

IN5140

Smart processes and agile methods in Software Engineering

Group session 10

- Global and Distributed Software Development

Agenda

First hour:

- Repetition of lecture
- Quiz
- BPMN feedback

Second hour:

- Previous Exam Questions

Questions?

Speak out loud, or type in chat

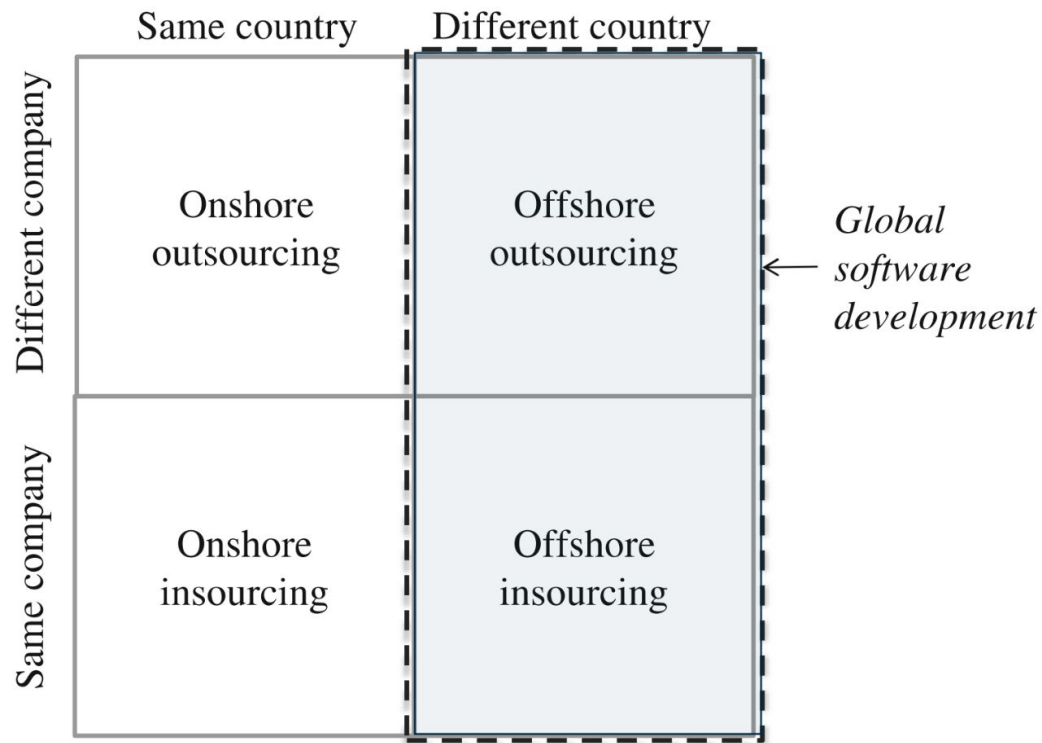
Repetition from lecture

Summary

Global and Distributed Software Development

- Motivation for global software development
(e.g., access to intellectual capital, outsourcing and cost reduction, work from anywhere flexibility)
- Terminology related to **global** software development
(i.e., onshore, offshore, outsourcing, insourcing)
- Challenges in **Distributed** Development (coordination needs)
 - Increased complexity
 - due to time zone differences, cultural gaps, enhanced communication requirements
 - Using slack for team coordination and communication

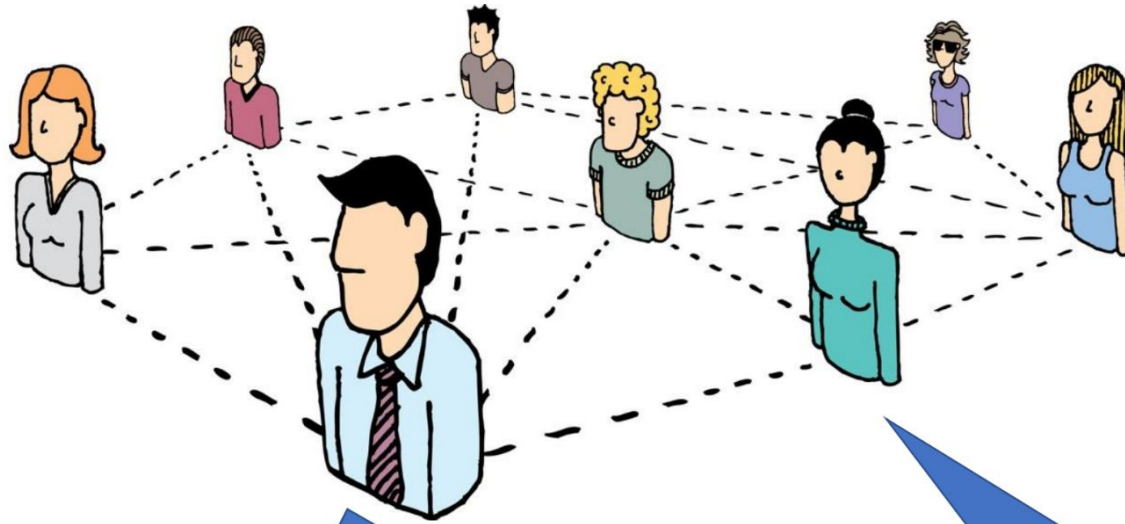
Terminology



Distributed development requires coordination

- Balancing the need for coordination with the need for focused, uninterrupted work time is a significant challenge in agile software development, but coordination is critical for success, especially in global distributed software development ¹.
- Many developers spend half their day in meetings ²
- Distributed teams face challenges such as:
 - time zone differences
 - cultural gaps
 - a need for enhanced communication

Team communication and coordination - Slack



Many people were negative to introduce “another system” because we were already using Yammer, Wikis, Skype, and others. But, we wanted to see if we could benefit from it in our distributed work.

No, I got answers on Slack yesterday.

[UX developer], do you have anything to add?

Stray and Moe, *Understanding coordination in global software engineering: A mixed-methods study on the use of meetings and Slack*, Journal of Systems and Software, Volume 170, 2020
<https://doi.org/10.1016/j.jss.2020.110717>

Quiz

(2023)

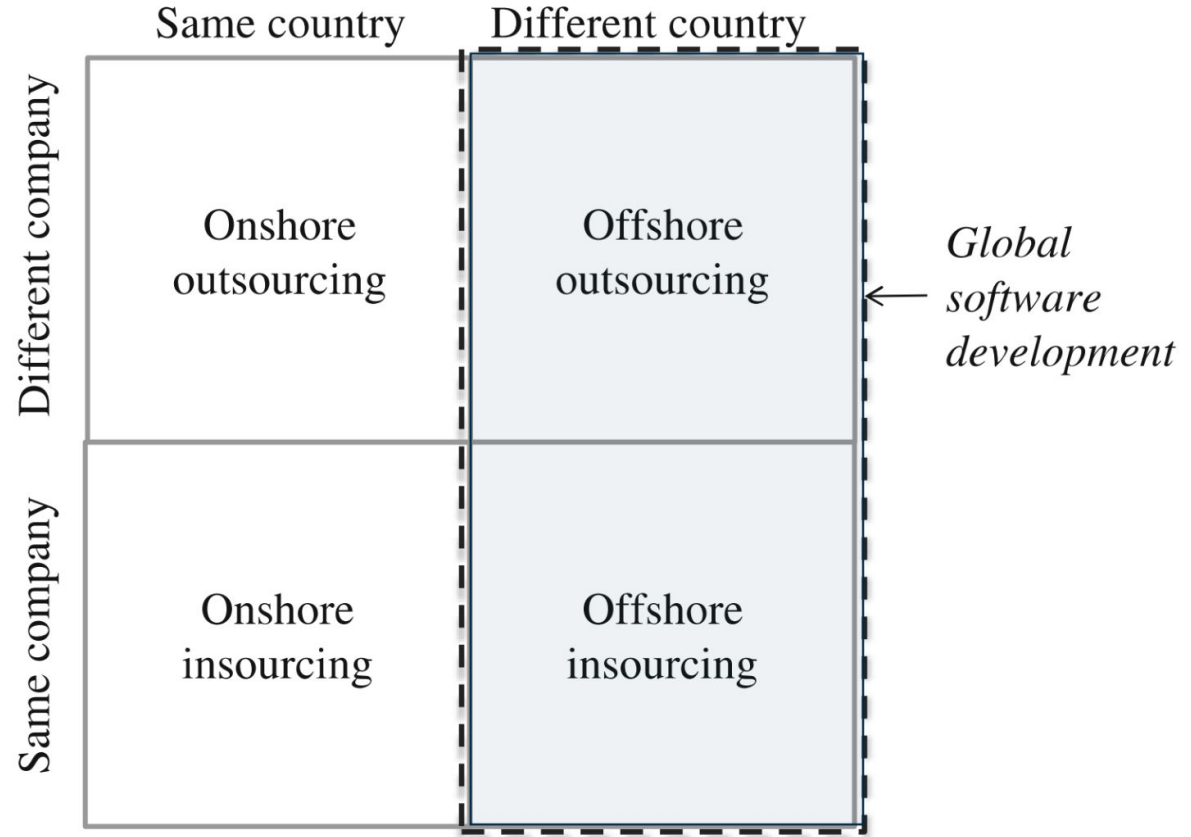
Global software development

In the matrix below, select the field(s) that combined represents **Global software development**.
(2 points if the correct one(s) is/are chosen, 0 points if not).

Click the image

		Same country	Different country
Different company	Different	Onshore outsourcing	Offshore outsourcing
	Same	Onshore insourcing	Offshore insourcing

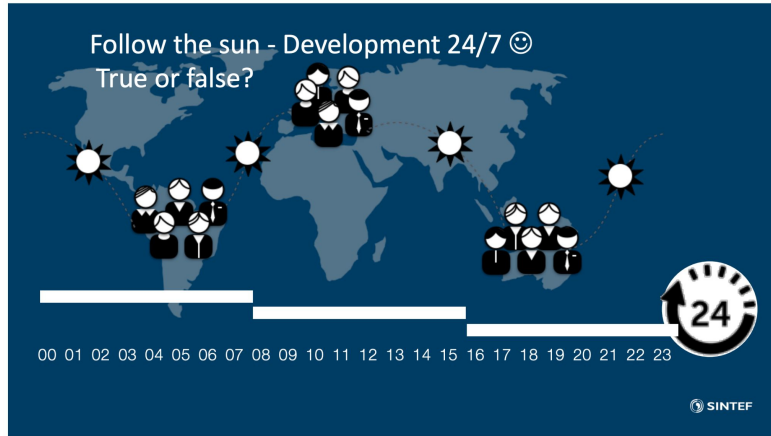
Terminology



(2023)

Follow the sun

Describe the "***Follow the sun***"- software development approach and mention one advantage and one disadvantage.



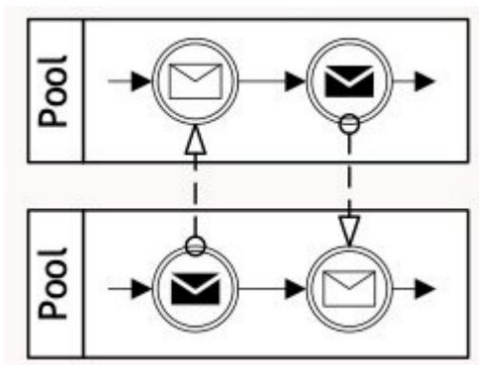
Follow the sun refers to developing software based on global distributed teams across the world to take an advantage of 24/7 continuous development. For example, after team Norway development feature, team India can take over and continue working on it while team Norway goes to bed.

One advantage of "follow the sun" is that this approach facilitates fast and continuous software development, resulting in being competitive in the market. There are several disadvantages such as culture difference (i.e., different culture has different norm, which makes different expectations and norms, making hard to communicate sometimes), coordination issues between distributed teams.

BPMN Feedback

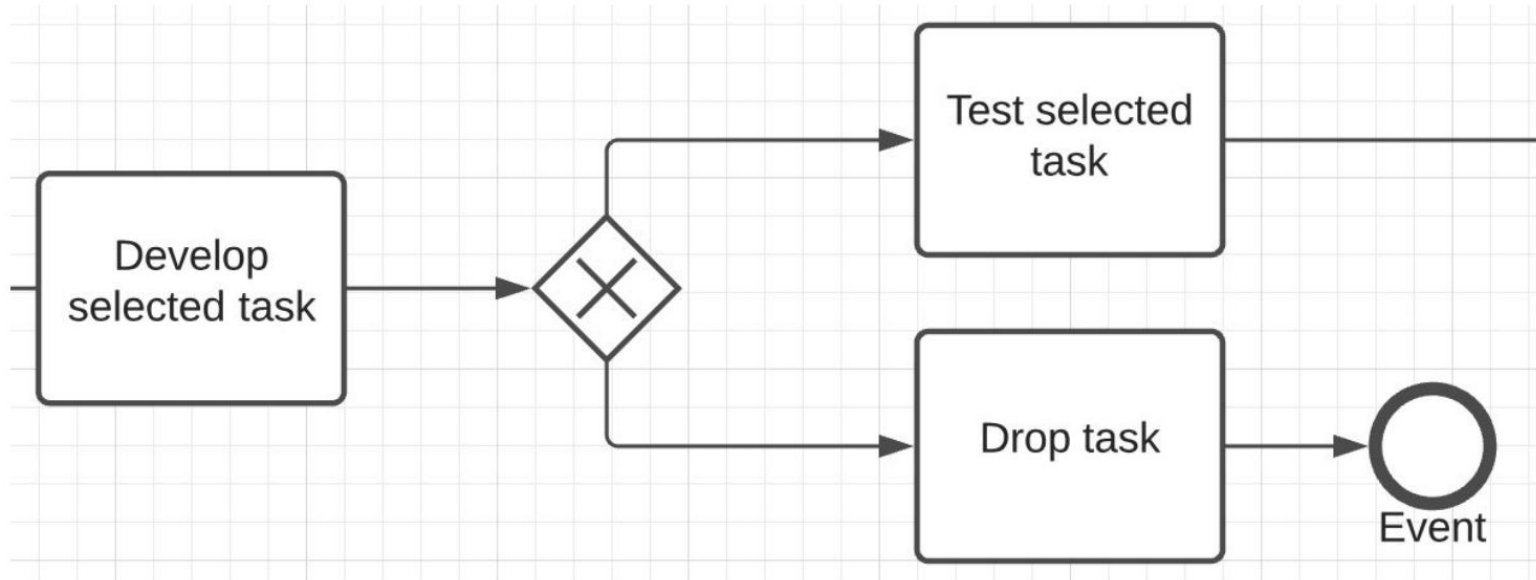
Deliverable 2 - Common mistakes

- **All** pools should have a start-event **and** end-event **with descriptions**
 - Important to visualize what initiates the process
 - Not necessary in swimlanes (but can be included)
 - Remember to name your pools!
- Dotted lines between **pools**, sequence flow between **swimlanes**.



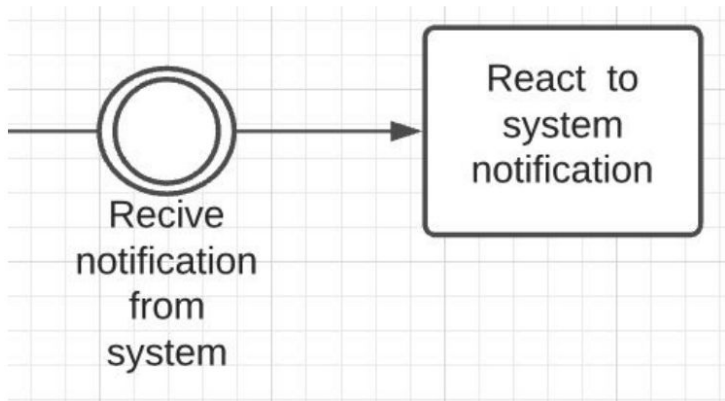
Deliverable 2 - Common mistakes

- **All** gateways and events must have a description



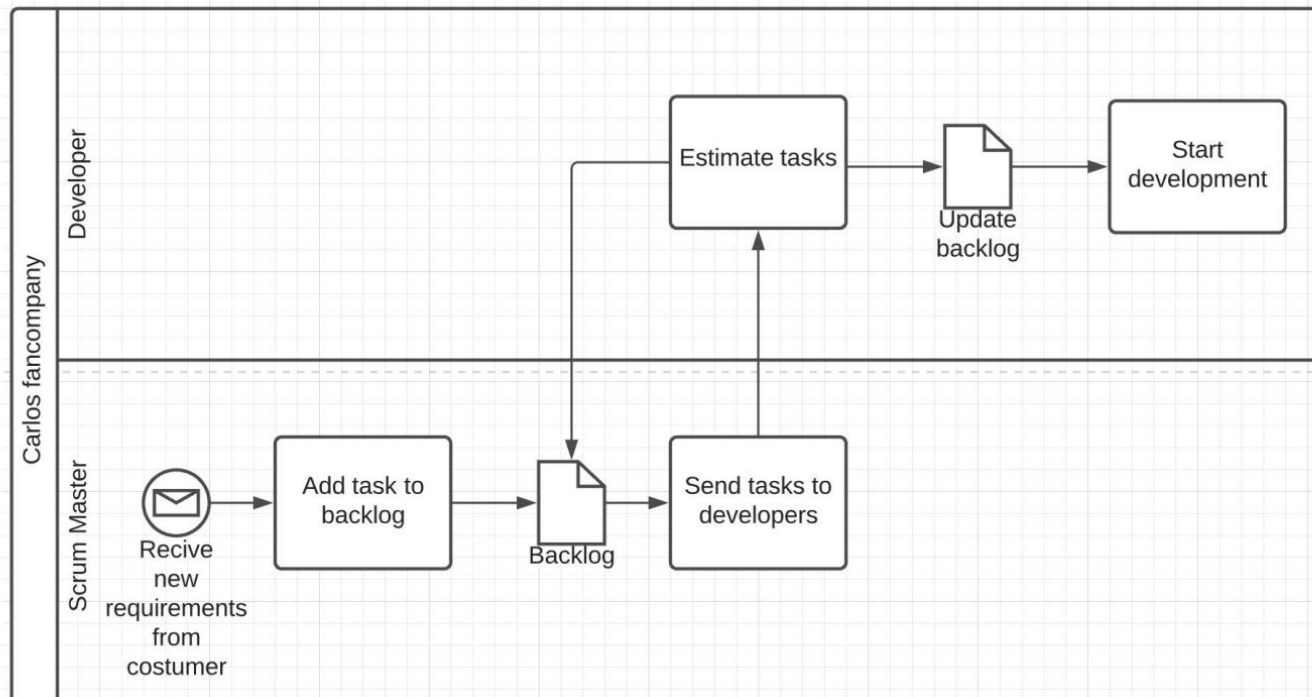
Deliverable 2 - Common mistakes

- Connect to data types using Data Association (dotted lines)
- In practise data and systems is used in most activities, you do not have to model all of them everytime
- Data should not “push” new flow directly
 - Alternative solutions to this:

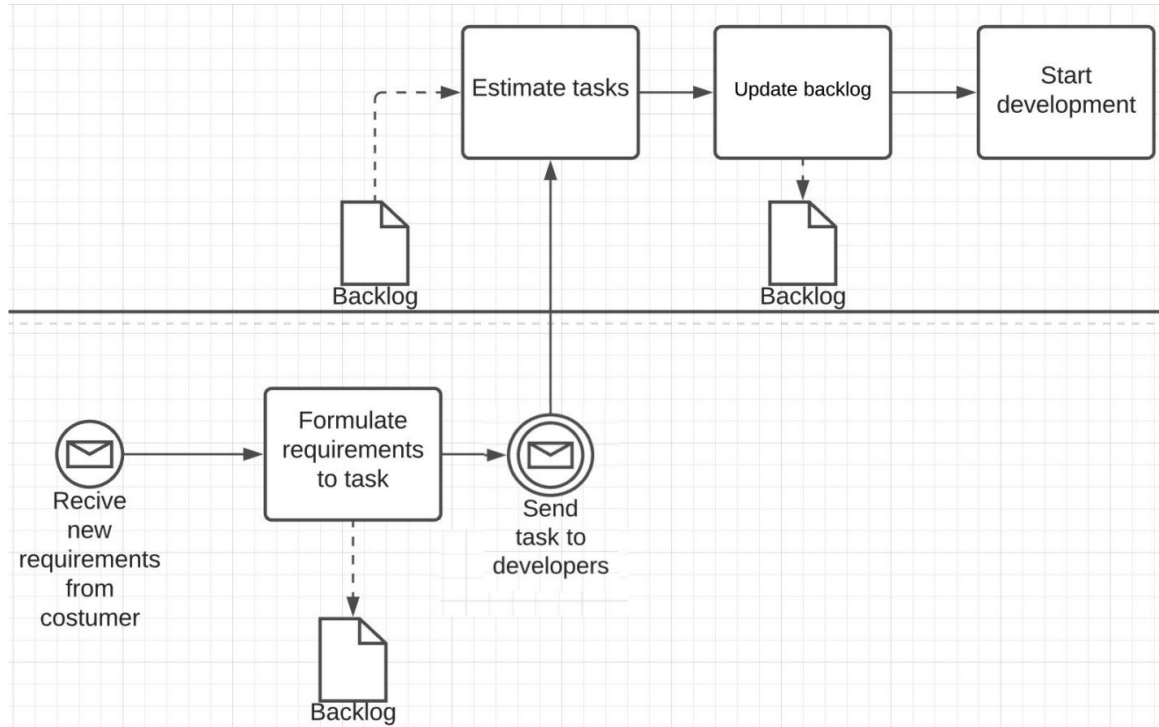


Deliverable 2 - Common mistakes

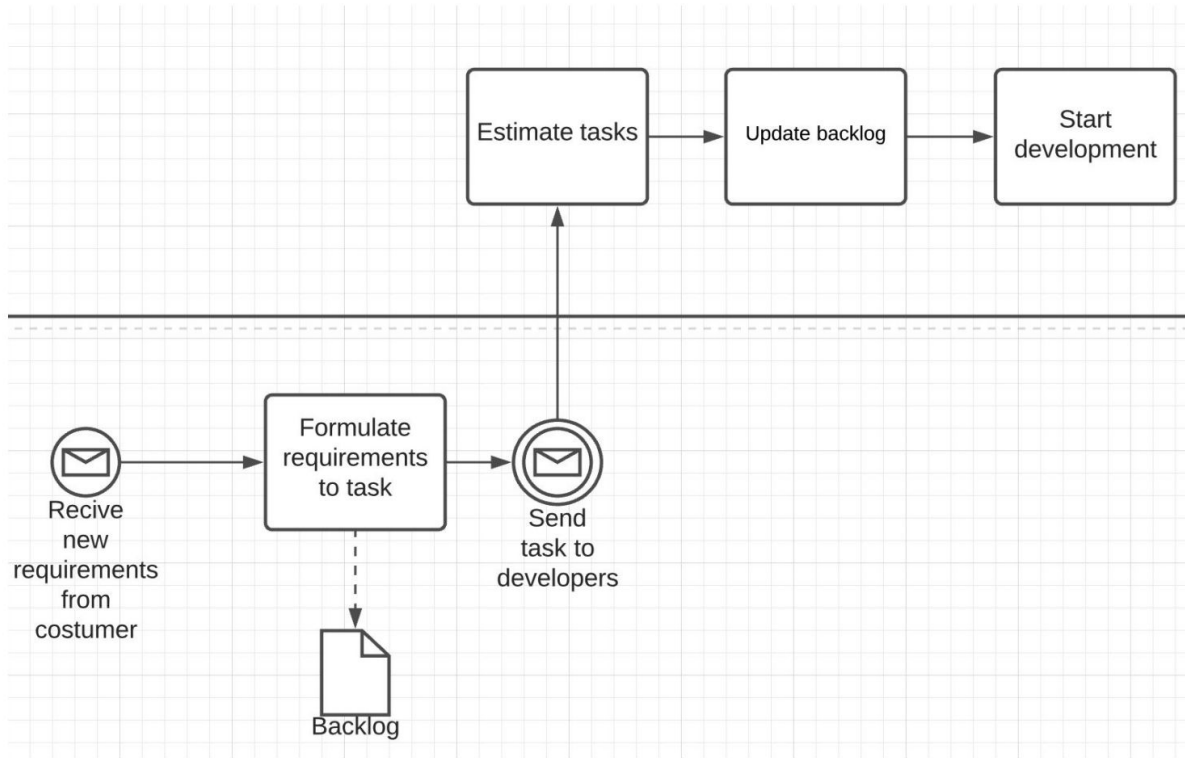
- Data mistakes



Deliverable 2 - Common mistakes

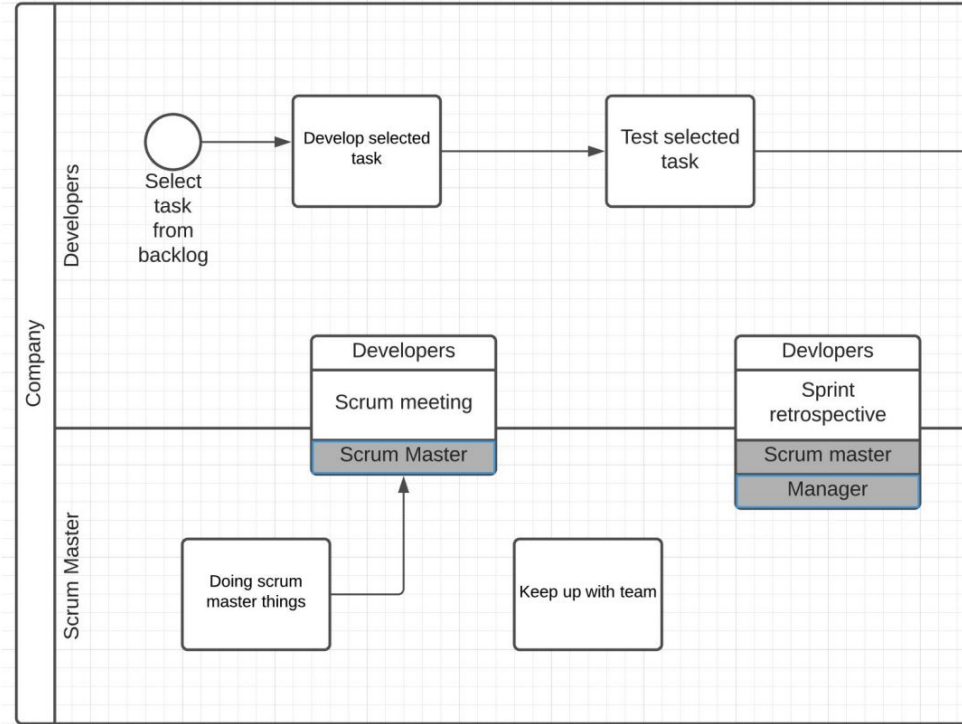


Deliverable 2 - Common mistakes

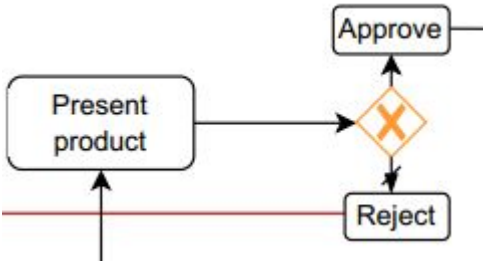
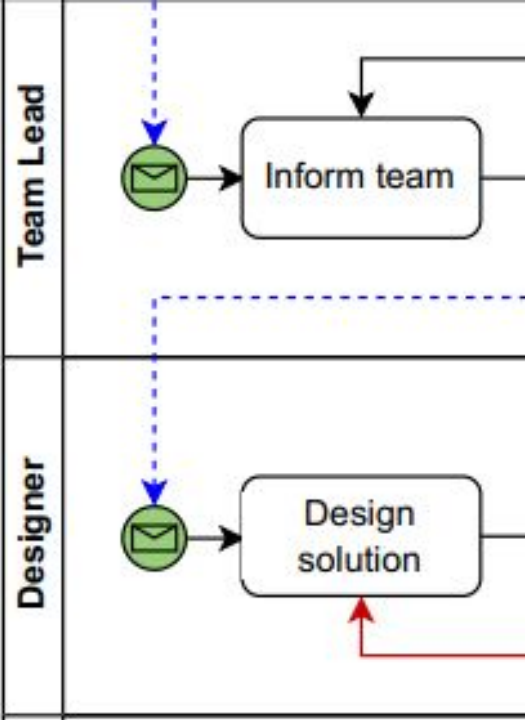


Deliverable 2 - Common mistakes

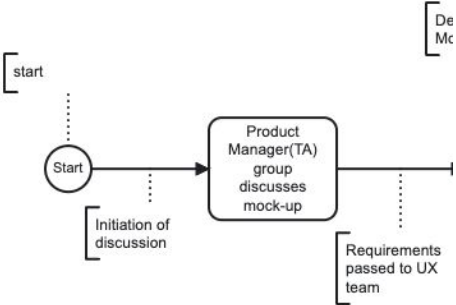
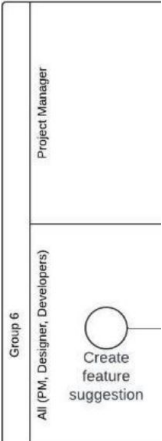
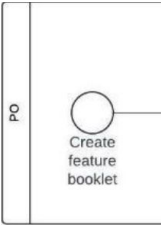
Example of flow mistakes and unnecessary activities



Deliverable 2 - from 2024



(Other groups is a representation of the other groups on the Mentimeter team, assigned to create the other feature)



Deliverable 2 - Common mistakes

- The goal of a BPMN diagram is to visualize a process (simplified)
 - Different stakeholders with different knowledge and experience
- It is therefore important to have a **readable** and **understandable** diagram.
Keep it simple!
- Keep in mind “Are we adding **valuable** details or **unnecessary** clutter?”
- Examples of “over-complicating”
 - Unnecessary sub-processes (sub-processes within subprocesses)
 - Focus on your process and the problems! Adding detail is great, but make sure that the main process/problem is not lost (especially important for the exam)
 - The “flow” should make sense through the whole diagram.

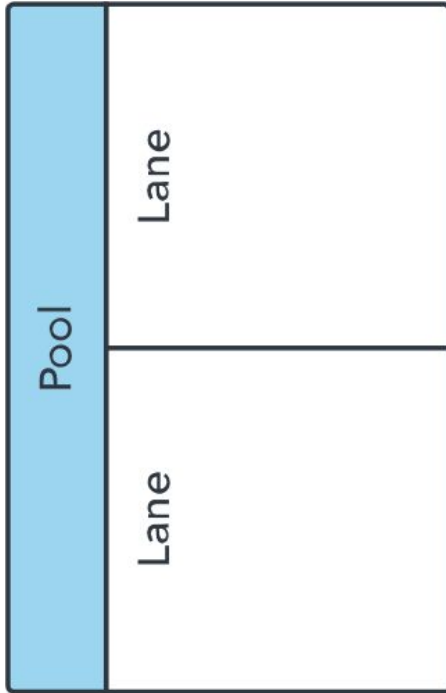
BPMN

Business Process Modelling Notation

“A project process model defines **Who** is doing **What**, **When** and **How** to reach a specific goal”

...this is what we want to visualize with BPMN!

Pools and Swimlanes



- **A pool** represents major participants in a process. A different pool may be in a different company or department but still involved in the process.
- **Swimlanes** within a pool show the activities and flow for a certain role or participant, defining who is accountable for what parts of the process.

Events



Start



Intermediate



End

- A trigger that starts, modifies or completes a process.
- They are shown by circles containing other symbols based on event type.

Activities

- A particular activity or task performed by a person or system. It's shown by a rectangle with rounded corners.
- They can become more detailed with for example sub-processes.



Gateways



Exclusive



Event based



Parallel



Inclusive



Exclusive
event based



Complex



Parallel
event based

- Decision point that can adjust the path based on conditions or events. They are shown as diamonds.
- Gateways can also be an empty diamond

Flow



- **Sequence flow:** shows the order of activities to be performed

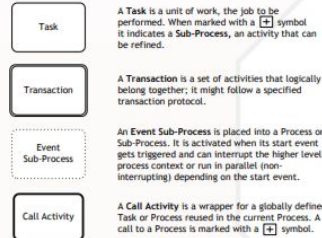


- **Message flow:** depicts messages that flow across “pools,” or organization boundaries such as departments. It shouldn’t connect events or activities within a pool.

How to engage BPMN

- **Skim through** the textual description
 - Try not to drown in the text
- Note potential **pools**
- Identify the **roles** of each pool
 - Swim lanes
 - What are their tasks
 - What are their dependencies
- Model the **tasks** with metadata
- Check that you are still answering the exercise
- Do not make the BPMN diagram too extensive and complicated

Activities



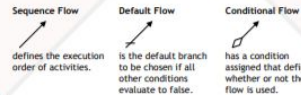
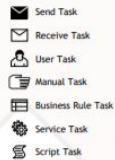
Activity Markers

Markers indicate execution behavior of activities:

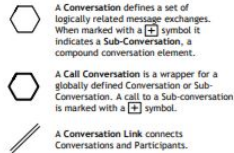


Task Types

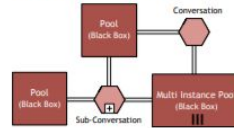
Types specify the nature of the action to be performed:



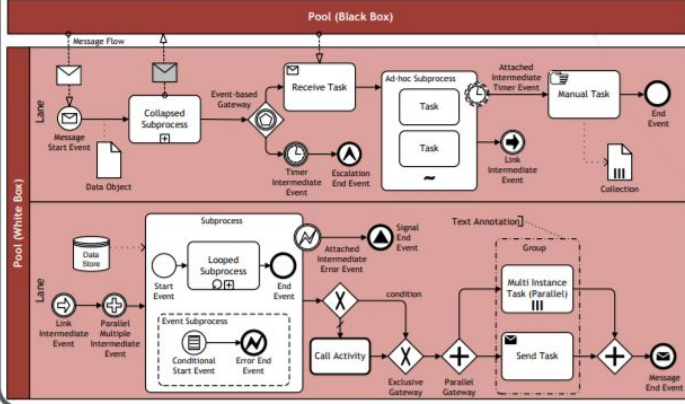
Conversations



Conversation Diagram



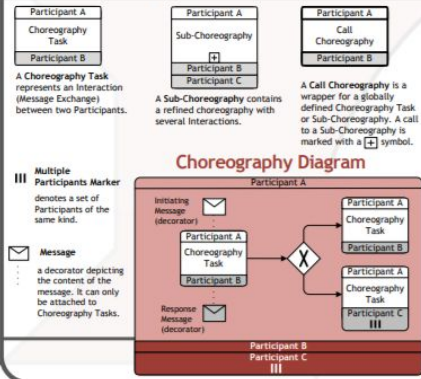
Collaboration Diagram



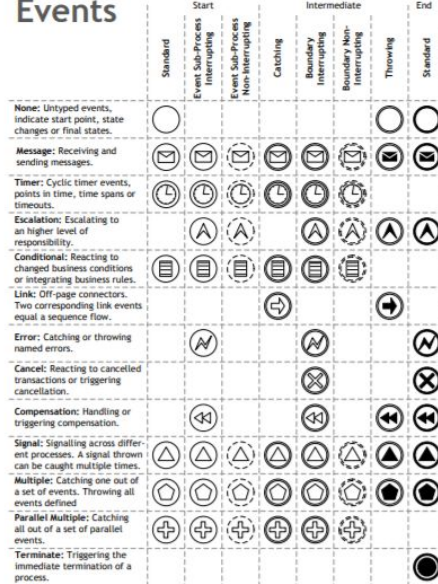
Swimlanes



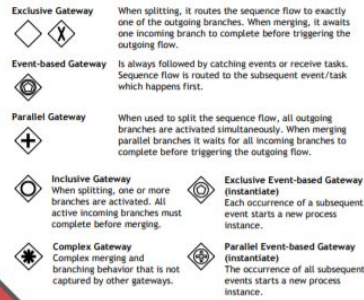
Choreographies



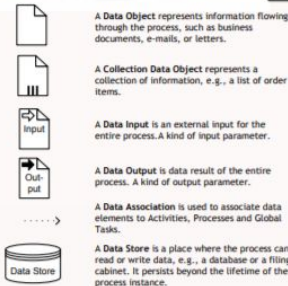
Events



Gateways



Data



What we value in your assignments

Syntax:

- Correct lanes and pools
- Activities and gateways
- Start and stop event
- Sequence flow
- Collaborations

In general:

- Your diagram should be readable and understandable

BPMN modeling

- There are many different ways to model BPMN-diagrams
- No “clear solution” as long as you are answering the exercise

This video saved our exam! 🤩

Break until 15:15 

Previous Exam Questions

What to expect from the course

What you get

- You learn how to reason about which process is best in which situation
- You understand when a process needs to be improved
- You learn the theoretical background about processes and their assessment
- You learn about Agile and its pros and cons
- You learn from real world research studies based on rigorous approaches and evidence
- You learn from practical experiences in different industrial contexts
- **You try to improve your own project with all the above**

What you don't get

- You don't learn how to implement a specific process
- You don't apply a specific process during the project course

2023 exam format

Written examination

- No examination support material is allowed
- Answer : English, Norwegian available
- 4hrs
- Hand drawings + 1 A4

The exam is divided into the following four sections:

- Section 1: Multiple Choice questions (10%)
- Section 2: Various question types (20%)
- Section 3: Text answers (30%)
- Section 4: Case (40%)

i Introduction

UNIVERSITY OF OSLO

The Faculty of Mathematics and Natural Sciences

Written examination IN5140/9140

2023 AUTUMN

Duration: December 4th, 15:00-19:00

Permitted aids: None.

It is important that you read this front page before you start. If you need to use the zoom function exam set you can hold down ctrl and click + or - on the numerical keyboard.

No examination support material is allowed.

This exam set is only available in English. You may answer in Norwegian or English.

Information about hand drawings(Scantron)

In this exam, you are permitted to make drawings/use sketching for Task 4.1 and Task 4.3. You are to use the sketching paper handed to you in the exam room. You can use more than one sketching sheet per task. See link to instructions for filling out sketching sheets near the bottom of your screen.

You may NOT hand in sketching sheets for any other tasks than Task 4.1 and Task 4.3. You will NOT be given extra time to fill out the "general information" on the sketching sheets (task codes, candidate number, etc.).

Good luck!

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- Section 2: Various question types (20%)
- Section 3: Text answers (30%)
- Section 4: Case (40%)

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