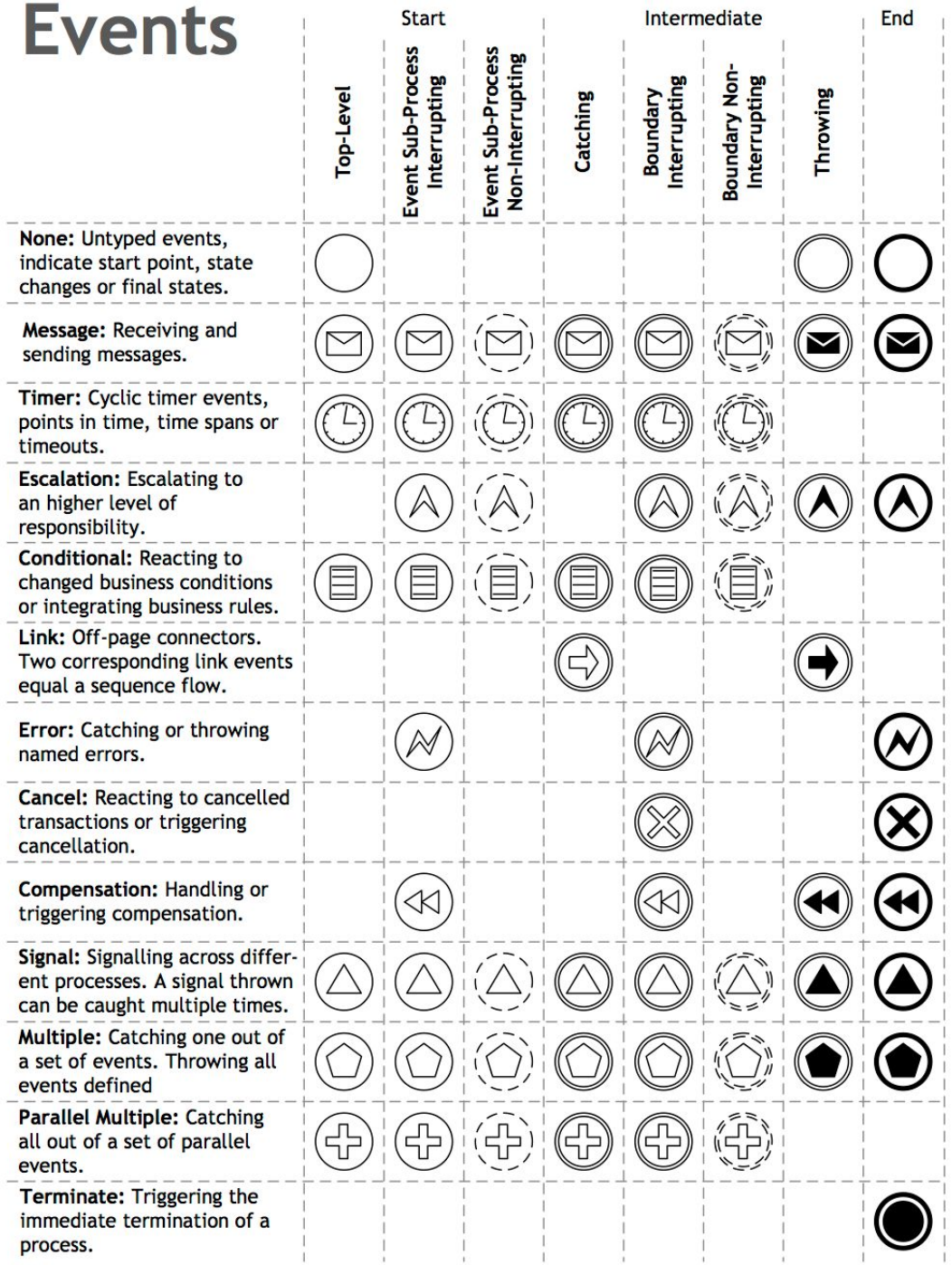
picture source: http://www.processmodeling.info/posts/highlights-from-bpmn-2-0-non-interrupting-events/

Event types:
Interrupting vs non-interrupting

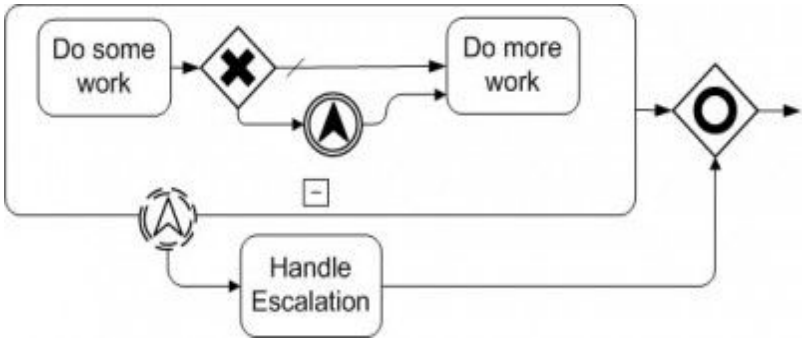


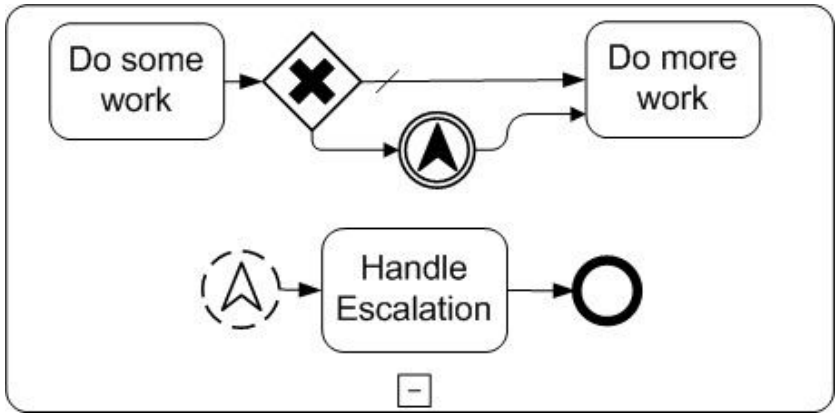
picture source: http://processpedia.com.au/community/wp-content/uploads/Order-Procurement-Process-Map-Example.png

Events

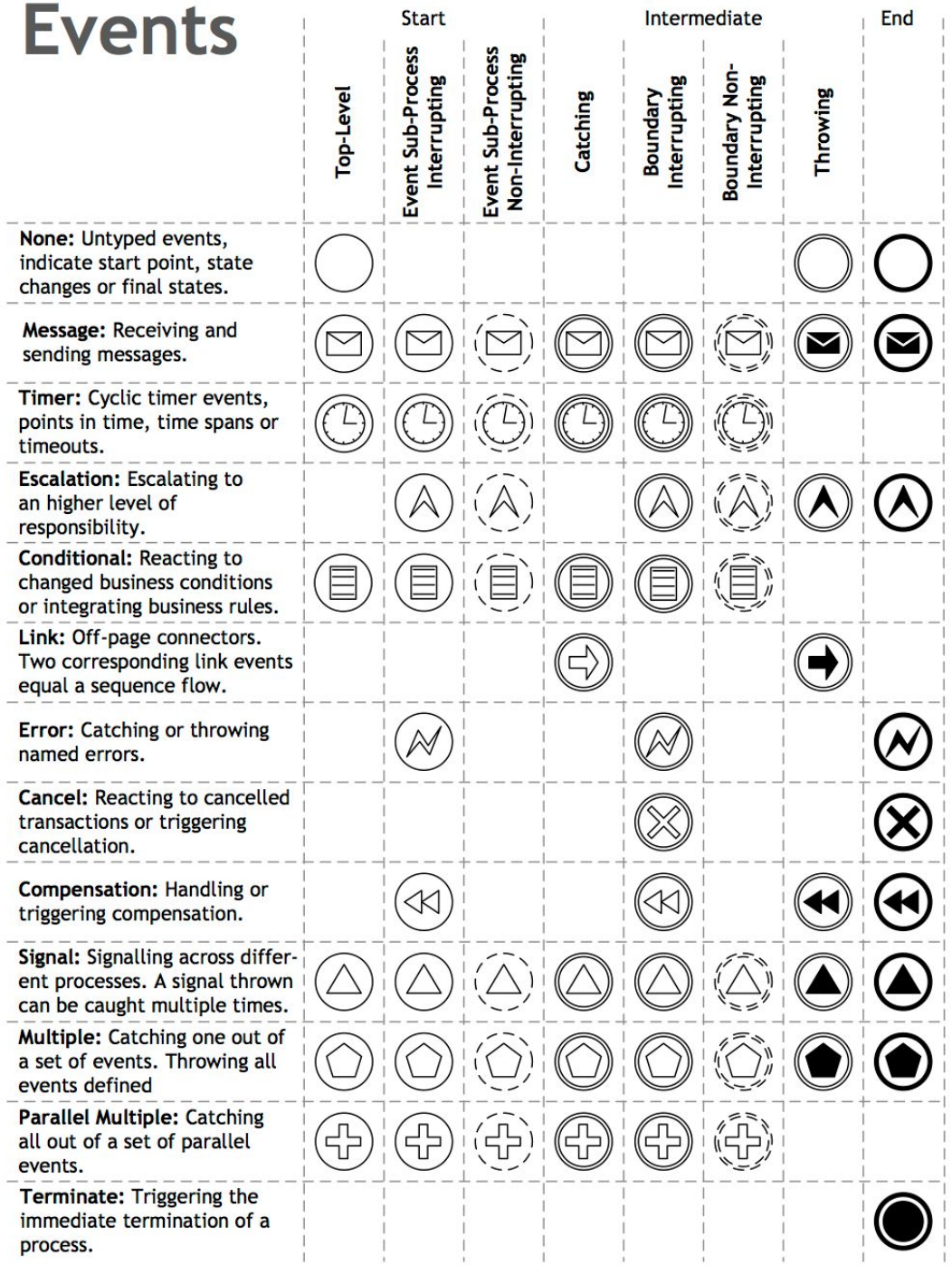


Event types:
Intermediate boundary vs. in-flow





Events

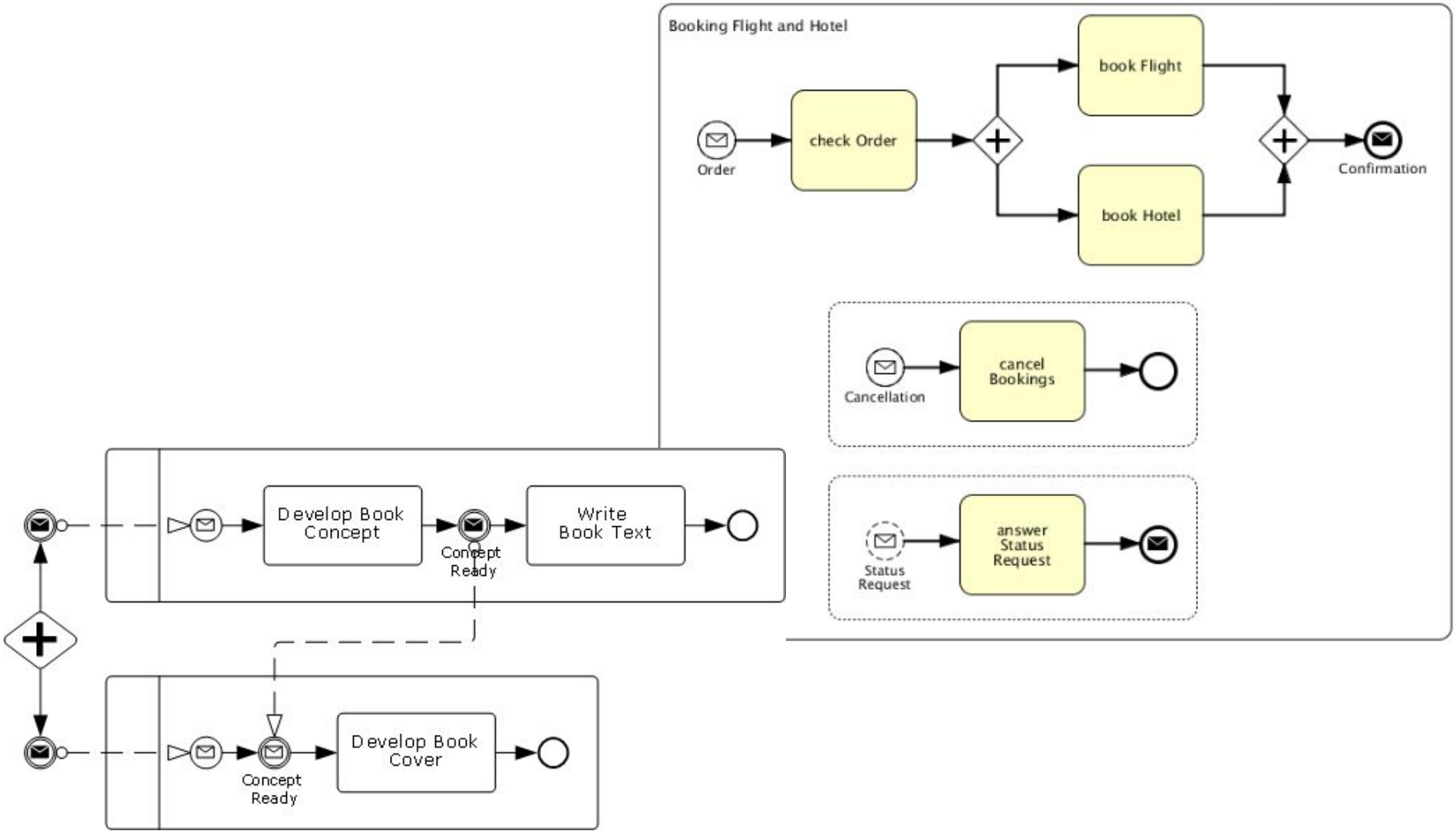


Event semantics: Messages

- Message represents a message send by external entity ~ Pool
  - Messaging is for interprocess communication
  - Inside the process use flow instead
- Message does not have to be JMS, SOAP etc. but it can be fax, mail, SMS etc.

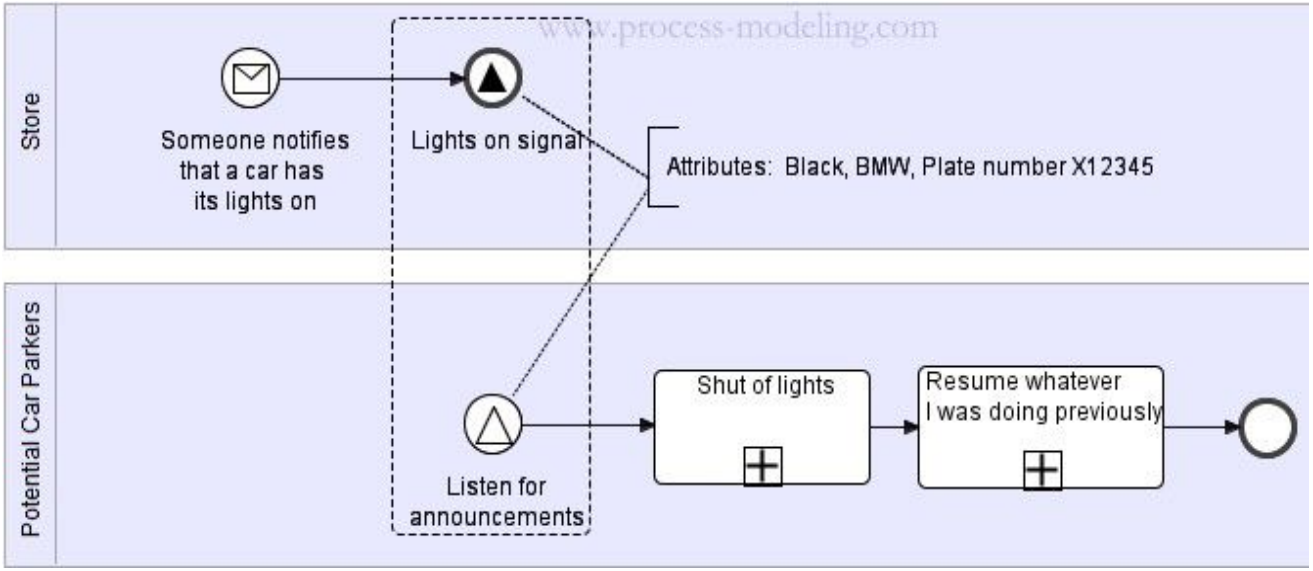
- A Message can be received and start process
- A message can occur as intermediate event
- A message can be sent at the end of process

Event semantics: Message - examples



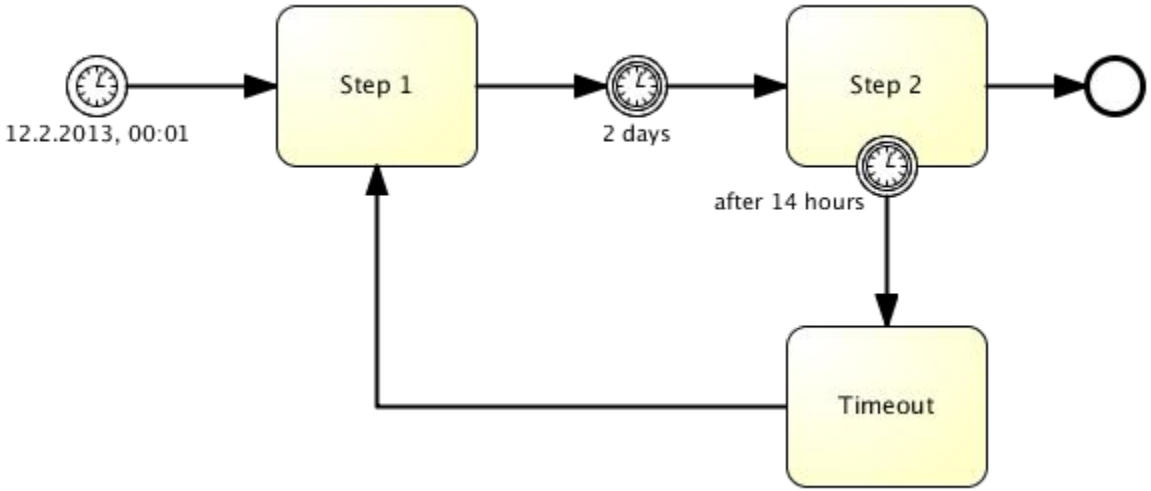
Event semantics: Signals

- Signal is similar to message, except
  - **Is not** addressed to any particular consumer
  - Entity producing signal does not “care” who is listening
  - Many instances of the same process can consume it
  - Good for loosely coupled communication
  - Signals are used often inside one process, messages not



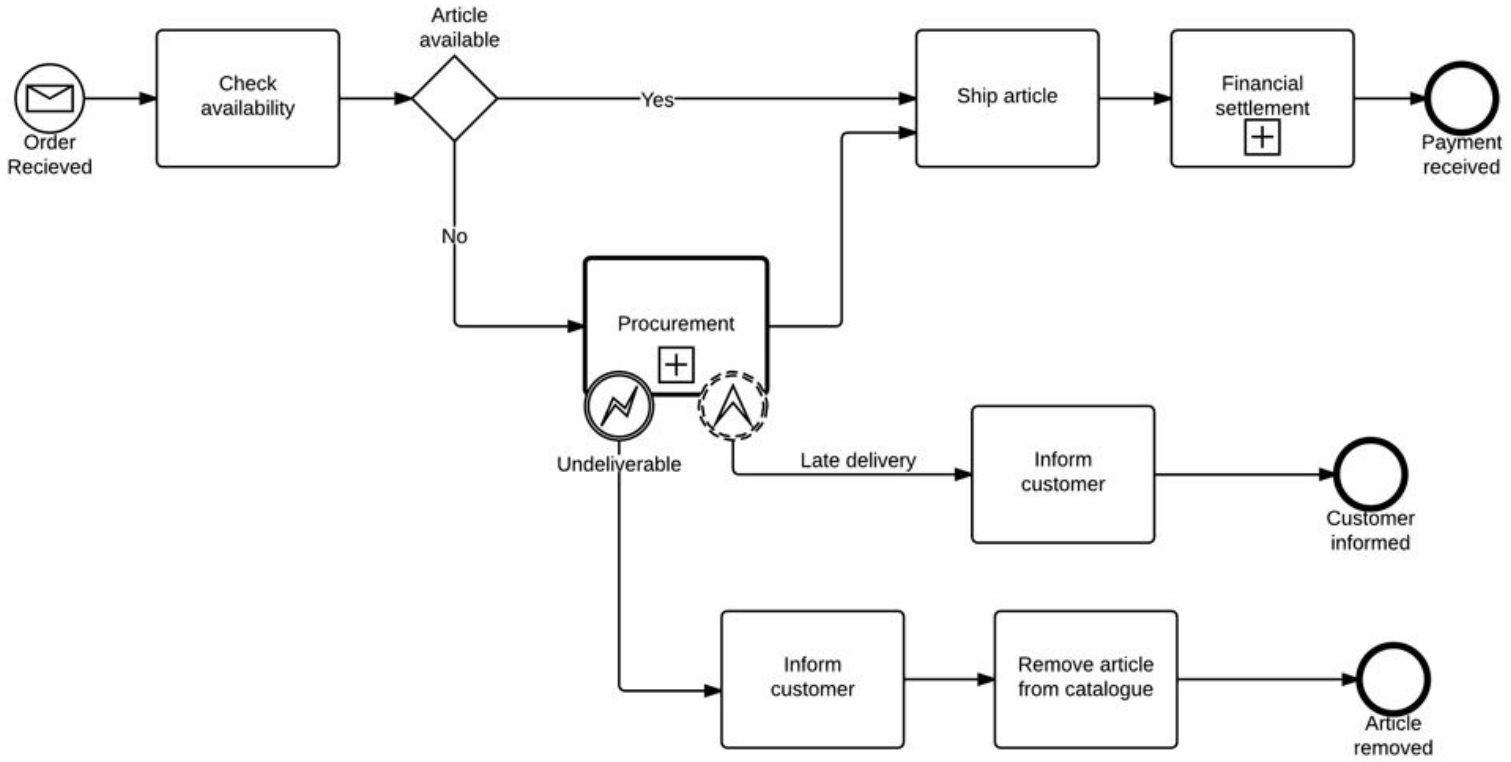
Event semantics: Timer

- Cyclic events
- Points in time
- Timeouts



Event semantics: Escalations

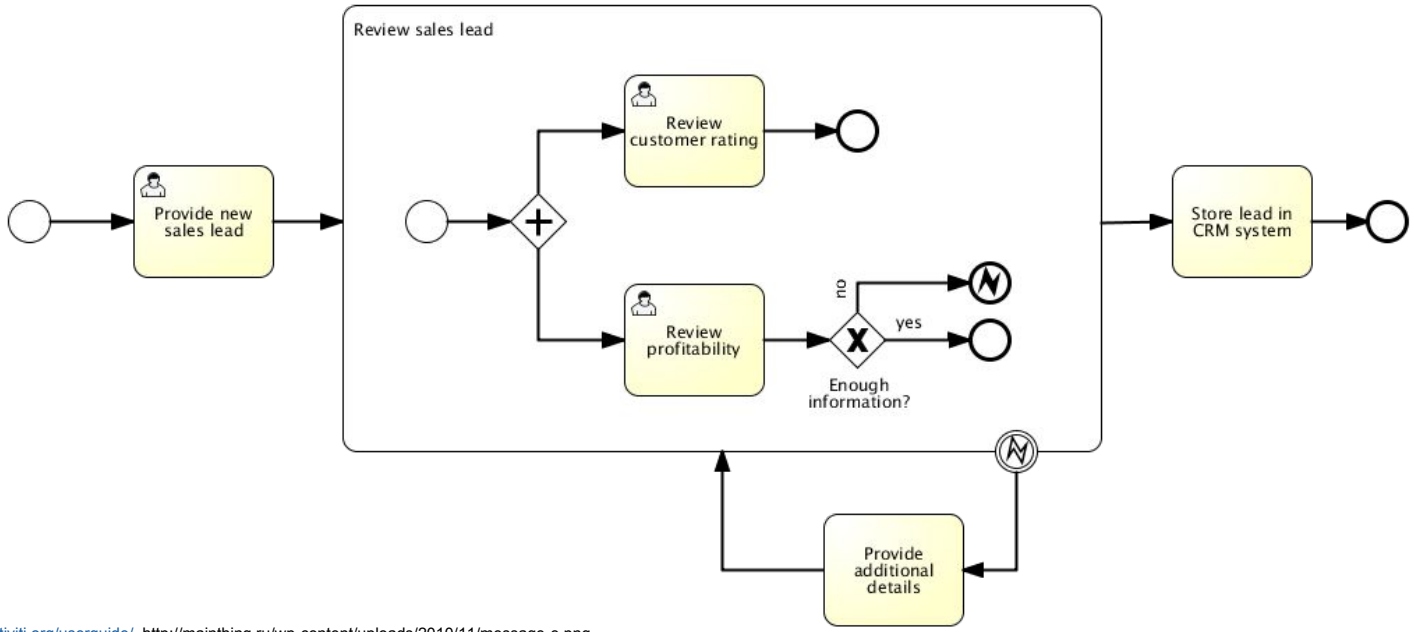
- Handling unusual but **expected** behaviour
  - Corrective actions (interrupting)
  - Additional steps to be done in parallel (non-interrupting)



picture source: http://processpedia.com.au/community/wp-content/uploads/Order-Procurement-Process-Map-Example.png

Event semantics: Errors

- Used for **serious** problem in process
- Throw - catch mechanism
  - Always interrupting
  - Always boundary event
- There should be some **error handling actions**



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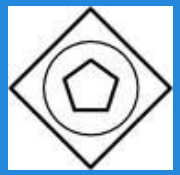
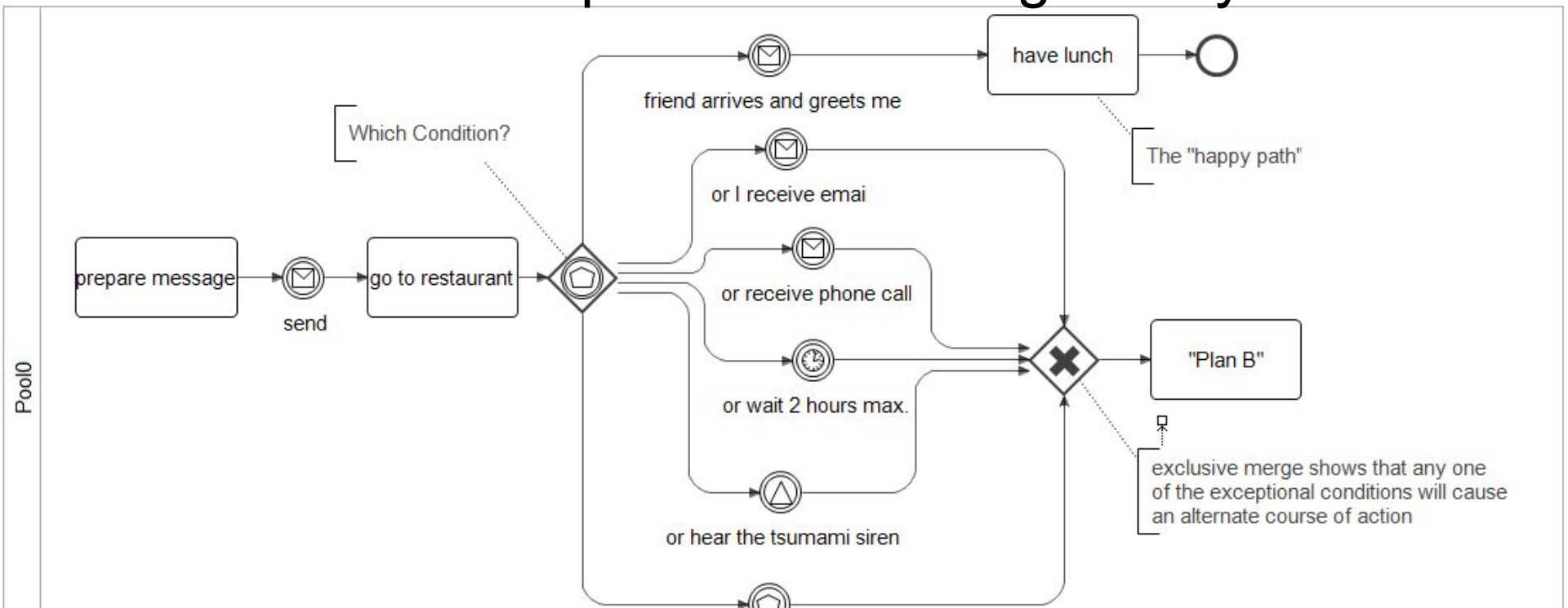
Event-based gateway



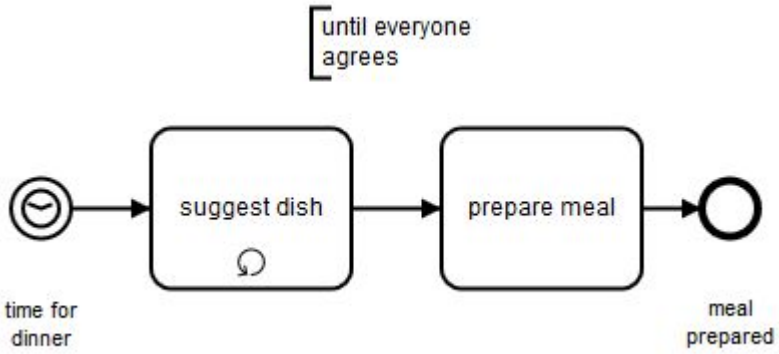
- Event-based gateway
  - Branching based on event, only one triggered
  - Different semantics – branched according to event that is placed after the gateway



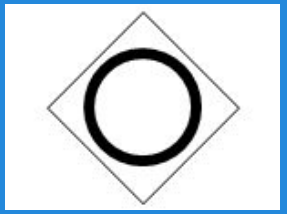
Multi-instance and Loop activity

- Multi-instance
  - Shortcut for a number (dynamically defined) of the same activities that run in parallel or in series.

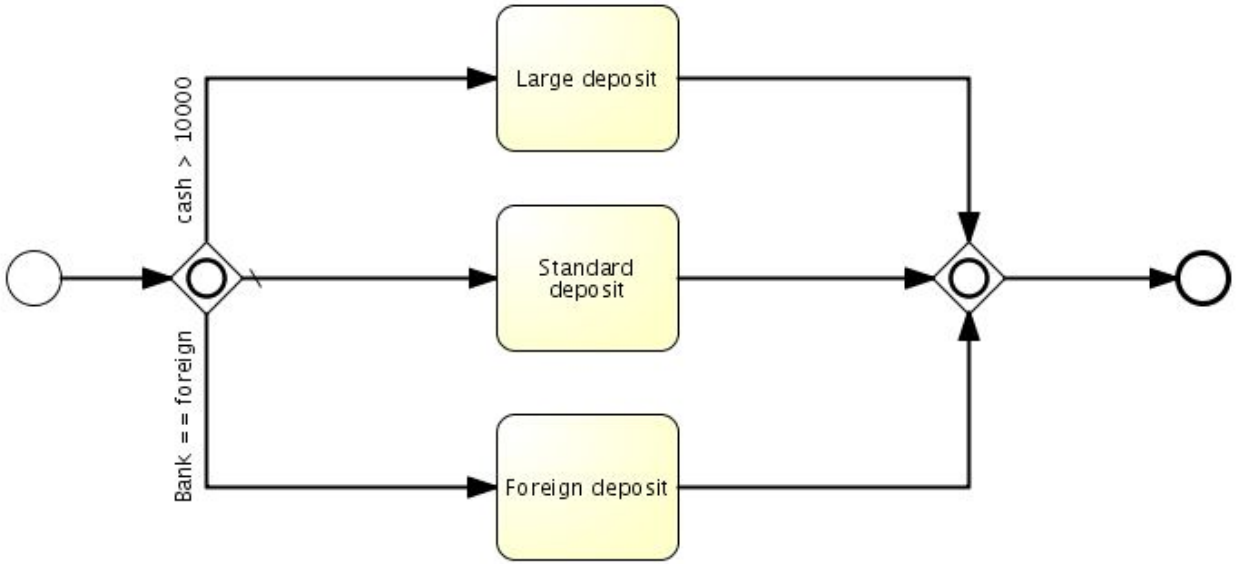
- Loop
  - Shortcut for a repeating one activity until a condition is met.



Recap:
Inclusive OR-gateway



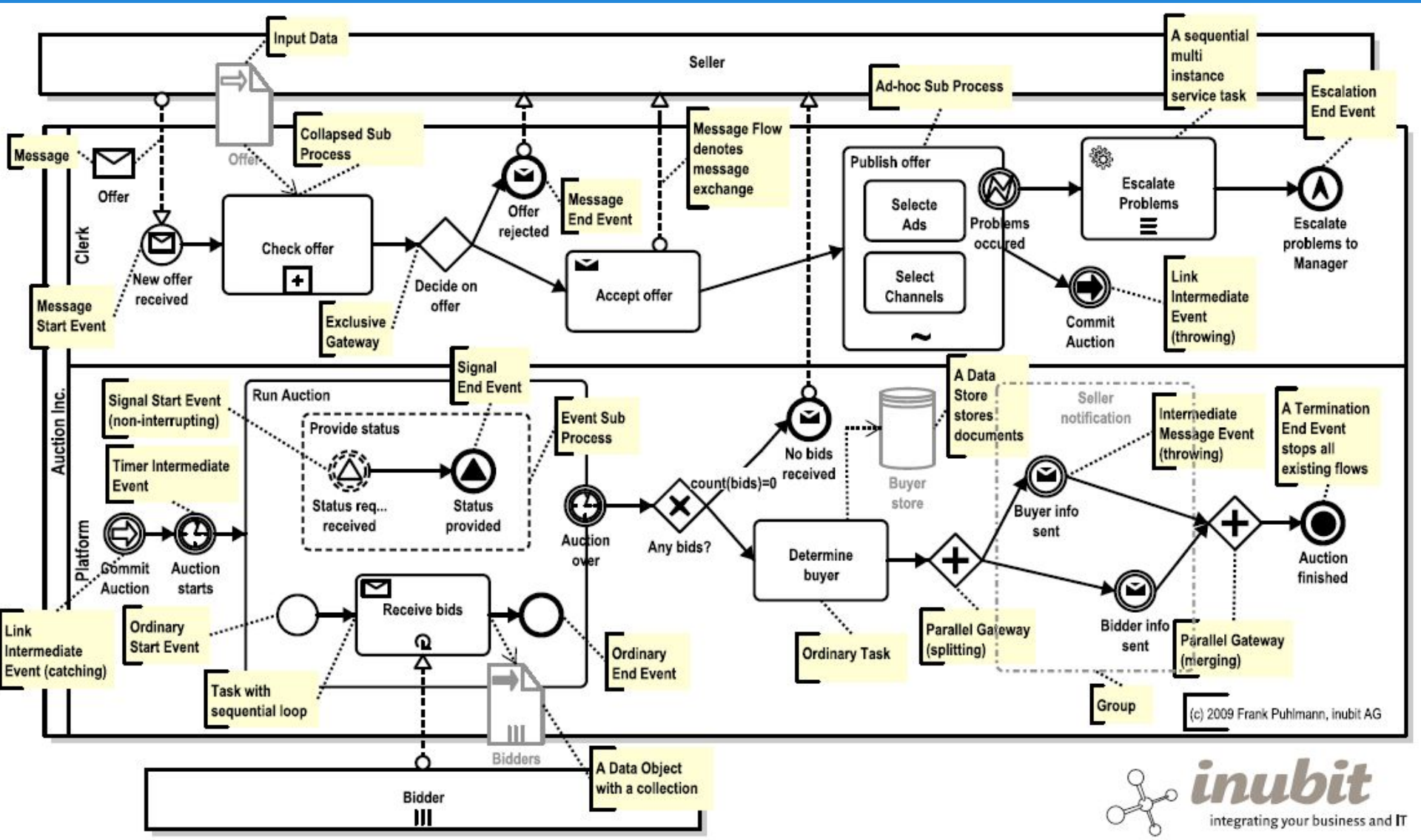
- One or more branches can be performed
- Depends on conditions
- Branches performed in parallel
- Waiting for all **activated** branches



What is in not covered here

- Transactional events
  - Compensations
  - Cancellations events
  - Rollbacks
- Other diagrams covered in BPMN 2.0 specs
  - Choreography diagrams
  - Conversation diagrams

BPMN L2 summary



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Questions?

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