

Introduction to BPMN

- Business Process Model and Notation
 - Object Management Group standard
 - More and more popular
-
- 500+ pages specification
 - Many symbols (100+)
 - Do I really need to learn it?

Introduction to BPMN

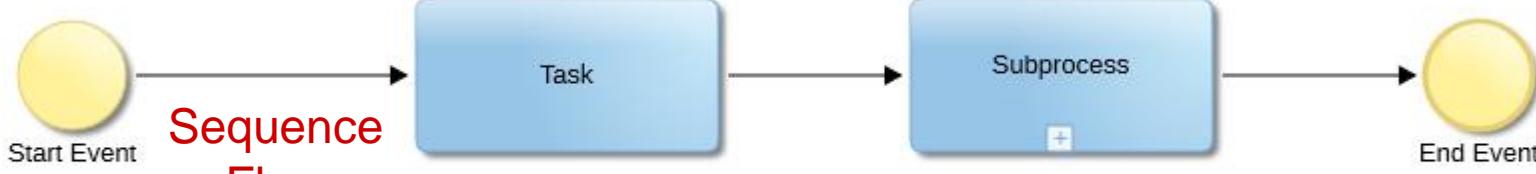
- Learning BPMN can be easy
- Pareto principle (80/20)
- Elements you really need to know and use

Introduction to BPMN

What do we want to know about the process?

- When does it start?
- What are the process steps?
- How does it end?

Introduction to BPMN



When
does it
start?

What are the process
steps?

Simple

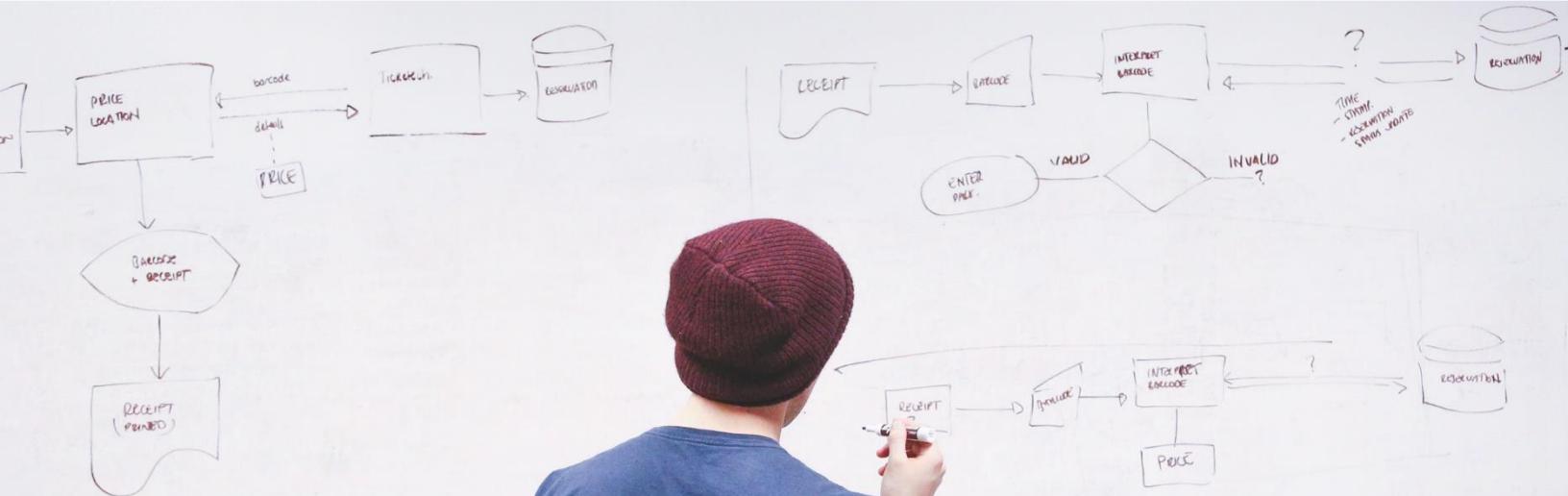
How does
it end?

Complex

Introduction to BPMN

DEMO

Flowcharts vs BPMN

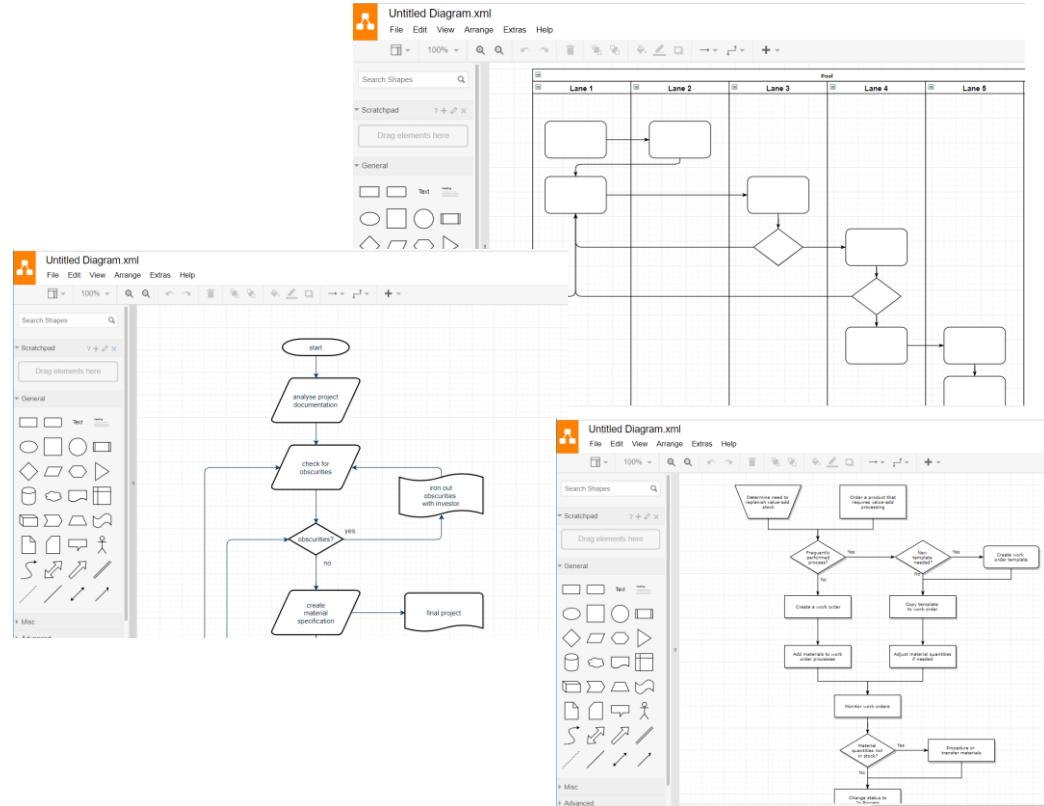


Flowcharts

- Easy to use
- Familiar
- Lots of tools

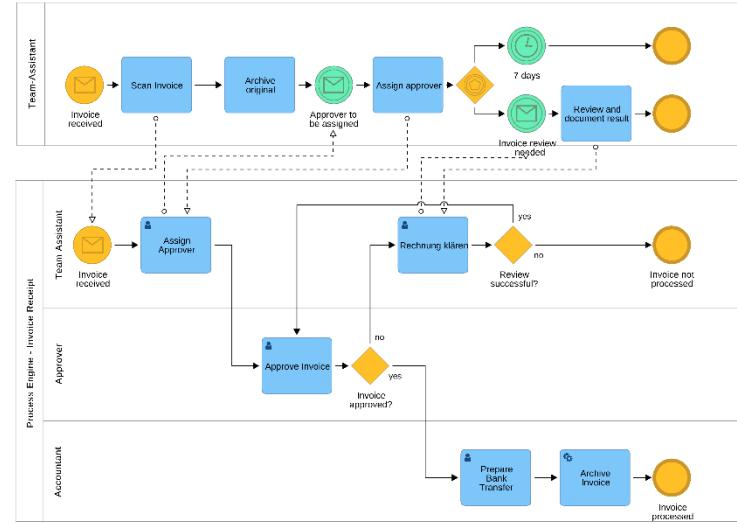
BUT

- „Pretty pictures”



BPMN

- Easy to use
- Familiar
- Lots of tools
- ISO standard
- Diagram interchange
- Business-IT alignment
- Support for automation
- Extensions
- ...



Learn more

BPM
Tips.com

The image shows the header of the BPTrends website. On the left is the BPTrends logo with the tagline "BPM Analysis, Opinion and Insight". To the right is a banner for the "IRM UK Business Process Management Conference" in London, dated 22-25 October 2018. Below the banner is a purple navigation bar with links for HOME, ARCHIVES, RESOURCES, SURVEYS, CALENDAR, ABOUT, and BPTRENDS ASSOCIATES. A search bar with the placeholder "Search this website ..." and a red "Search" button are also present.

HOME ARCHIVES RESOURCES SURVEYS CALENDAR ABOUT BPTRENDS ASSOCIATES

Search this website ... Search

[Home](#) / [Archives](#) / [Articles](#) / Making BPMN a True lingua franca

Making BPMN a True lingua franca

June 2, 2014 , By Francois Bonnet, Gero Decker, Lloyd Dugan, Matthias Kurz, Zbigniew Misiak, Simon Ringuette

1. Introduction

The Business Process Model and Notation (BPMN) is the leading standard for modeling business processes. One of its goals is providing business professionals with a standard notation allowing not only internal communication of the business procedures, but also business-IT alignment² and collaboration between business partners³.

BPMN is developed by the Object Management Group (OMG) which also manages the highly popular Unified Modeling Language (UML) and Model Driven Architecture (MDA). In July 2013, the International Organization for Standardization (ISO) adopted BPMN and published it as ISO/IEC 19510:2013, which is identical to version 2.0.1 of the OMG.

You're Invited!
Join the BPTrends
Community

JOIN





Trace: • [start](#)

Welcome to the BPMN Model Interchange Working Group (BPMN MIWG) Wiki



BPMN MIWG by <http://www.omgwiki.org/bpmn-miwg/doku.php> is licensed under a Creative Commons Attribution 3.0 Unported License.

Chair or BPMN MIWG: Denis Gagne from Trisotech

Purpose

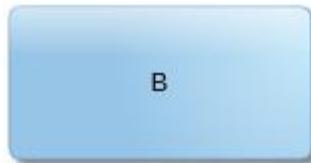
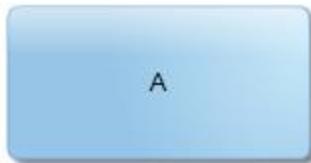
The purpose of the BPMN MIWG is to support, facilitate, and promote the interchange of BPMN Models.

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- ❖ Welcome to the BPMN Model Interchange Working Group (BPMN MIWG) Wiki
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- ❖ 2018 Model Interchange Capability DEMO
- ❖ 2017 Model Interchange Capability DEMO
- ❖ 2016 Model Interchange Capability DEMO
- ❖ 2015 Model Interchange Capability DEMO BPM EE
- ❖ 2015 Model Interchange Capability DEMO

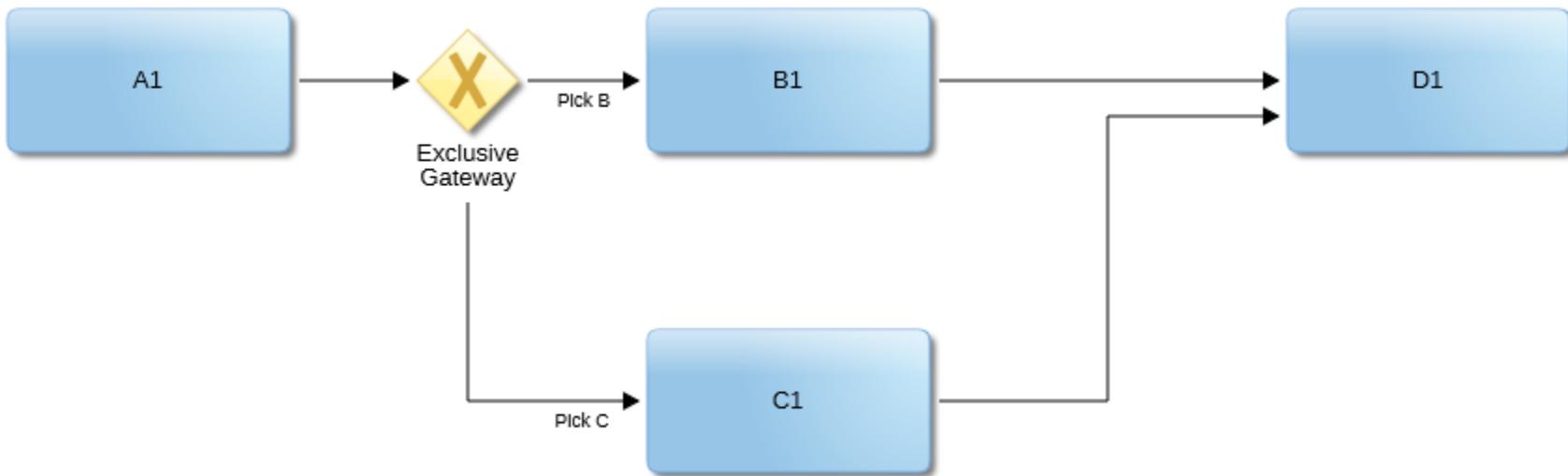
What if the process is not a sequence?

Let's take a look at the following example



What if the process is not a sequence?

Pattern 1: There can be only one (Exclusive Gateway)

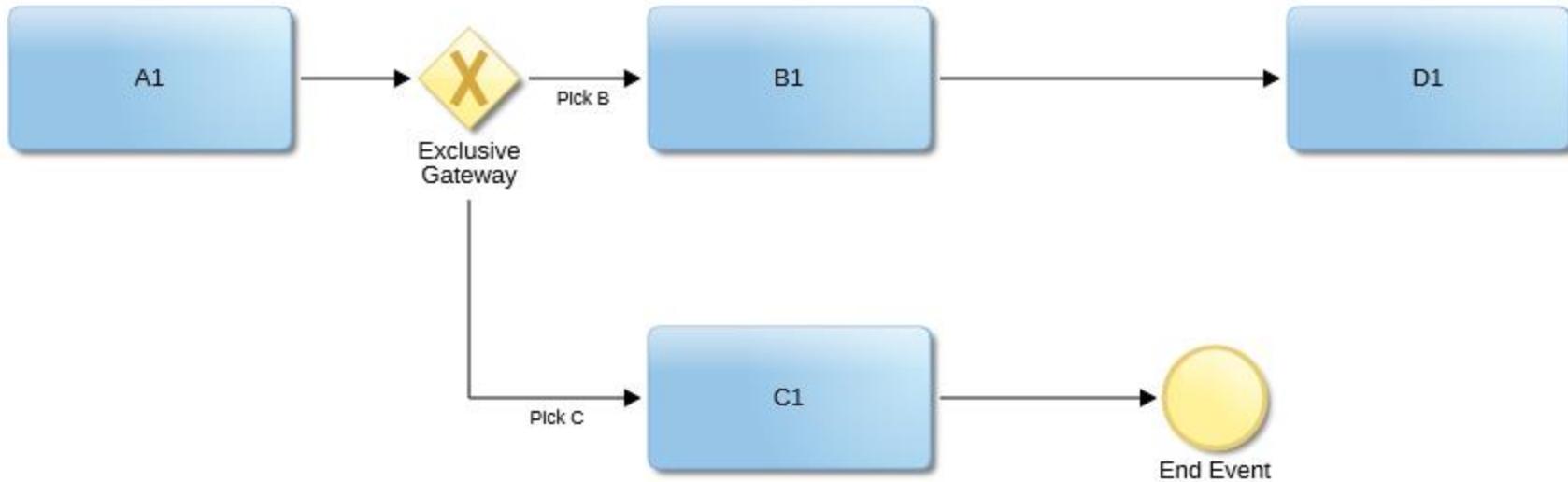


There can be only one

DEMO

What if the process is not a sequence?

Pattern 1b: Different endings

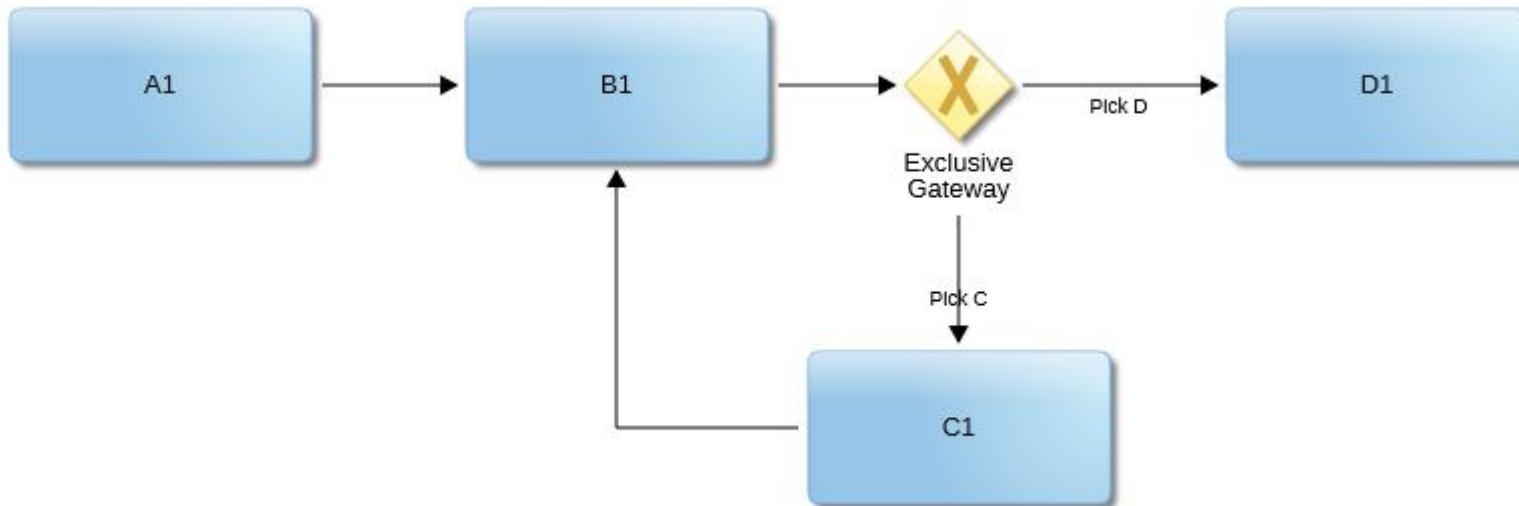


Different endings

DEMO

What if the process is not a sequence?

Pattern 1c: Rinse and repeat

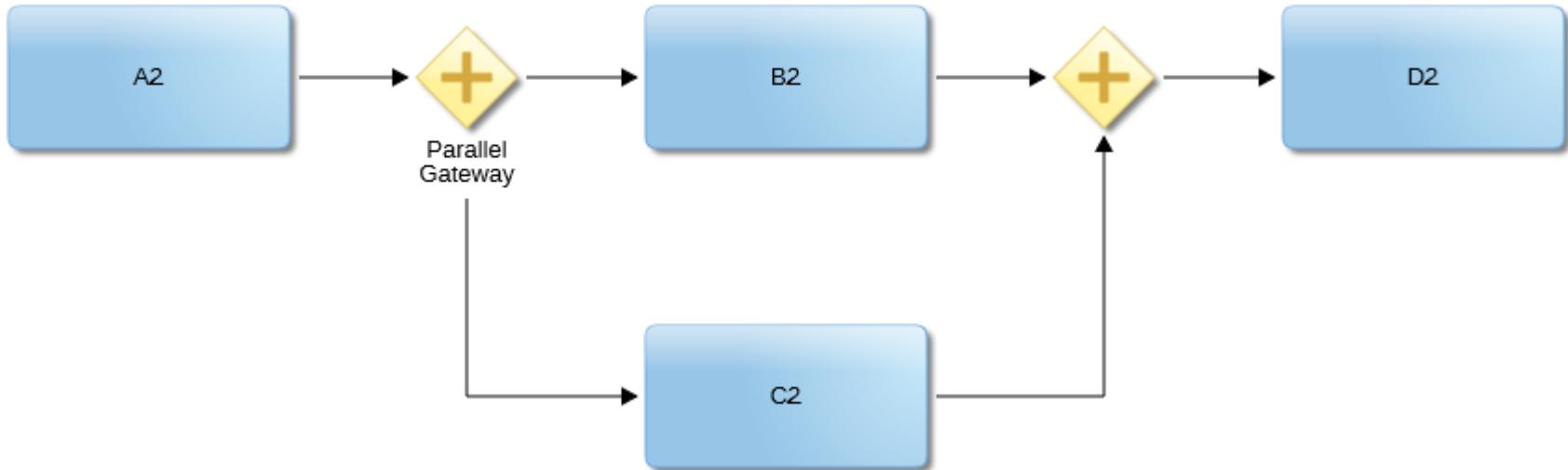


Rinse and repeat

DEMO

What if the process is not a sequence?

Pattern 2: I want it all (Parallel Gateway)

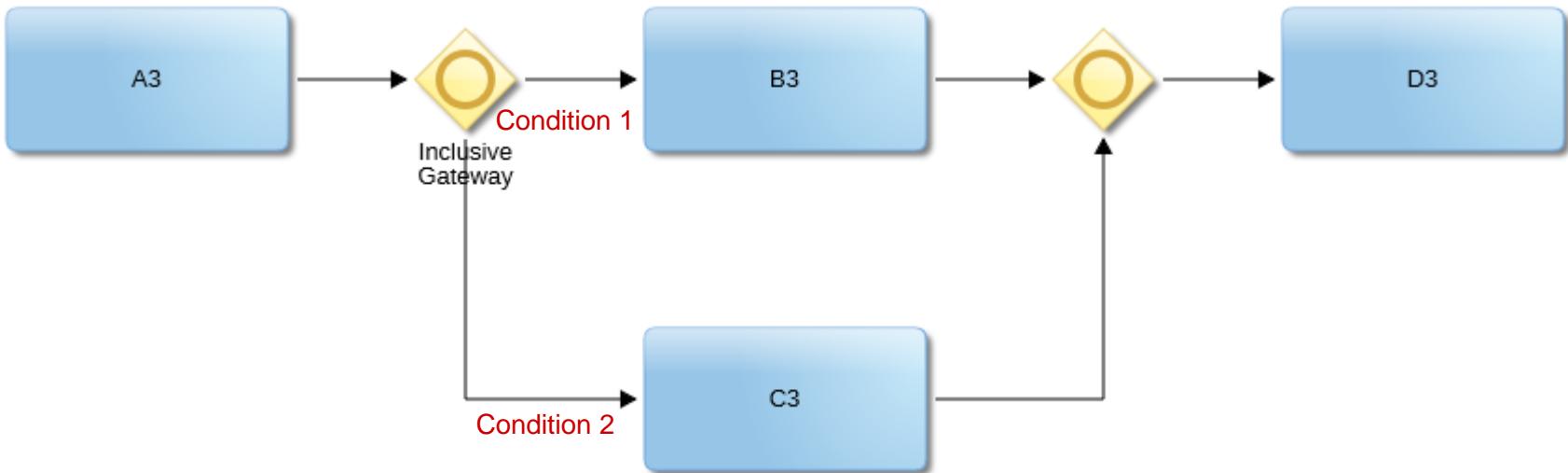


Parallel Gateway

DEMO

What if the process is not a sequence?

Pattern 3: It's complicated (Inclusive Gateway)



Inclusive Gateway

DEMO

Worth a thousand words

Start event types



Message Start Event



Timer Start Event



Conditional Start Event

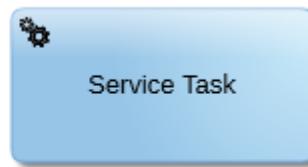
Our process starts when we get some message.
E.g. Order received.

Our process starts at a given moment.
E.g. 2 days before quarter ends

Our process starts when some condition is met.
E.g. stock level below minimum

Worth a thousand words

Task types



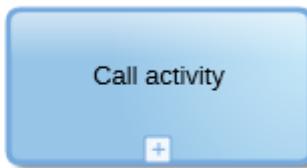
Someone does it
with no IT support

Someone does it
with IT support

IT system does it

Worth a thousand words

Sub-Process types



We hide
complexity in
„child submodel”

We call some
standard
procedure

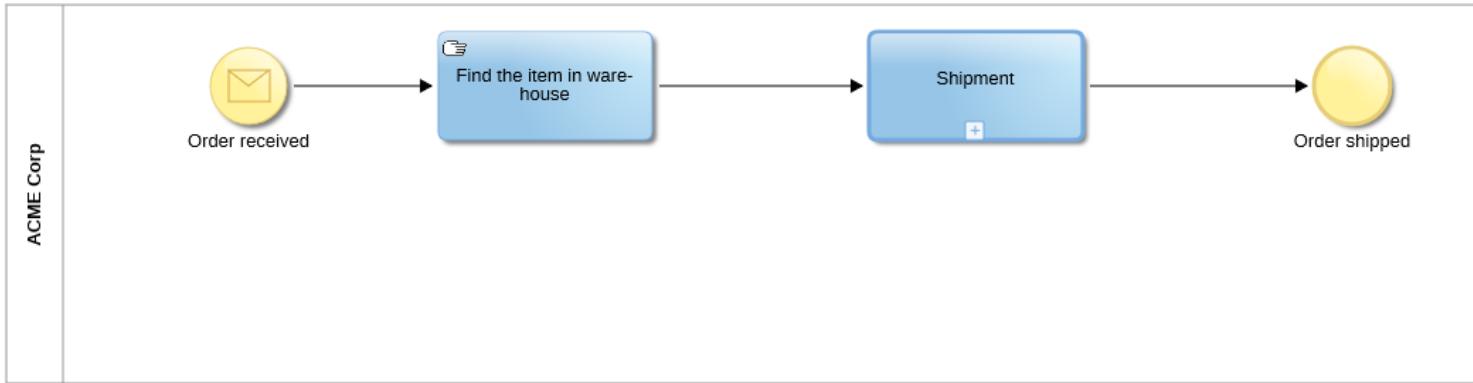
Worth a thousand words

Why do we use icons to show types?

DEMO

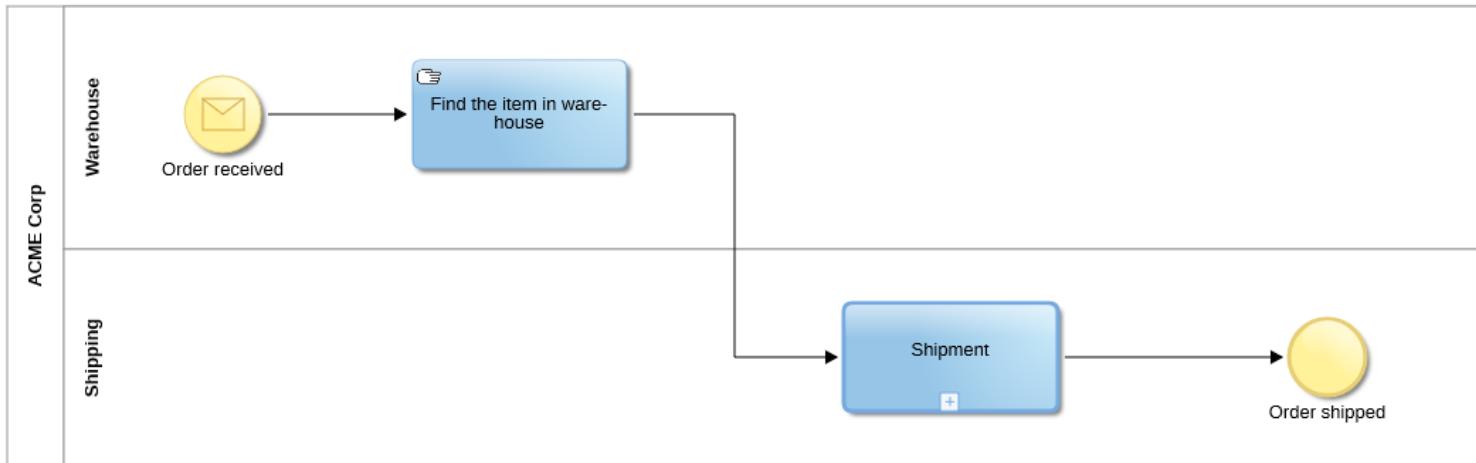
Who does what

Pools...



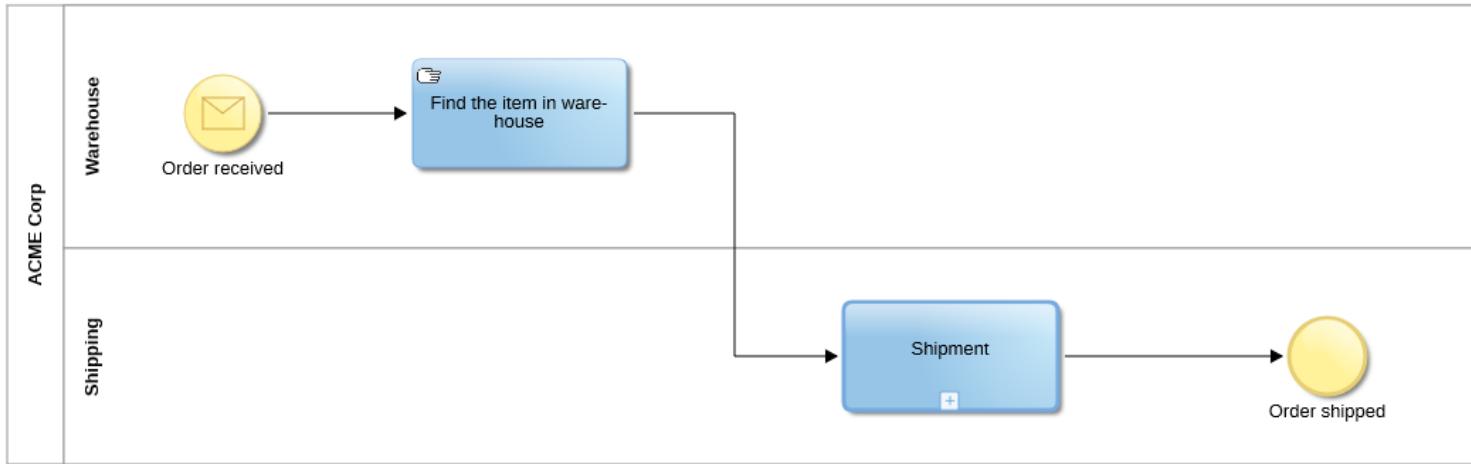
Who does what

... and lanes



Who does what

Black-box pools

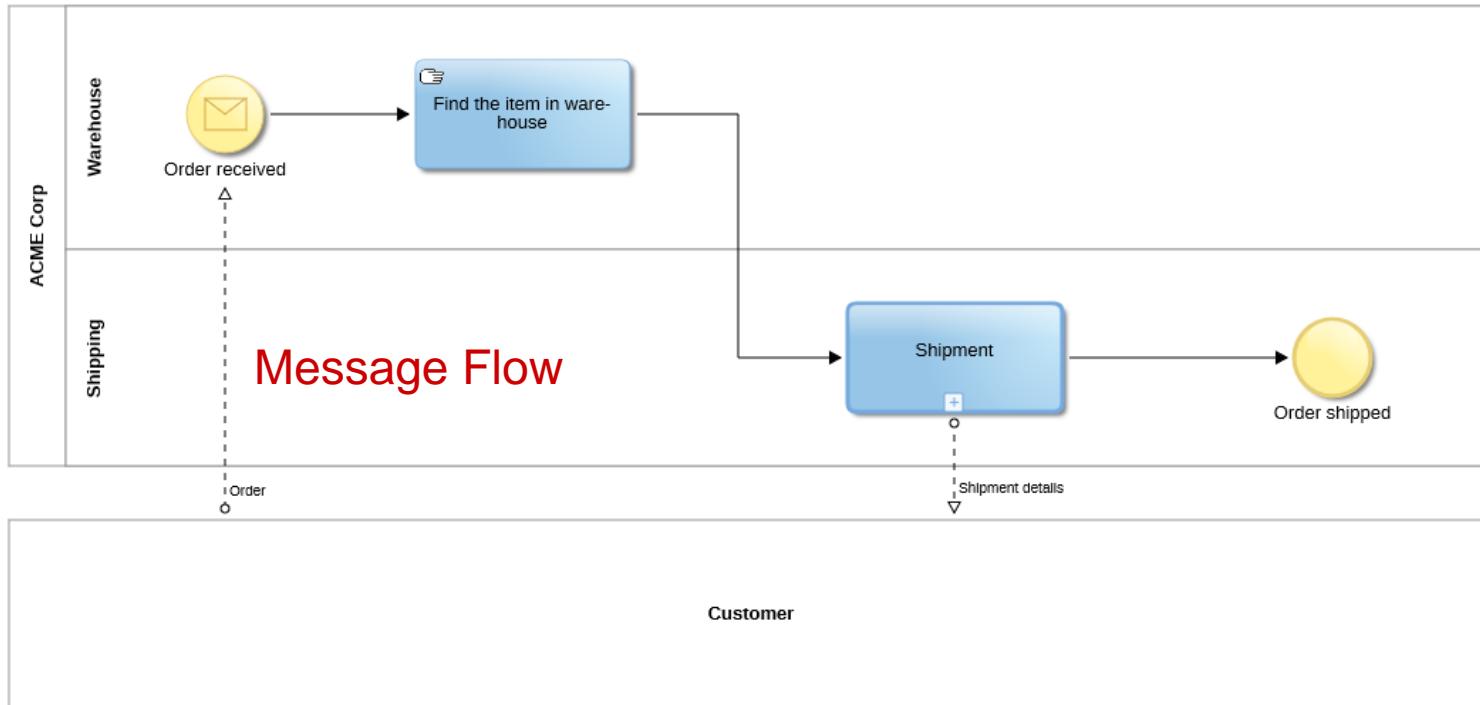


Customer

Black-box pool

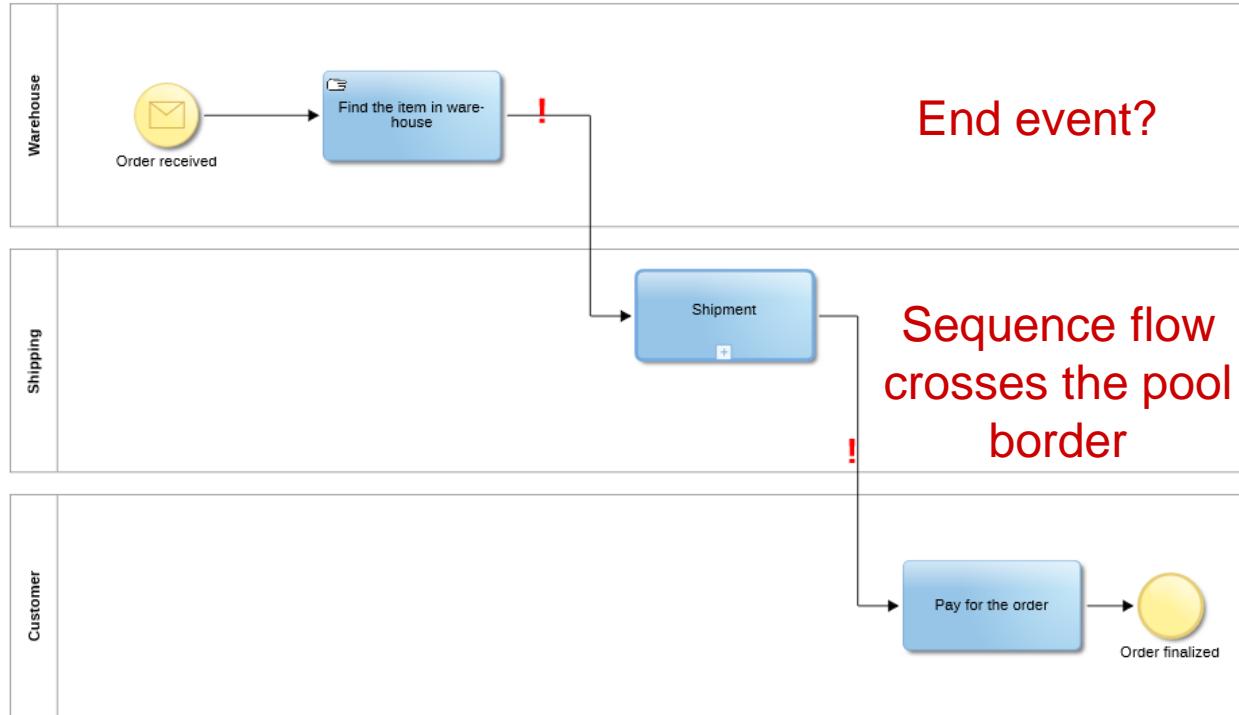
Who does what

Collaboration



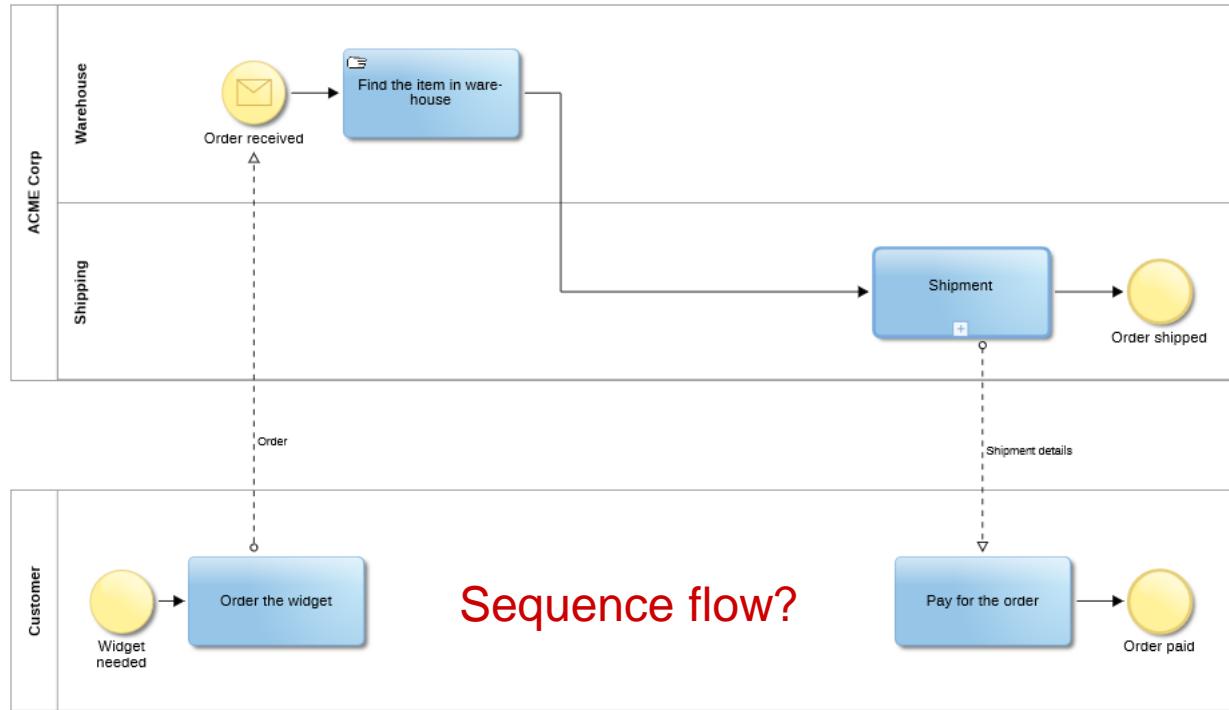
Who does what

Common errors



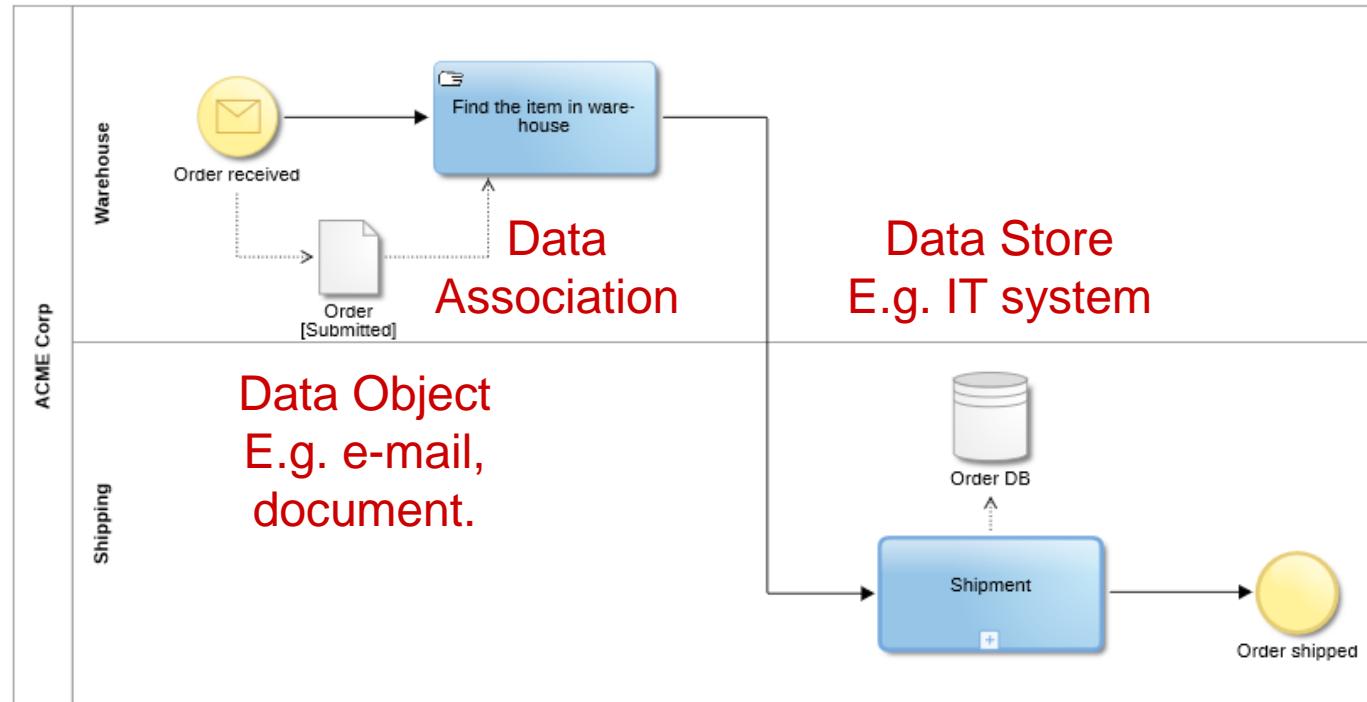
Who does what

Common errors



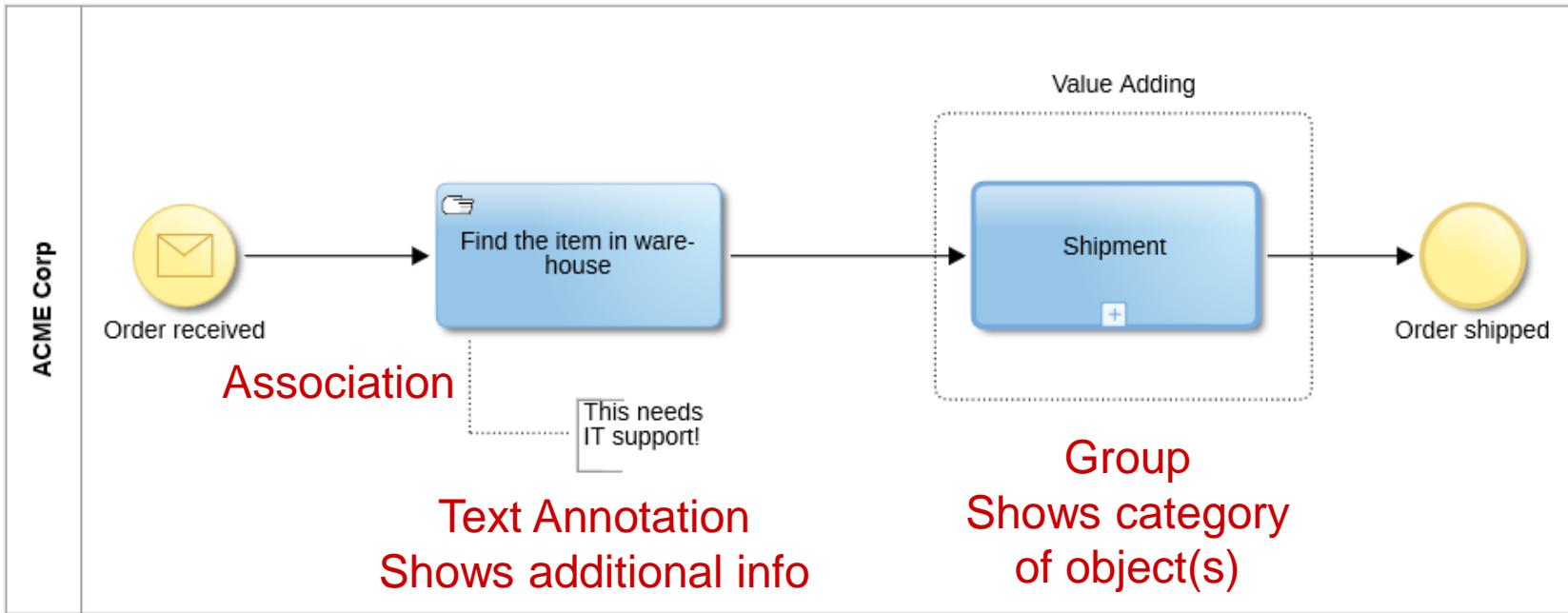
What about the data?

Data Objects and Data Stores



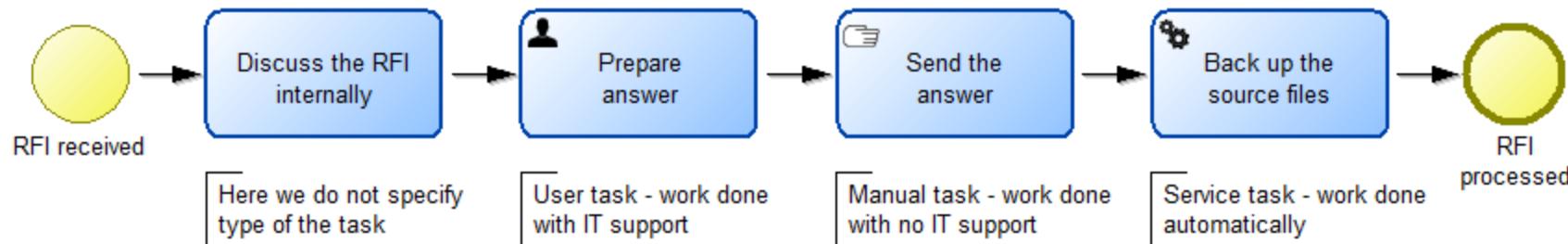
Any comments?

Artifacts



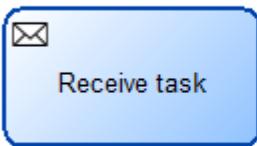
Task types

Basic task types

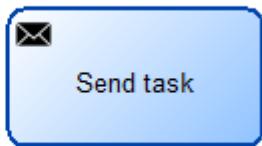


Task types

Additional task types



Receive task



Send task

Waiting for a message from outside Sending message to external participant

Task types

Additional task types



=

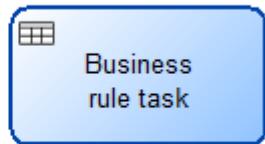
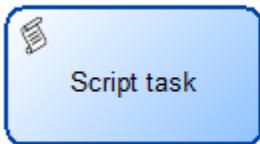


Receive task
(instantiating)

Message start
event

Task types

Additional task types



Automated on Calling business
process engine rules engine

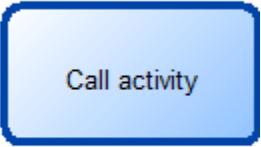
Task types

Business Rules

New OMG standard: Decision Model and Notation (DMN)

Task types

Additional task types



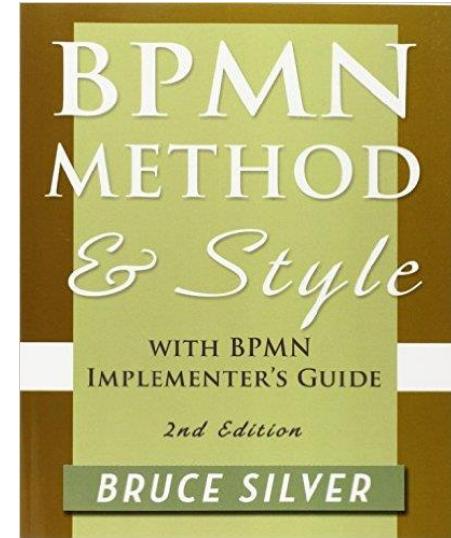
Call activity

Calls a Global task
(only User,
Manual, Script,
Business Rule)

BPMN diagram – step by step

From blank page to ready diagram

Inspired by Bruce Silver



Extended on a basis of my experiences

BPMN diagram – step by step

- 1) Process background info (goal etc.)
- 2) Participants (+level of detail needed)
- 3) Happy path
- 4) More details (types, resources, ...)
- 5) Exceptions
- 6) Sub-processes (where needed)

DEMO – Wire transfer process

BPMN diagram – Wire transfer

- 1) Process background info (goal etc.)
- 2) Participants (+level of detail needed)
- 3) Happy path
- 4) More details (types, resources, ...)
- 5) Exceptions
- 6) Sub-processes (where needed)

Case study

Simple process inspired by one of my students

Try solving on your own before you watch example solution in the next video

You can provide link to your solution via message or question and I will give you feedback

Case study

Customer sends order to company A.
Order needs to be entered to CRM system and checked by operations and if something is missing/wrong operations ask internal call center to contact the customer and correct the order. When order is OK, it is sent to fulfillment for company B (vendor).
Vendor sends the product to the customer

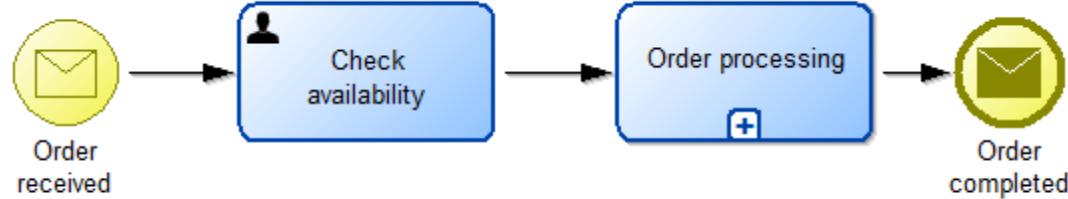
BPMN diagram – step by step

- 1) Process background info (goal etc.)
- 2) Participants (+level of detail needed)
- 3) Happy path
- 4) Resources (documents, **IT systems**, ...)
- 5) *Exceptions*
- 6) Sub-processes (where needed)

Case study

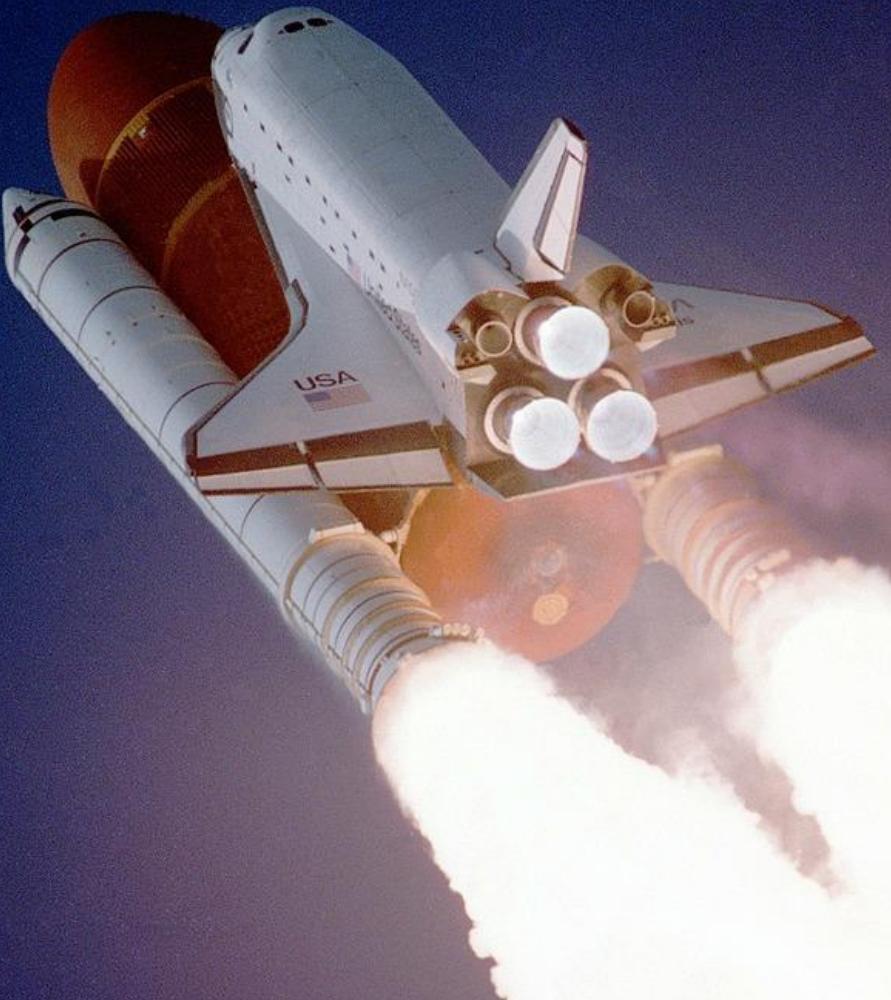
Customer sends order to company A.
Order needs to be entered to CRM system and checked by operations and if something is missing/wrong operations ask internal call center to contact the customer and correct the order. When order is OK, it is sent to fulfillment for company B (vendor).
Vendor sends the product to the customer

Events

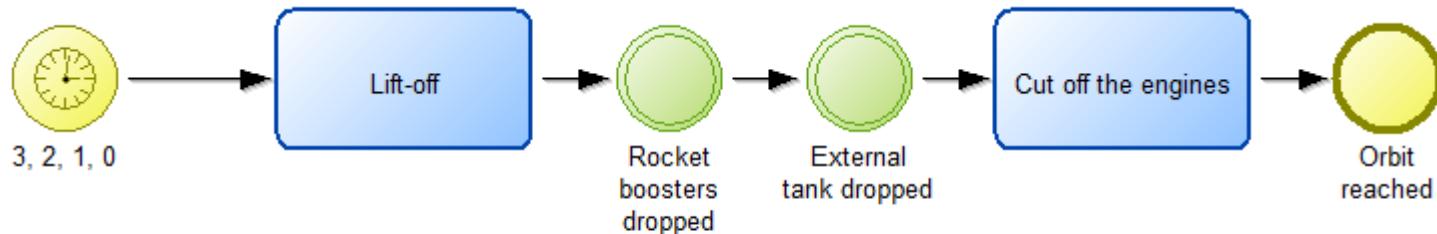


Start
Event

End Event

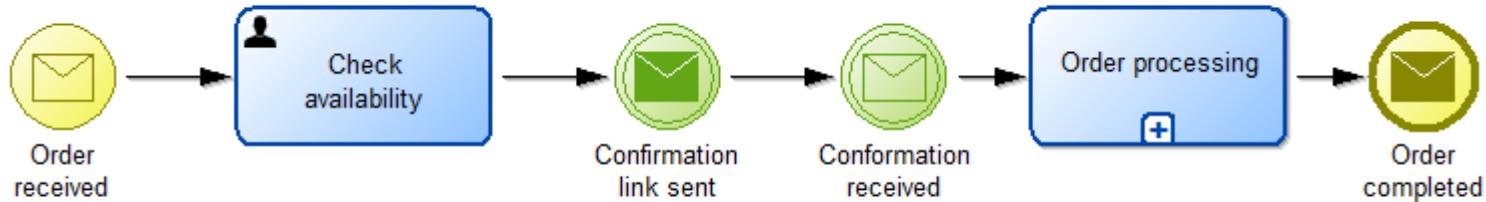


Events



Intermediate
Events

Back to business

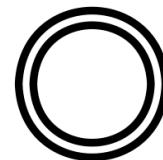


Throwing Catching

Throwing Intermediate Events



Always dark markers e.g.



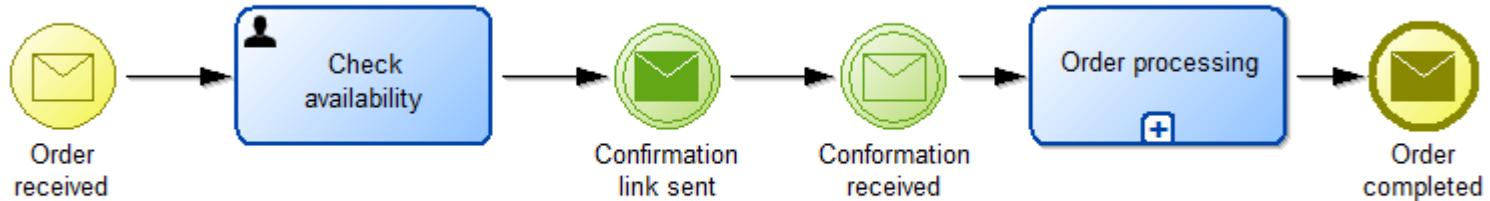
Catching Intermediate Events



Always light markers e.g.



What about tokens?



Intermediate Event None



Only Throwing.
Marks important process
milestone.

Intermediate Event Message



Throwing and Catching.
Shows exchange of
messages with
participants external to
the process.



Intermediate Event Signal



Throwing and Catching.
Either sends a signal
(broadcast) or waits for it.



Intermediate Event Timer



Only Catching.
Shows that our process
needs to wait e.g. till a
specific time/date etc.



1

Intermediate Event Conditional



Only Catching.
Shows that our process
needs to wait till some
condition is met.

Downloaded for Noncommercial Use Only

Student	Mathematics Grade 5	Mathematics Grade 6	Mathematics Grade 7
Alex			
Chloe			
Elaine			
Ethan			
Freddie			
Gina			
Jessica			
Liam			
Marc			
Shane			
Sophie			
Taylor			
Victoria			
Wesley			
Zoe			
James			
Grace			
James			
Samuel			
Benji			
Tony			
Jones			
Priscilla			
James			
Surya			
Mariela			
Christy			
Friyos			
Almond			
Pinky			
Sony			
Melbin			
Tony			
Silo			
Jasmin			

Welcome to the Teacher
You may copy these sheets on a daily basis and keep them on a clipboard.

PASSED



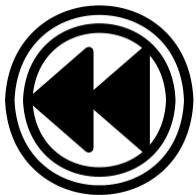
More Intermediate Events



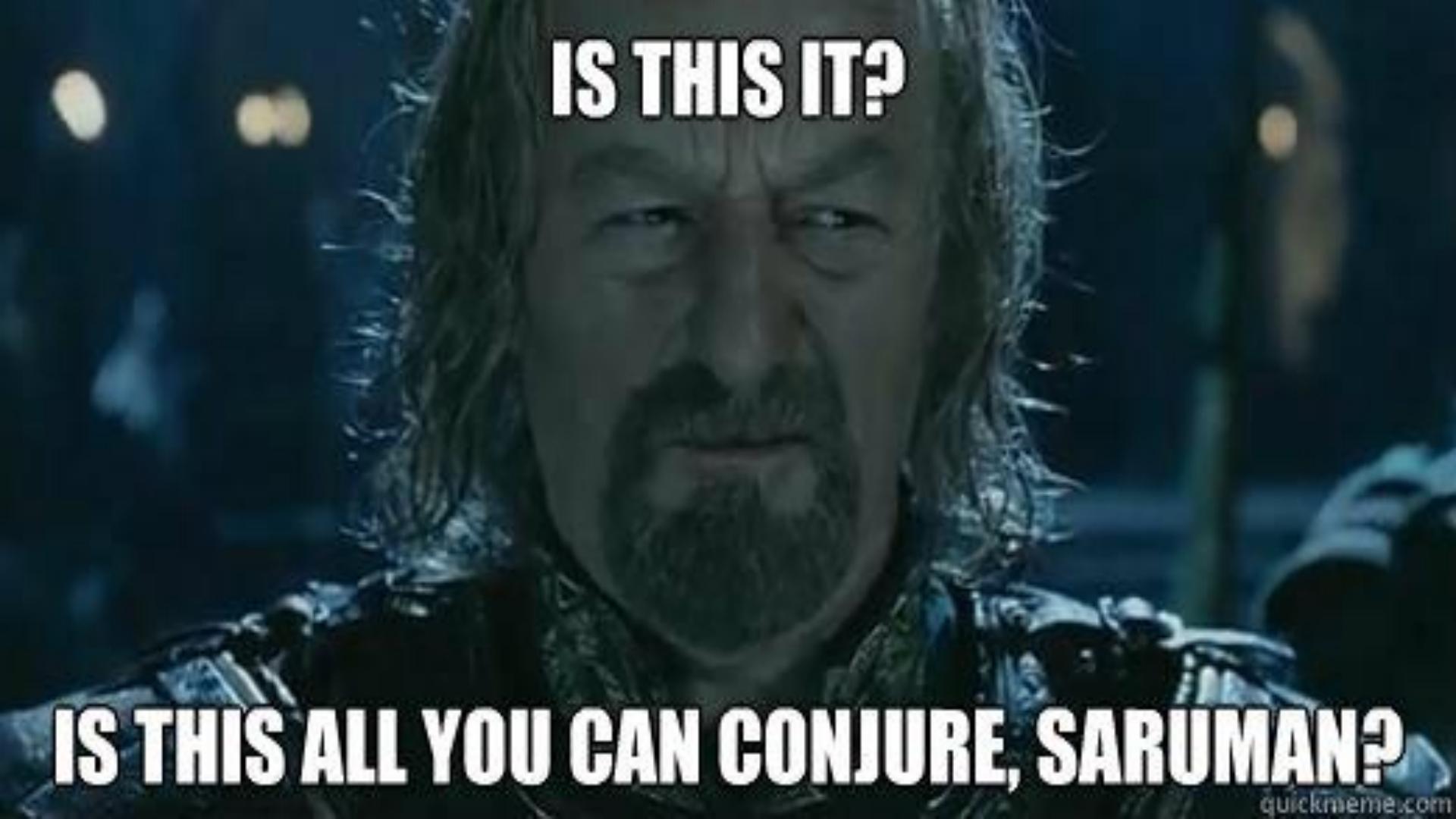
Link



Escalation



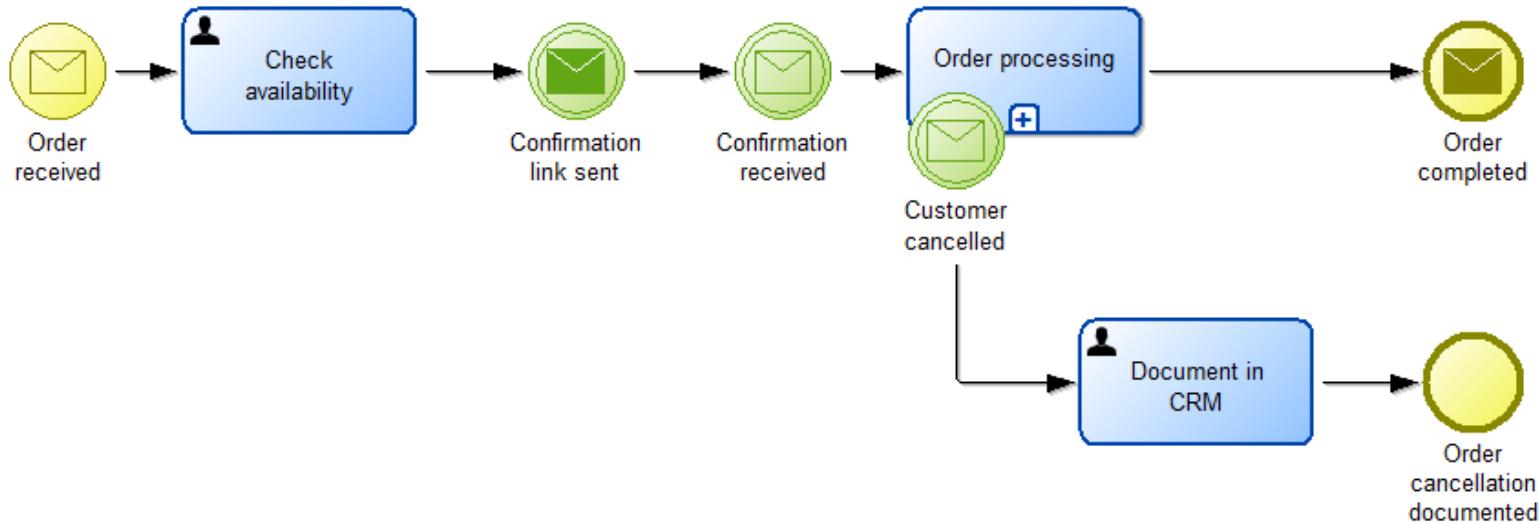
Compensation



IS THIS IT?

IS THIS ALL YOU CAN CONJURE, SARUMAN?

Boundary Intermediate Events



Case study 2

The Customer calls the support center (Front Office) and reports an issue about underperforming service or faulty equipment or software.

Source: BPSim Implementer's Guide v2.0

Case study 2

The Front Office collects information from the Customer and tries to provide a solution directly to the Customer on the other end of the line, otherwise they inform the Customer the issue is going to be escalated to technical experts and they will be contacted again soon.

When the Front Office receives the solution from the technical experts, they contact the customer and try to close the issue; otherwise they inform the Customer that the issue is going to be further escalated.

Case study 2

When the issue is escalated to the 1st Level Technical Support Agent, the agent tries to provide a solution to the Front Office; otherwise they request further assistance from the 2nd Level Technical Support Agent and forward the solution to the Front Office when a solution has been provided.

Case study 2

When the issue is escalated to the 2nd Level Technical Support Agent, the agent tries to find a solution for the 1st Level Technical Support Agent; otherwise they request further assistance from the Supplier and forward the solution to the 1st Level Technical Support Agent when provided.

Case study 2

When the Supplier receives a request from the 2nd Level Technical Support Agent they provide a solution to the reported issue.

Case study 2

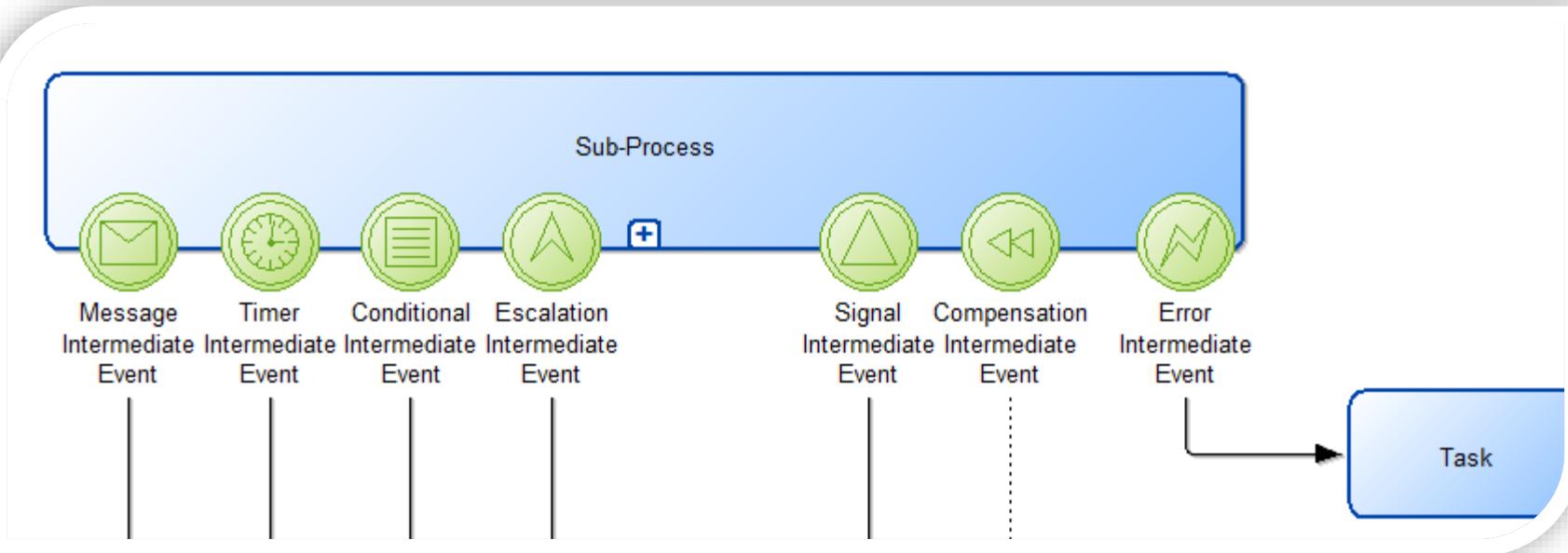
- 1) Keep calm and
- 2) Identify performers (pools)
- 3) Model the processes
- 4) Add message flows

Remoras

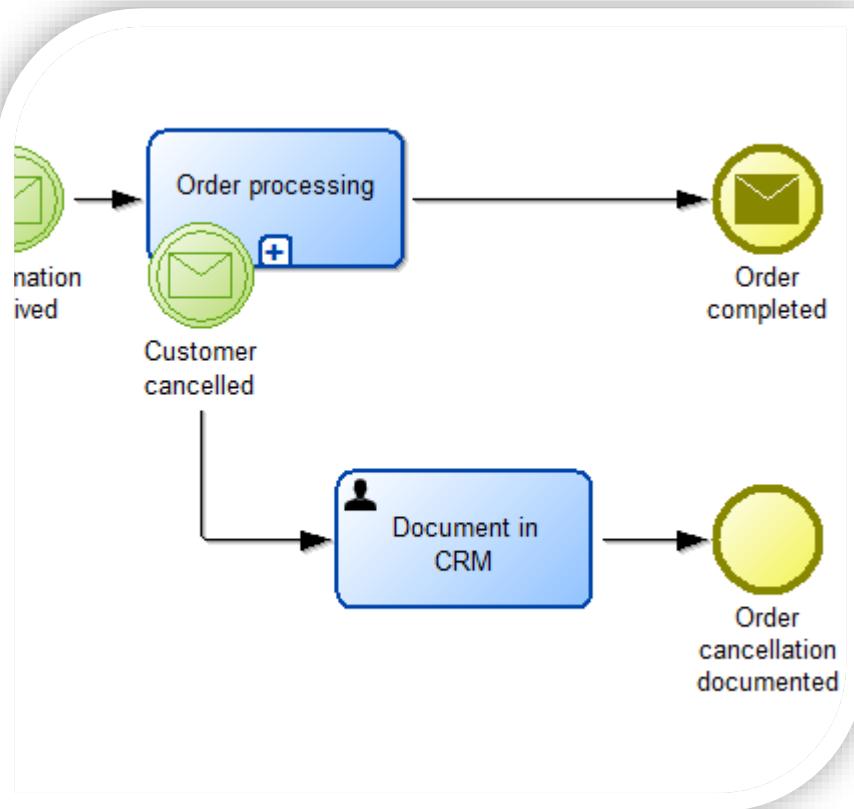


Source: <https://upload.wikimedia.org/wikipedia/commons/9/93/Lemonshark.jpg>

Boundary Intermediate Events



Boundary Intermediate Events

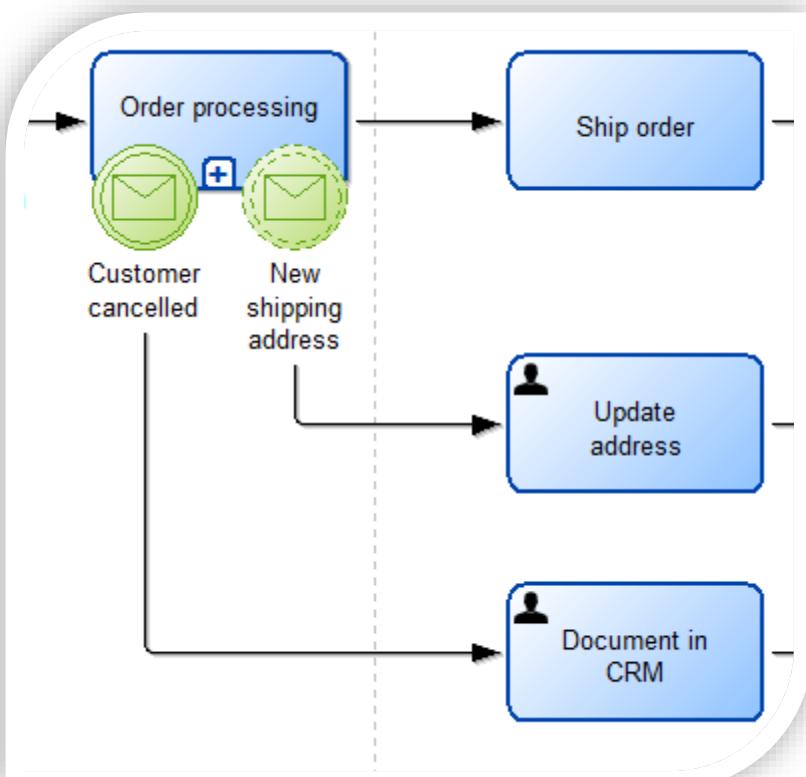


Look like Intermediate Events
Placed on a boundary of
Activities (i.e. Tasks or Sub-
Processes).

Document how to react to a
specific event.

Most of them active only
when their „parent” is active.
Catching only.

Boundary Intermediate Events

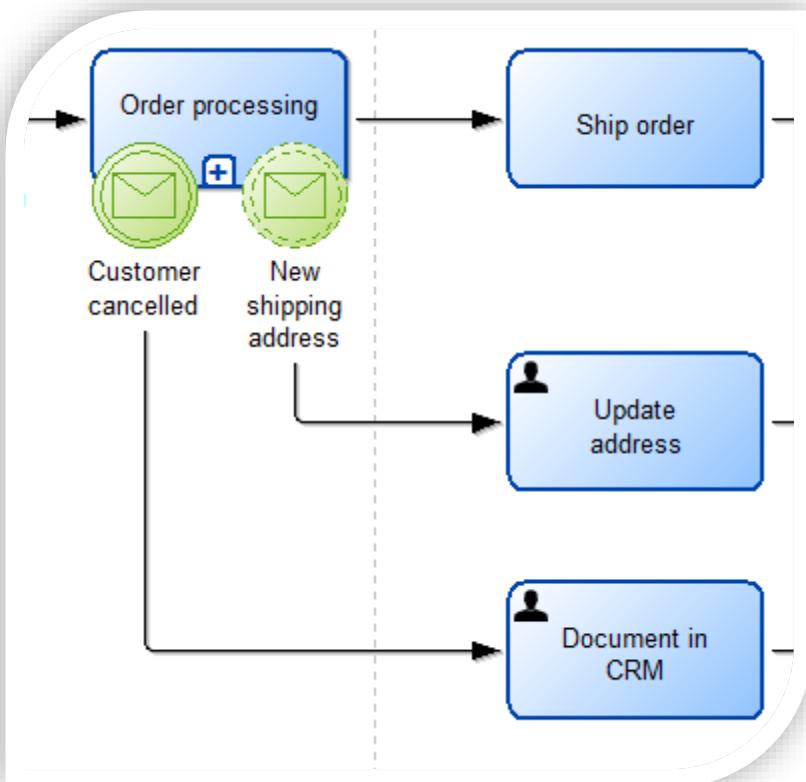


Interrupting – solid line

Non-interrupting – dashed line

Non-interrupting events create additional tokens

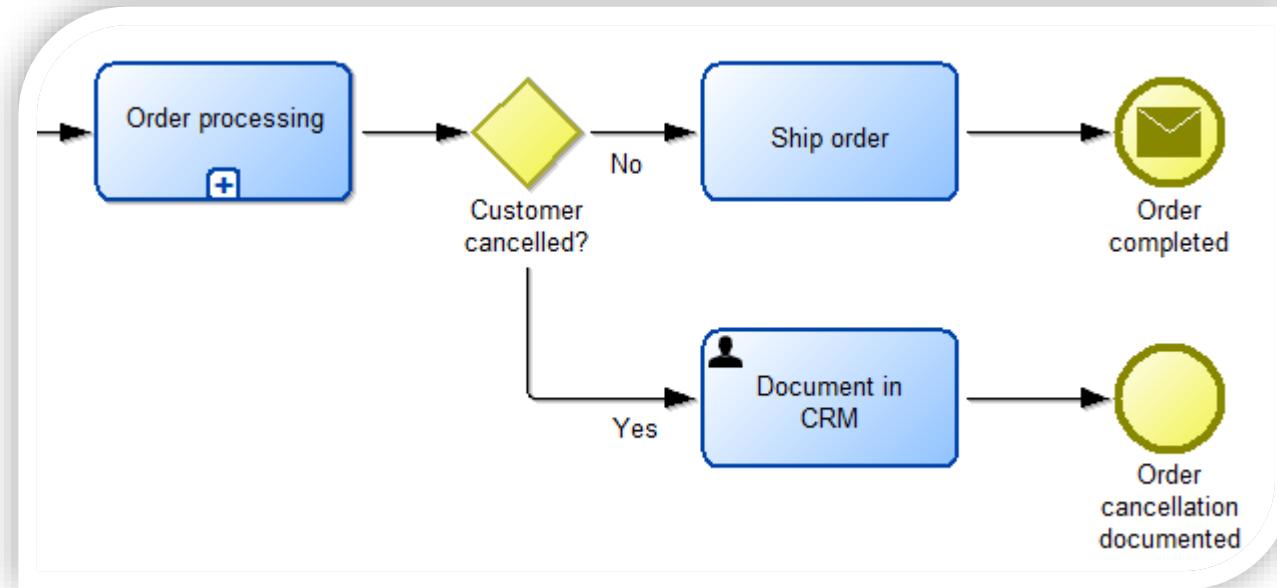
Boundary Intermediate Events



What happens when customer cancels after we started shipping the order?

Nothing – this boundary event is no longer active

Why do we need boundary events?



Handling different results of Sub-Processes
Possibility to handle special cases when activity is still
being executed

Boundary Event Message



Non-Interrupting and
Interrupting

Boundary Event Time



Non-Interrupting and
Interrupting

Boundary Event Conditional



Non-Interrupting and
Interrupting

Boundary Event Signal



Non-Interrupting and
Interrupting

Boundary Event Escalation



Non-Interrupting and
Interrupting

Boundary Event Error



Only Interrupting

Plus some for technical scenarios



Compensation



Cancel

BPMN modelling with ADONIS:CE

BPM
Tips.com

- 100% free
- Support for BPMN and much more

The screenshot shows the homepage of the ADONIS:CE website. At the top right is a yellow header bar with the text "BPM" and "Tips.com". Below the header is a navigation bar with links: "Download", "BPMN 2.0", "Webinars and tutorials", "Support", "Partners", "Contact us", "Legal", and a language dropdown set to "English". The main content area features a large blue hexagonal logo with the text "ADONIS:CE Free BPM Tool". To the right of the logo is a large, semi-transparent watermark containing text about BPMN, such as "Process Diagram", "Business Processes", "BPML", "BPMN fit for business", and "We take BPMN one step further...". Below the logo are four buttons: "Welcome", "Start here", "Join us", and "Go pro". Further down, there's a section titled "ADONIS:Community Edition" with a list of features: "BPMN 2.0 fit for business", "100% free tool (also for business use)", "All the features you need for professional business process management", and "So easy to use that even BPM newbies will love it". To the right of this section is a large blue circle with a white downward-pointing arrow, labeled "ADONIS Pro Demo".

www.adonis-community.com

BPMN modelling with ADONIS:CE

DEMO

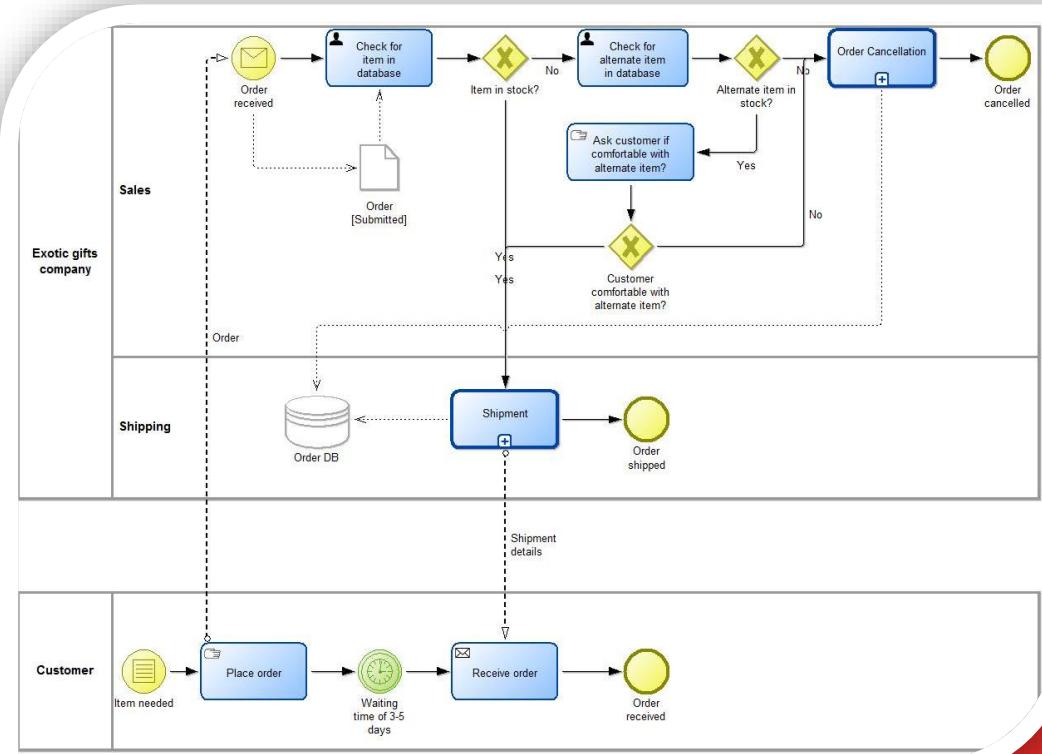
Decisions



Question

Scenario by Siddhartha:

I would want to know how can the company send a message to the customer about Order cancellation and how can it be fitted into the customer's sequence flow or is it necessary to fit it into the customer's sequence flow. Would the message be an Intermediate event or another Start event which would have a separate End event?



Gateways



Exclusive
Gateway



Exclusive
Gateway



Parallel
Gateway



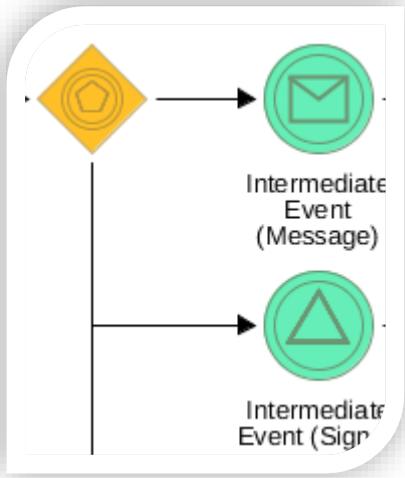
Inclusive
Gateway

Data based Gateways
i.e. we can say in advance
which way to go (on a basis of
data)

Time will tell...

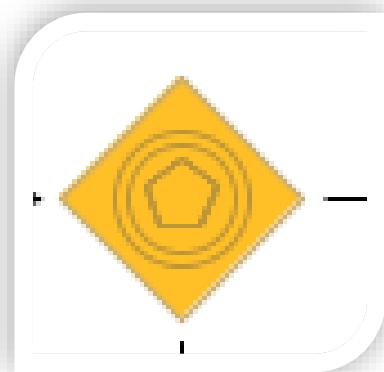


Event based Gateway

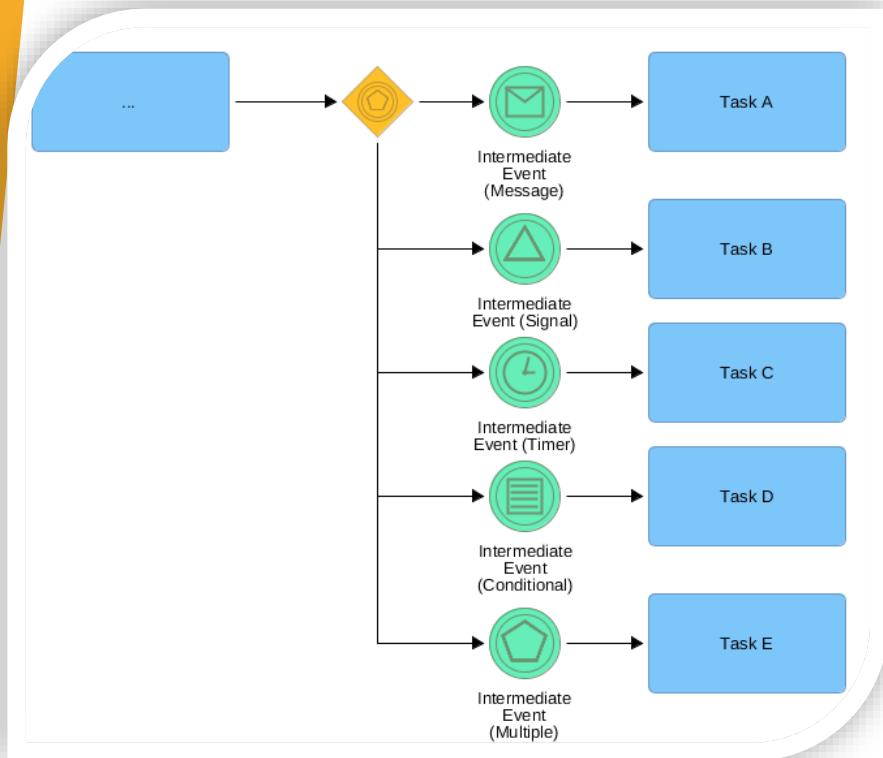


First event to happen
determines path selection

Only first one counts!



Allowed events



**Intermediate event
(catching):**

Message (OR Receive Task)
Signal
Timer
Conditional
Multiple

Event based Gateways

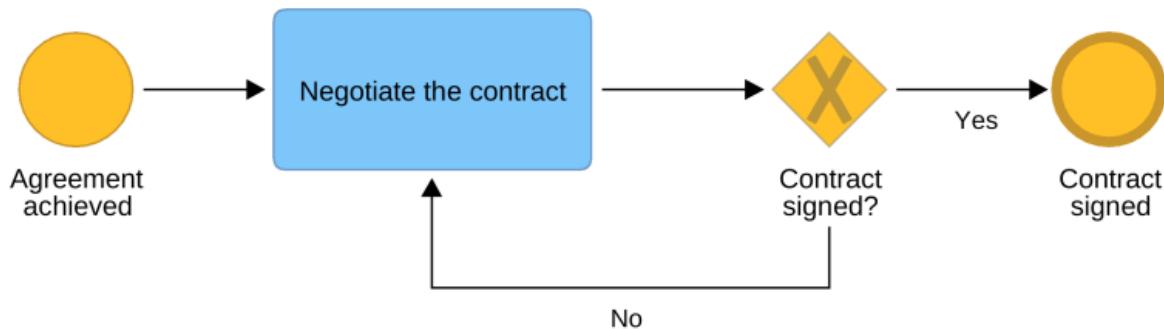
DEMO

Repetitions



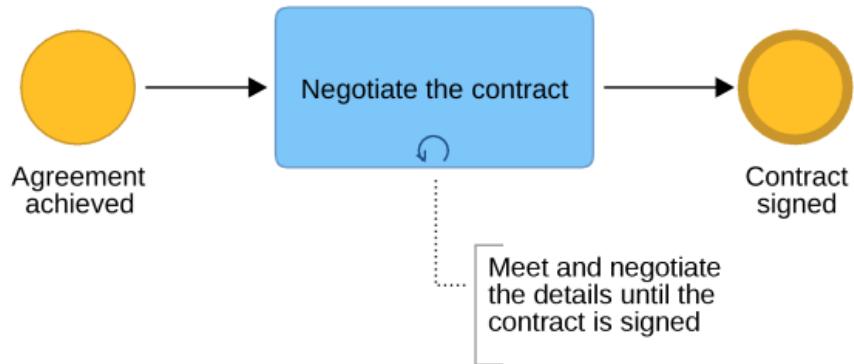
Repeating Activities

Using gateways

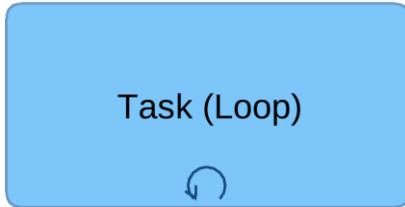


Repeating Activities

Using loops



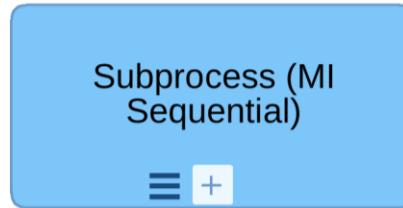
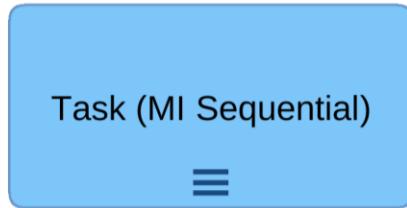
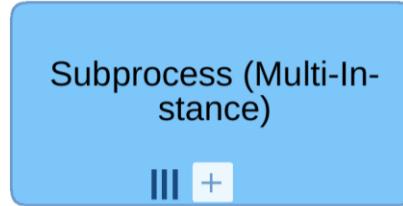
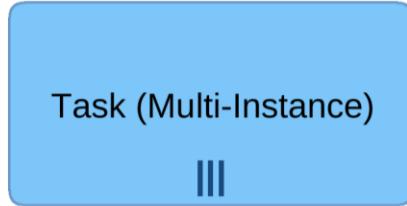
Loops and Multi-Instance Activities



Activity repeats as long as
some condition is true.

We cannot say in advance
how many times it will happen.

Loops and Multi-Instance Activities

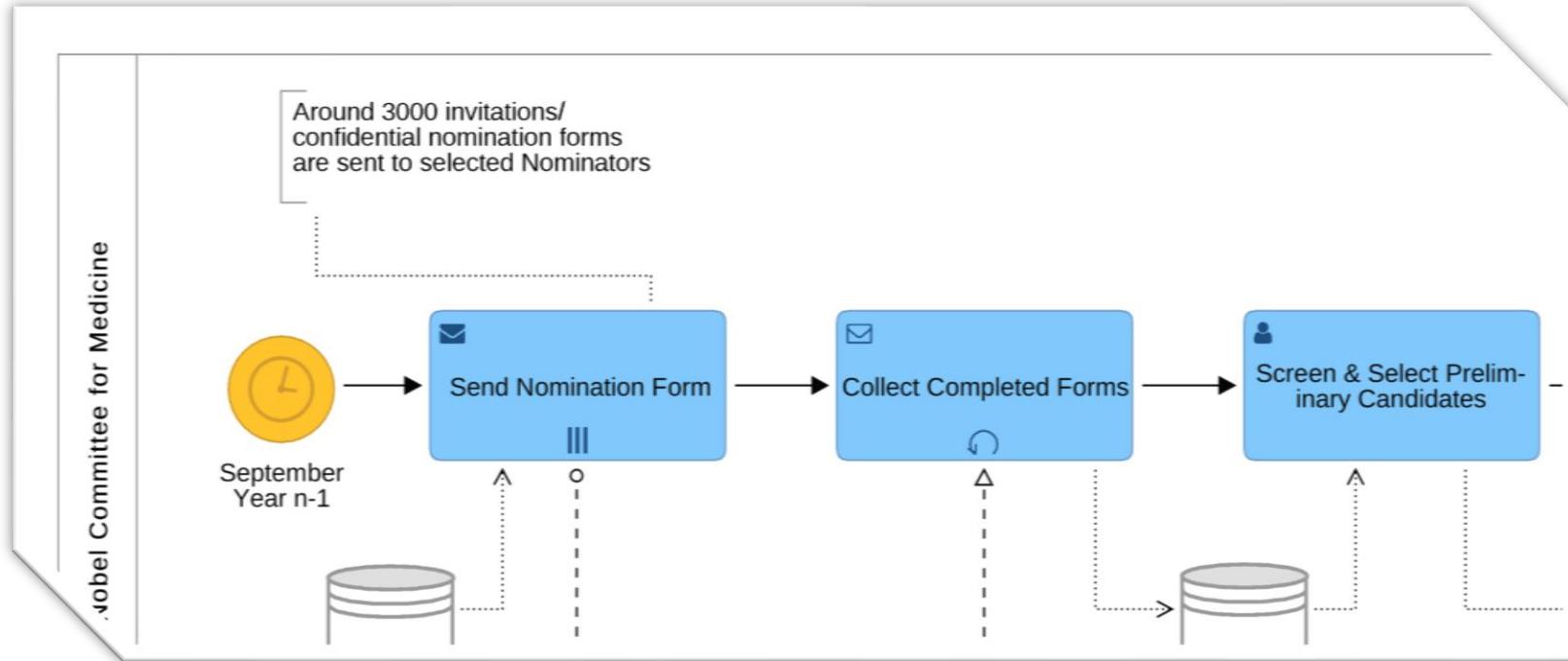


Activity is performed predefined number of times.

Before we start executing it we know this number.

Example

Nobel Prize process (source: BPMN by Example)



How to use BPMN organization-wide?



Question from student (thanks Terje!)

How would you proceed to analyse improvement opportunities across more than 30 organizational units? Visio flowcharts are available for all of them individually, but there is a need for:

- 1) doing more holistic analysis, showing interlinks between the units, and
- 2) keeping track of all improvement opportunities and their status.

Do you have any advise on methodology/software for this sort of work?

1) BPMN tools



2) How to manage change



BPMN tools



How do I pick one?



It depends :)



What is your goal?

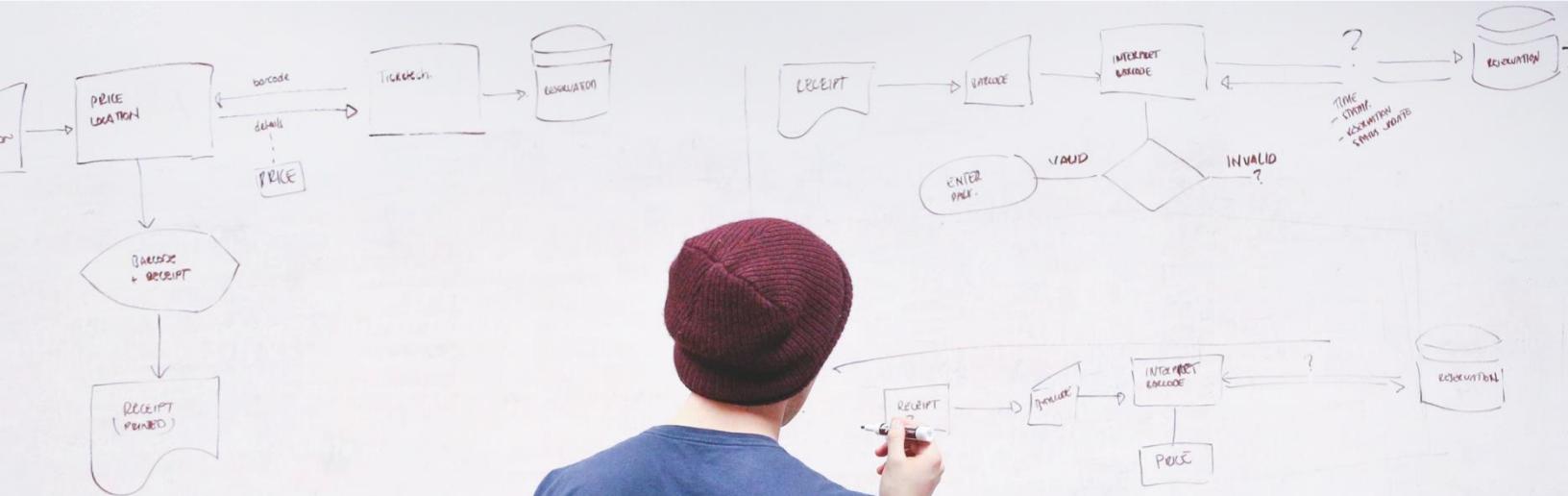


Many categories

- Diagramming tools
- CASE (Software Engineering) tools
- BPMS (Process Automation) tools
- Business Process Analysis tools

- and more (simulation, process mining, ...)

Diagramming tools

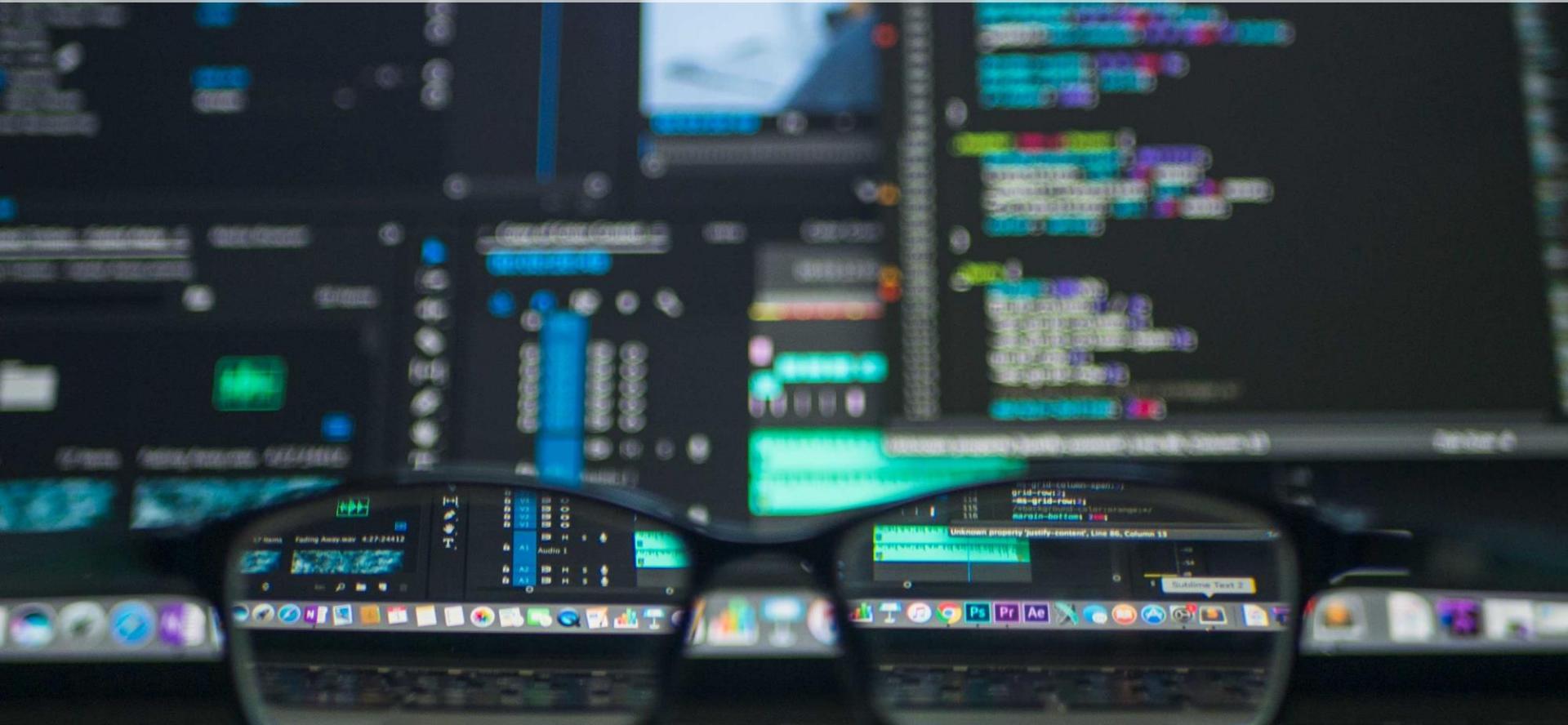


Diagramming tools

- Very easy to use
- Great for producing nice looking drawings
- Usually many diagram types available

- Example tools: Visio, SmartDraw, Lucidchart, draw.io

CASE tools



CASE tools

- For business analysts and software engineers
- Great for making specifications, generating code (and reverse engineering)
- UML, SysML, BPMN, ...
- Example tools: Enterprise Architect, Visual Paradigm

BPMS tools



BPMS tools

- For teams preparing process-based applications
- Great for automating processes in a quick and agile way
- BPMN extended with technical attributes, DMN, CMMN
- Example tools: Appian, Bizagi, Activiti, Bonita, Camunda

BPA tools



BPA tools

- Both for business and IT
- Great for building shared understanding, improving processes, planning Digital Transformation
- BPMN (possible interchange with CASE/BPMS tools) and additional model types
- Example tools: ADONIS, ARIS, iGrafx

How to manage change



How to manage change

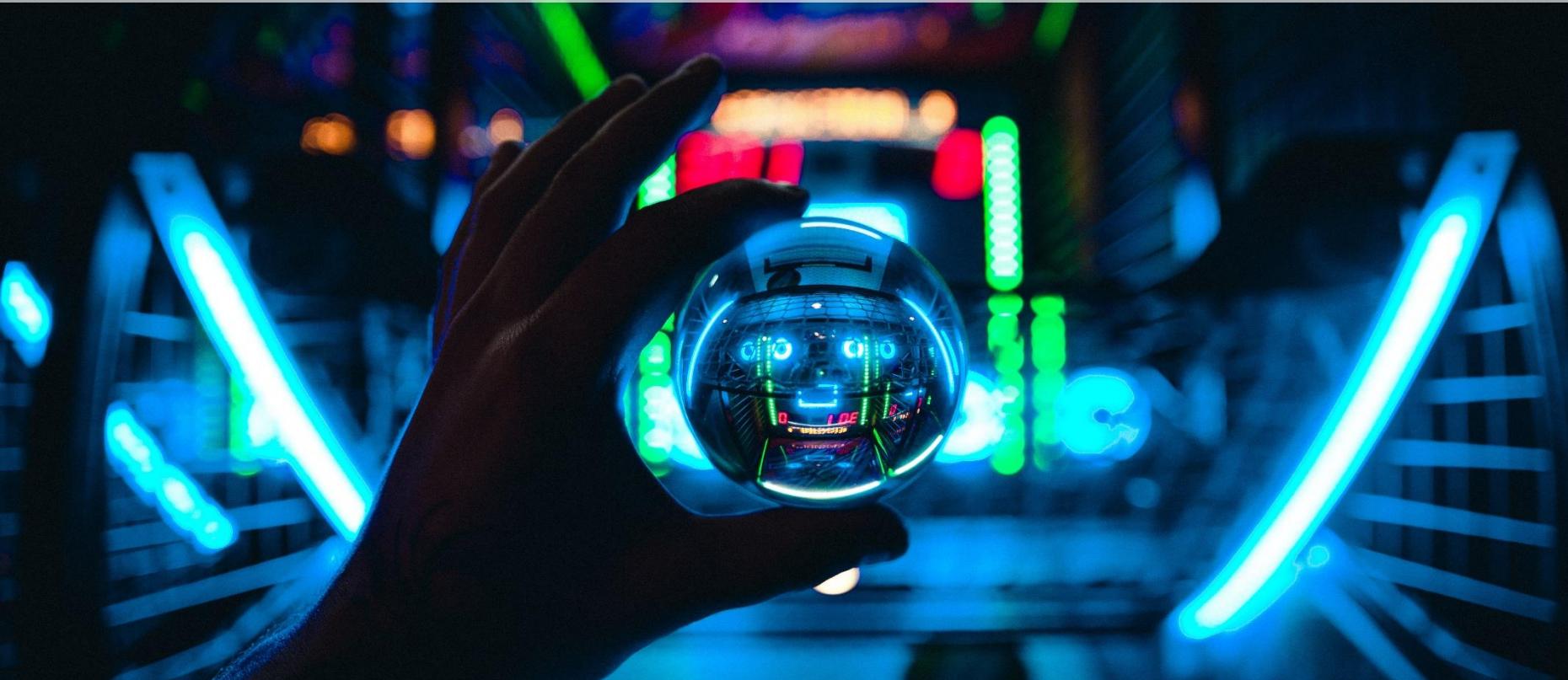


Example using ADONIS

(<https://us.boc-group.com/adonis/>)

- Process architecture
- Complete view
- Initiatives
- Collaboration

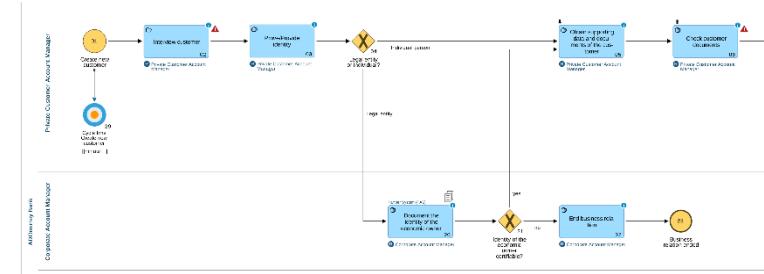
Unpredictable workflows



Inspired by William B. :)

BPMN

- Easy to learn :)
 - Useful for improvement
 - Allows automation
-
- Silent assumption: well-defined processes
(structured, predictable)



Unpredictability

- Clear structure vs knowledge work (unstructured and evolving work)
- E.g. insurance, healthcare, legal, ...
- Total freedom vs sharing best practices
- Not so easy to express in BPMN
 - Ad-hoc Sub-Process
 - Boundary Events
 - Event-based Sub-Processes

CMMN

BPM
Tips.com

- OMG standard
- Adaptive Case Management



- Also automation

Comparison



Processes

Activities

Transitional

Data

Procedural

Token

Cases

Events

Contextual

Information

Declarative

Event Condition
Action (ECA)

Decisions

Rules

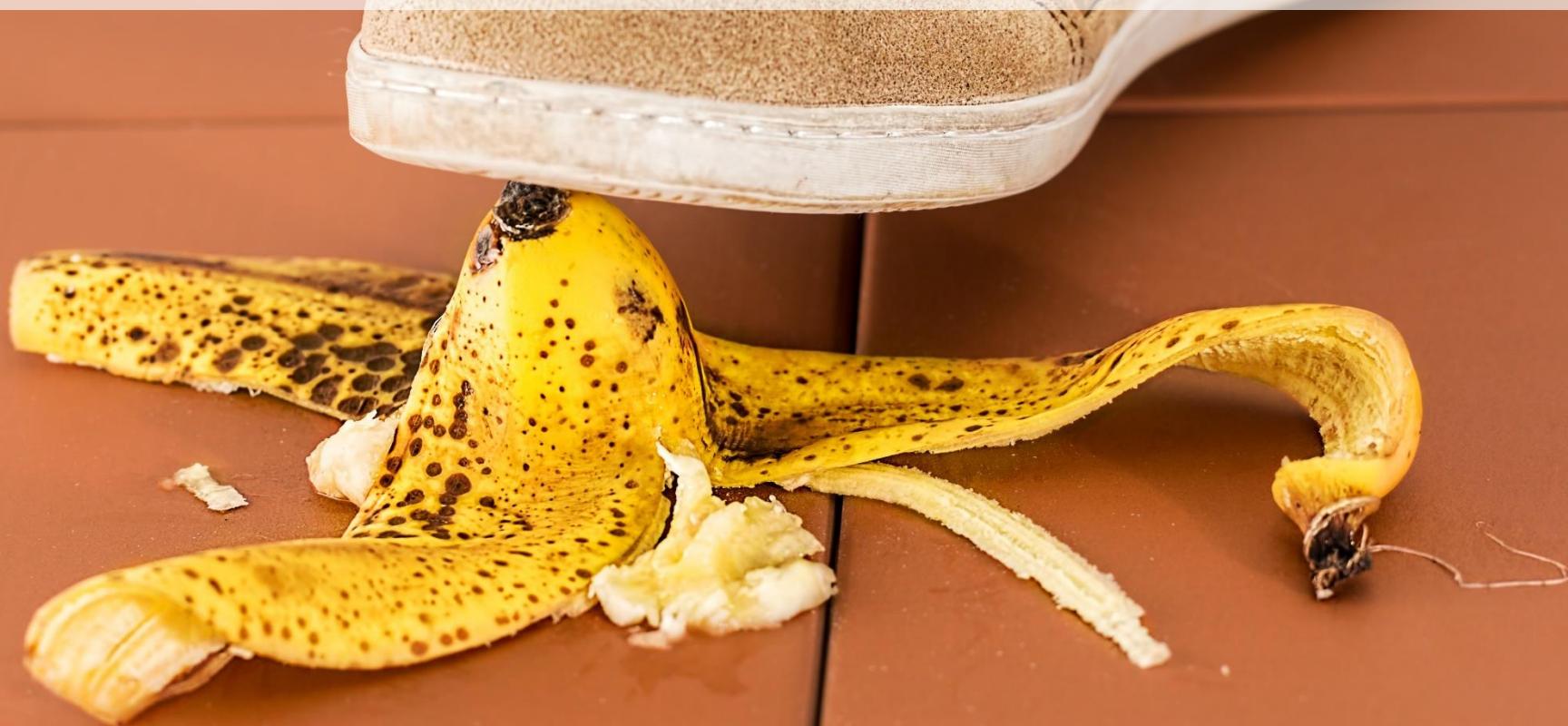
Applied

Knowledge

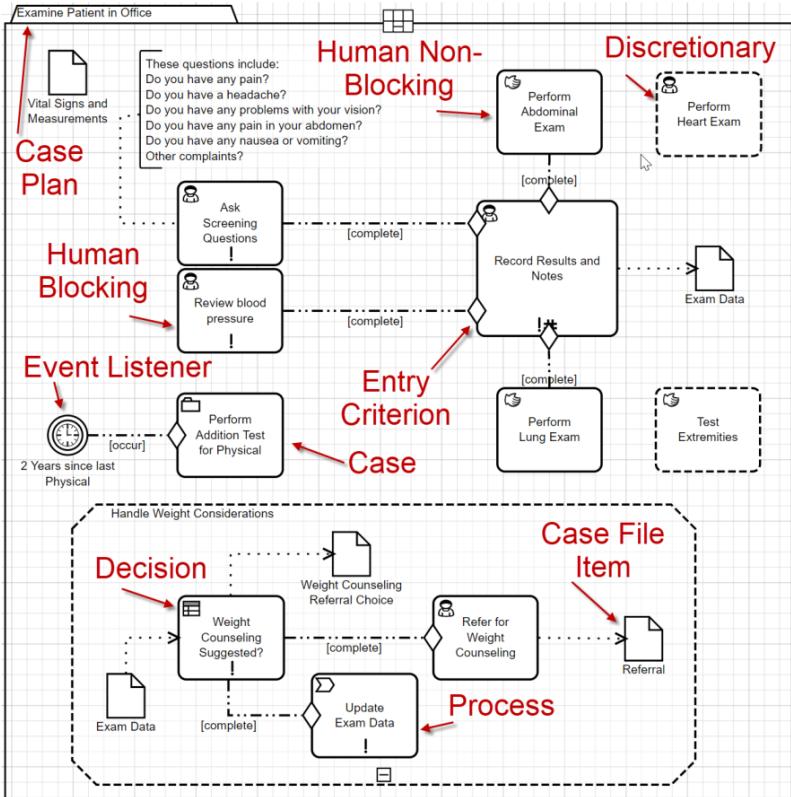
Functional

First Order Logic
(FOL)

New standard



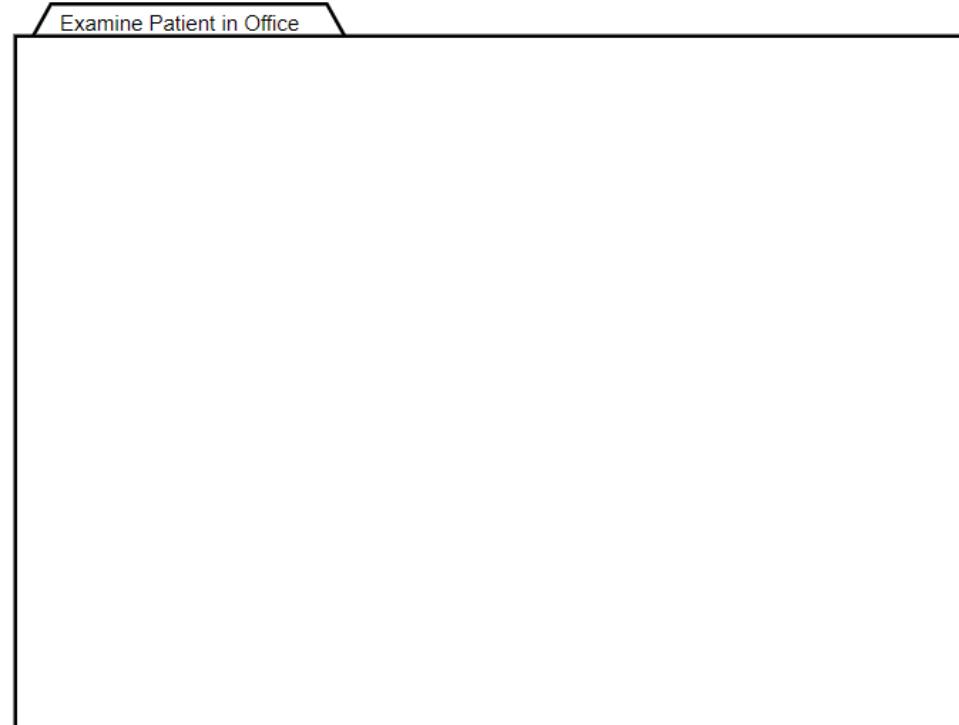
CMMN elements



Source: Field Guide to Shareable Clinical Pathways. BPMN, CMMN & DMN in Healthcare

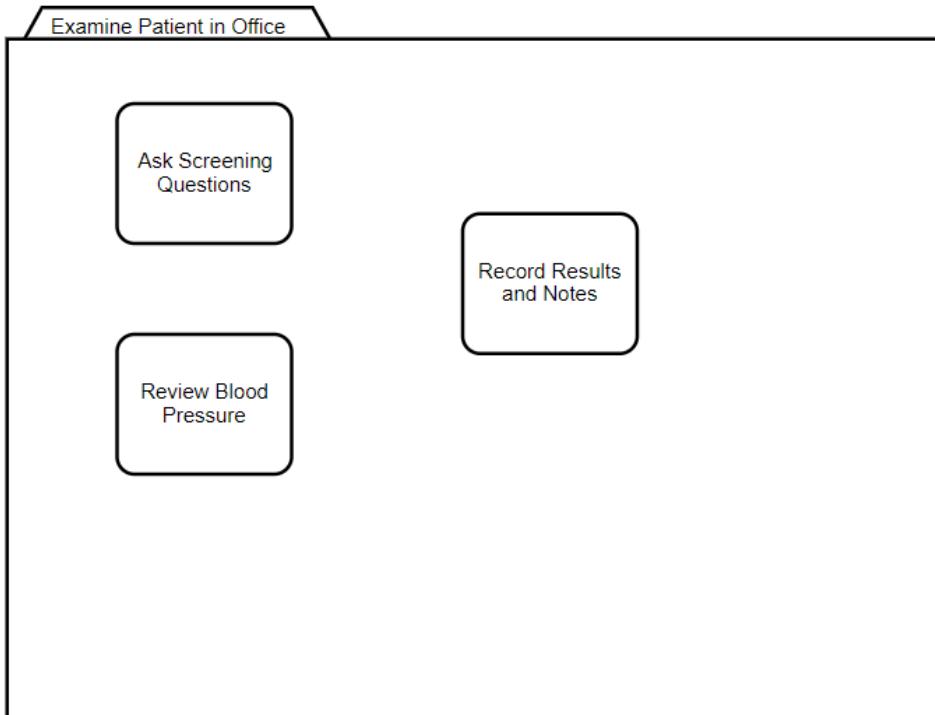
Case Plan Model

BPM
Tips.com



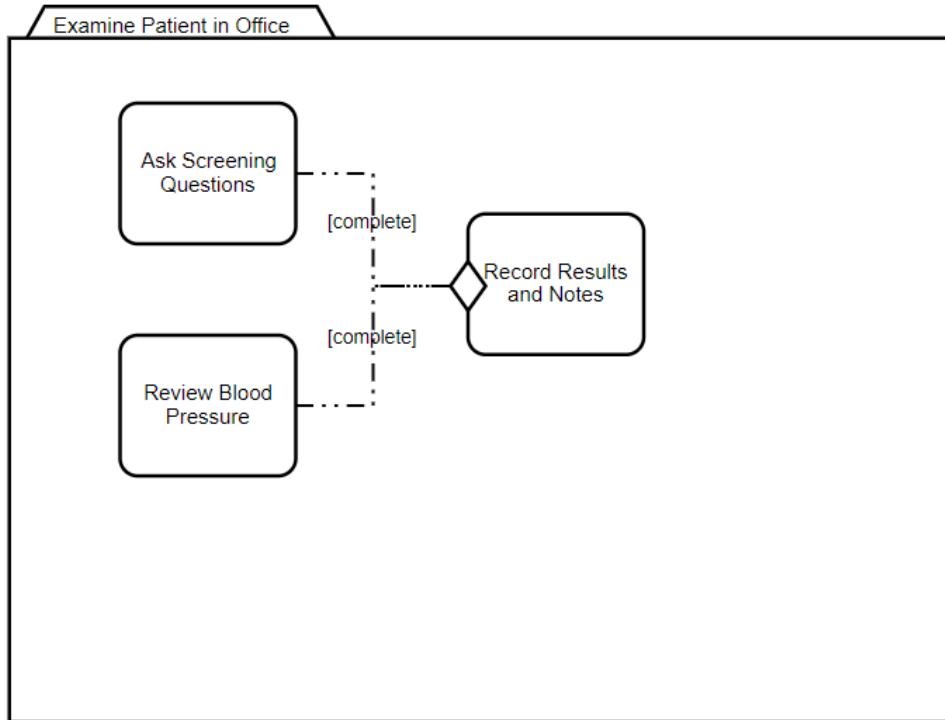
- Case
- Unlike pools in BPMN not optional

Task



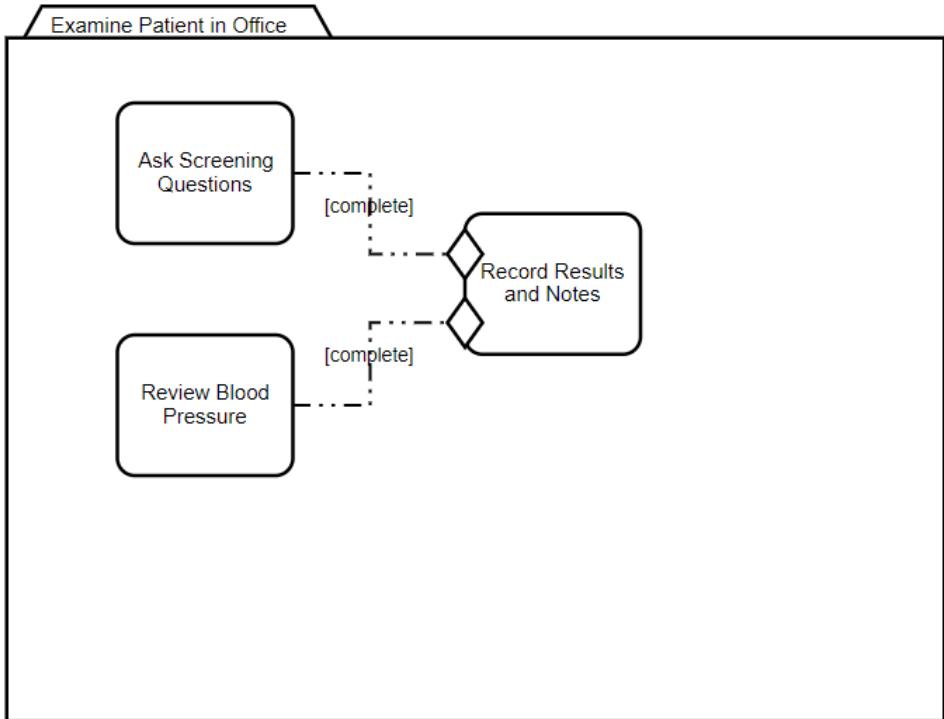
- CMMN is declarative, so position does not have any meaning

Entry criterion (sentry)



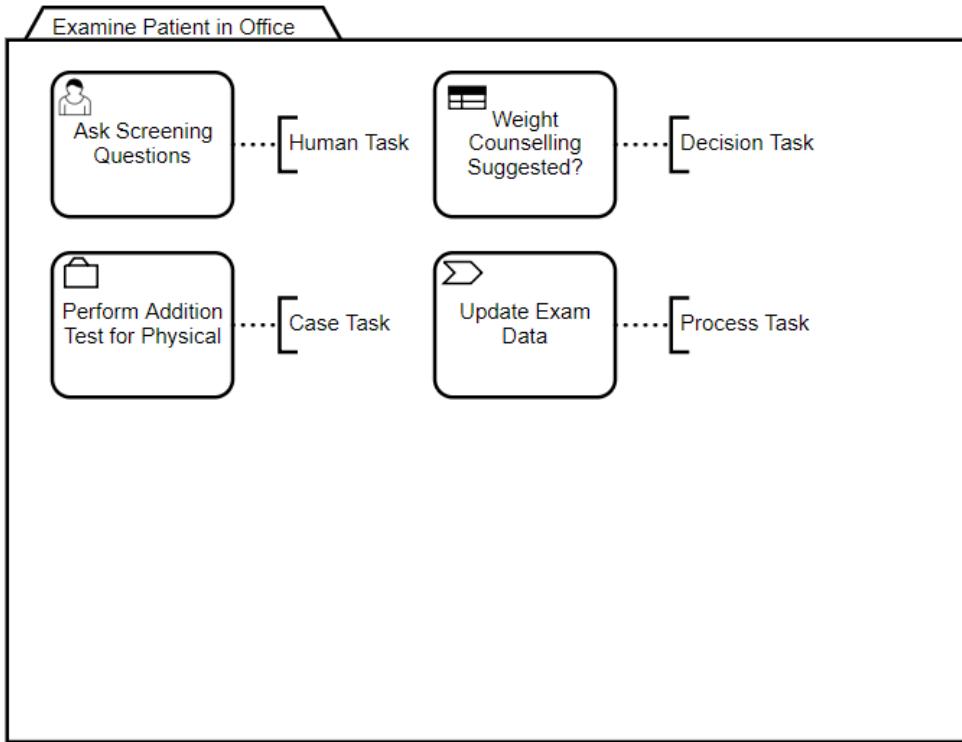
- No Token in CMMN!
- Sentries
- Entry criterion (shallow diamond)
- AND

Entry criterion (sentry)



- OR
- Connector
(dash dot
dot)

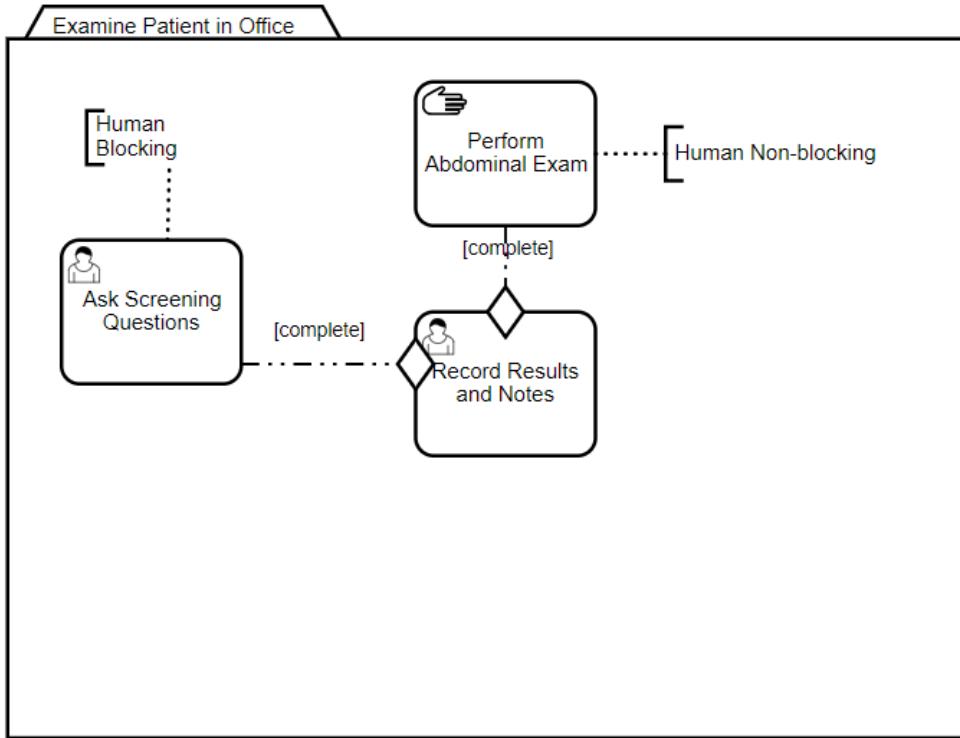
Task types



- Old friends
(Association
and Text
Annotation)

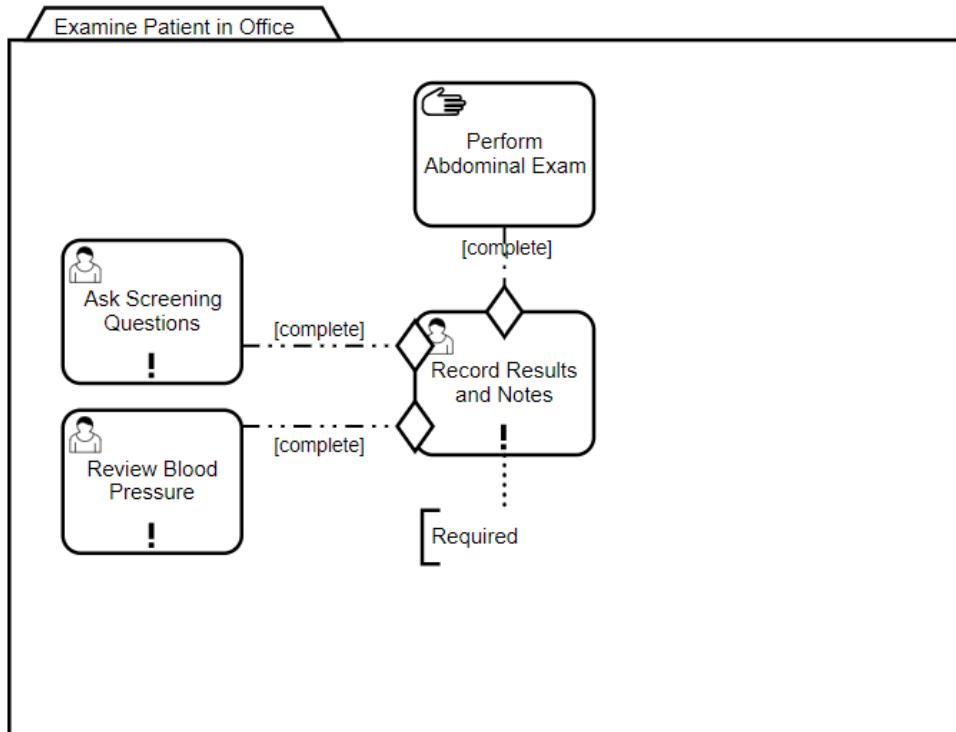
- 4 Task types
- BUT...

Blocking



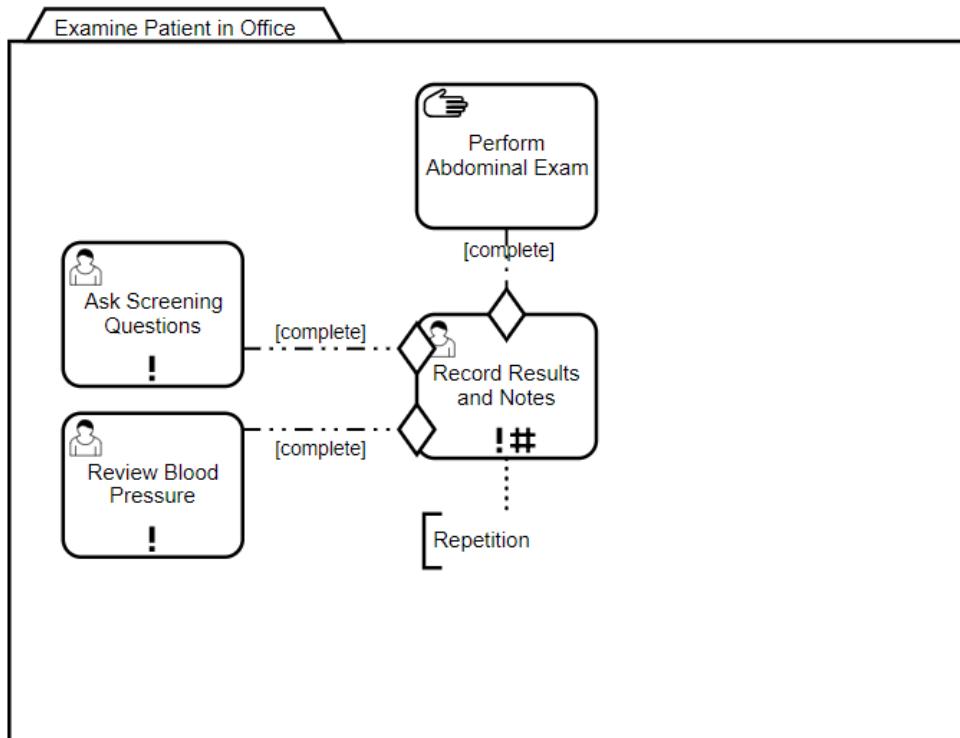
- Only Human Tasks have different icons
- Process, Case, Decision Tasks look the same

Required



- Case manager cannot complete case if required (!) tasks are still active

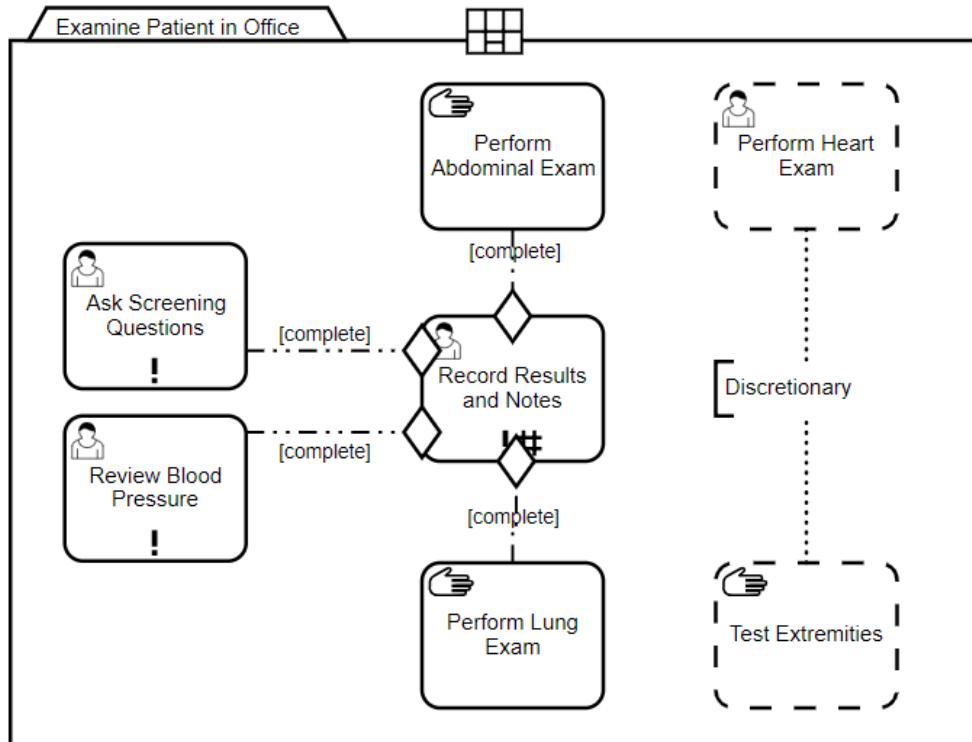
Repetition



- # symbol

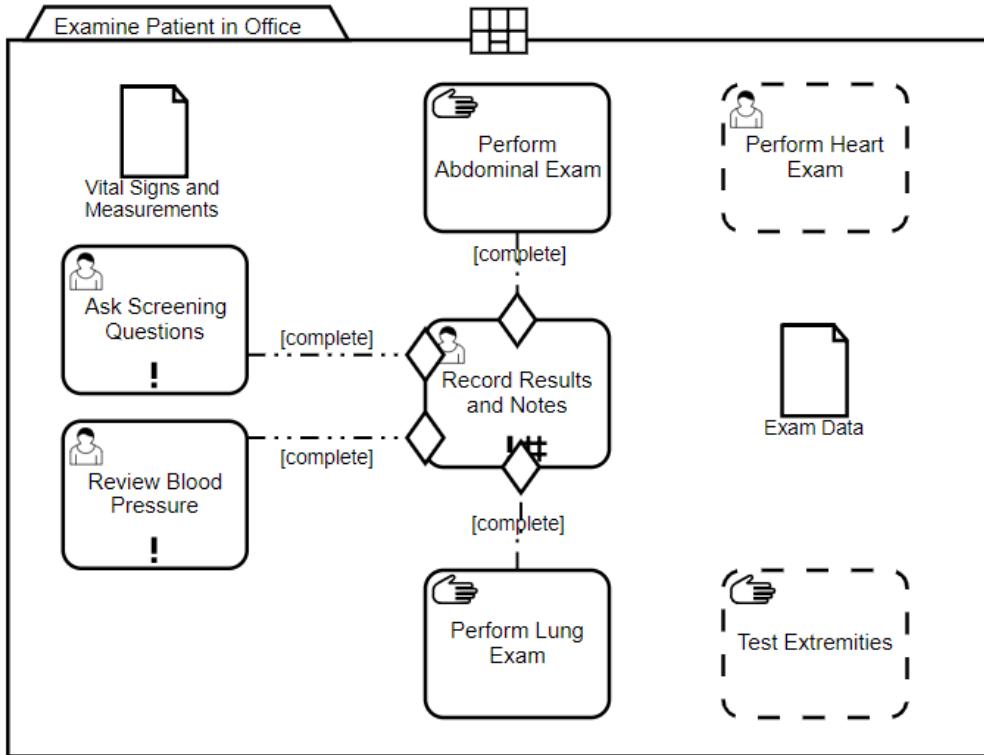
Discretionary tasks

BPM
Tips.com



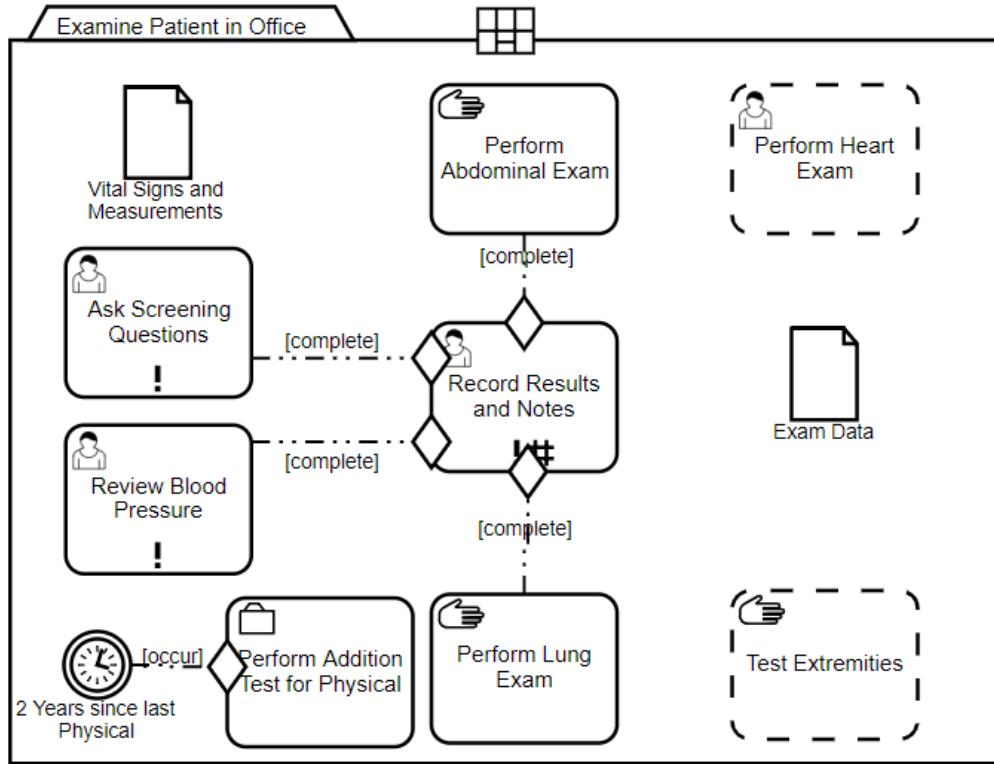
- Can be added to case during the planning phase
- All Task types can be discretionary
- Planning table marker

Case file item



- Similar to Data Objects in BPMN
- Information needed in a case
- Possible connectors to Sentries

Event listener



- Linked to Sentries



None

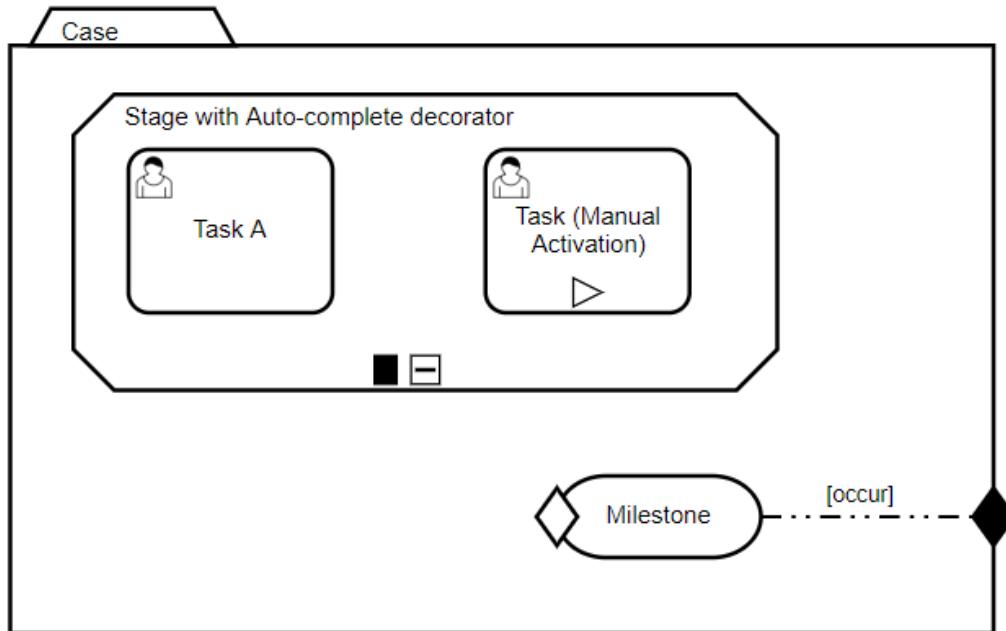


Timer



User

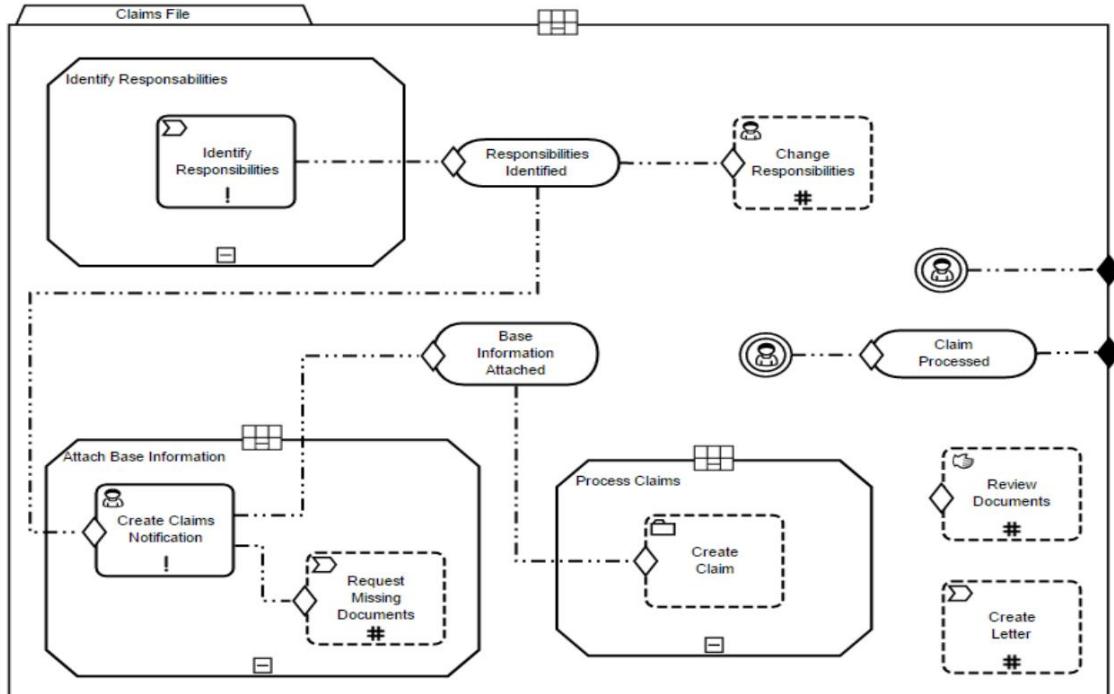
Is this all?



- Stage
- Auto-complete
- Manual activation
- Milestone
- Exit criterion
- ...

Do we need CMMN?

BPM
Tips.com

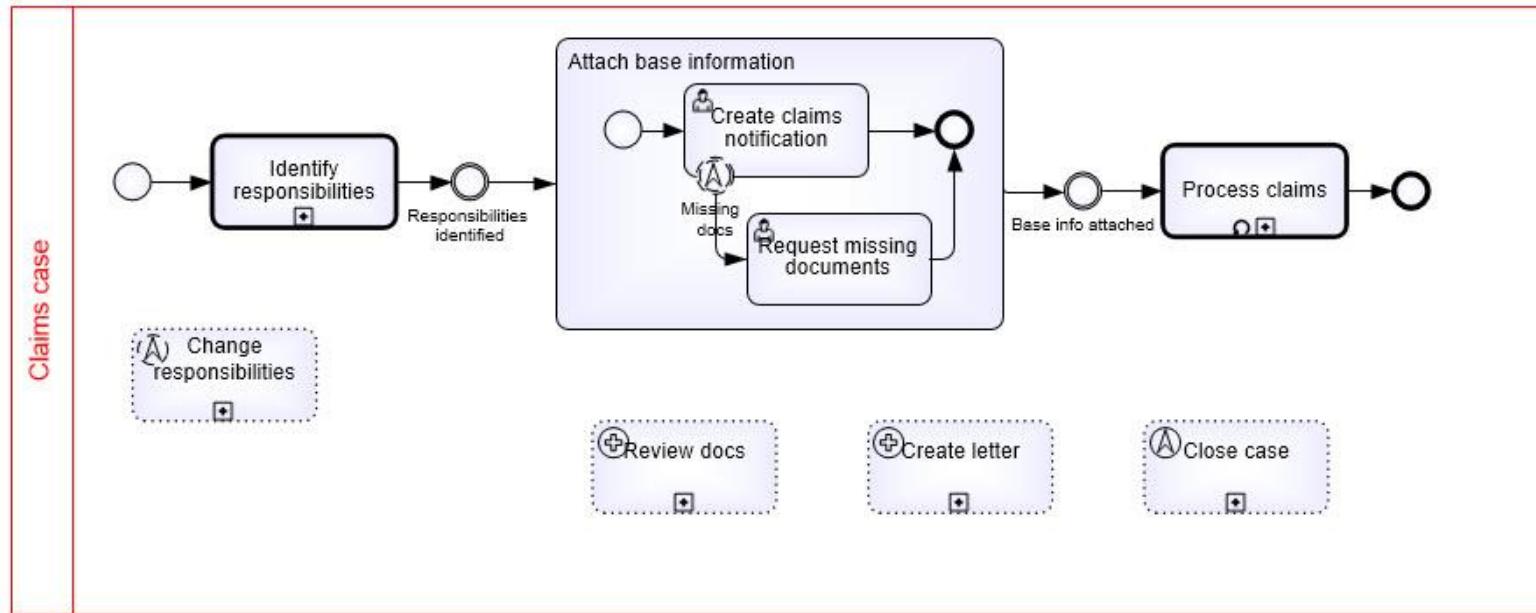


Source: CMMN 1.1 specification

Do we need CMMN? BPM

Tips.com

- BPMN and CMMN Compared (by Bruce Silver)
- <https://methodandstyle.com/bpmn-cmmn-compared/>



Next steps - reading

BPM
Tips.com

Field Guide to Shareable Clinical Pathways

BPMN, CMMN & DMN in Healthcare
Version: 1.0



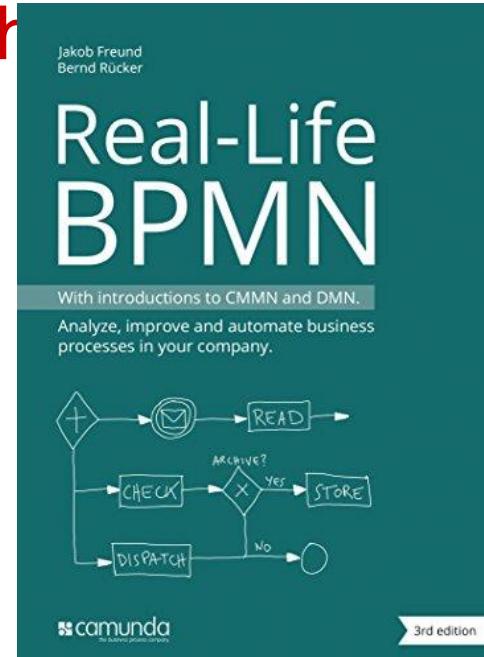
OMG Healthcare Domain Taskforce
healthcare@omg.org

This paper presents a discussion of technology issues considered in a Subgroup of the Object Management Group. The contents of this paper are presented to foster wider discussion on this topic; the content of this paper is not an adopted standard of any kind. This paper does not represent the official position of the Object Management Group.

- <https://www.omg.org/registration/registration-field-guide.htm>

Next steps - reading **BPM** Tips.com

- Real-Life BPMN (3rd edition): With introductions to CMMN and DMN



Next steps - tools

BPM
Tips.com

- ADOxx.org
(<https://www.adoxx.org/live/web/learnpad-developer-space/learn-pad-modelling-environment>)
- BPMN.io
- Camunda
- Flowable