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IN5140

Smart processes and agile methods in Software Engineering

Group session 5 :
Measurements in process improvement

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Agenda

First hour:

- Project Information
- Quick recap

Second hour:

- Previous Exam Questions

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Project milestones throughout IN5140

What	Due date	% of total score
Deliverable 1 – Brochure	5th of Oct, 23:59	passed/not passed
Deliverable 2 – Retrospectives and BPMN on project	26th of Oct, 23:59	passed/not passed
Deliverable 3 – Improved BPMN and SPI suggestions on project	9th of Nov, 23:59	passed/not passed
Project Presentations	10th, 11th, and 13th November	passed/not passed

- Submit deliverables here (PDF): https://devilry.ifi.uio.no/
- Feedback within 2-3 weeks

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Questions?

Speak out loud, or type in chat

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Recap from the lecture

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Measurement Theory

- Why are measurements important in software engineering? Why do we measure?
- What is Goal-Question-Metric (GQM)?
- What are OKRs (Objectives and Key Results)?
- What is a burn-down chart and What is it used for?

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Data

- What is the difference between quantitative and qualitative data?
- What is the difference between objective and subjective data?
- What are the four types of measurement scales (nominal, ordinal, interval, ratio)?
  - Explain each scale and give at least one example for each scale
- What is the difference between accuracy and precision?

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Concepts and Constructs

- What is a construct?
  - Explain and give an example (e.g., performance, product quality, lead time, maintainability).
- What is a KPI?
  - Give examples of Agile development KPIs.
- What is software complexity?

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Scrum versus Kanban

- What was the finding of the study of Scrum versus Kanban?
- Which variables were used in the study?
  - Independent
  - control
  - dependent variables

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Exercise

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Write three variables (measures) that you may use in your project to measure aspects of the development process or system being developed.

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For each of the variables specified in previous question, describe whether the variable:

- can be measured directly or only indirectly
- is objective or subjective
- is quantitative or qualitative
- is measured at the nominal, ordinal, interval or ratio scale

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How do you measure Maintainability?

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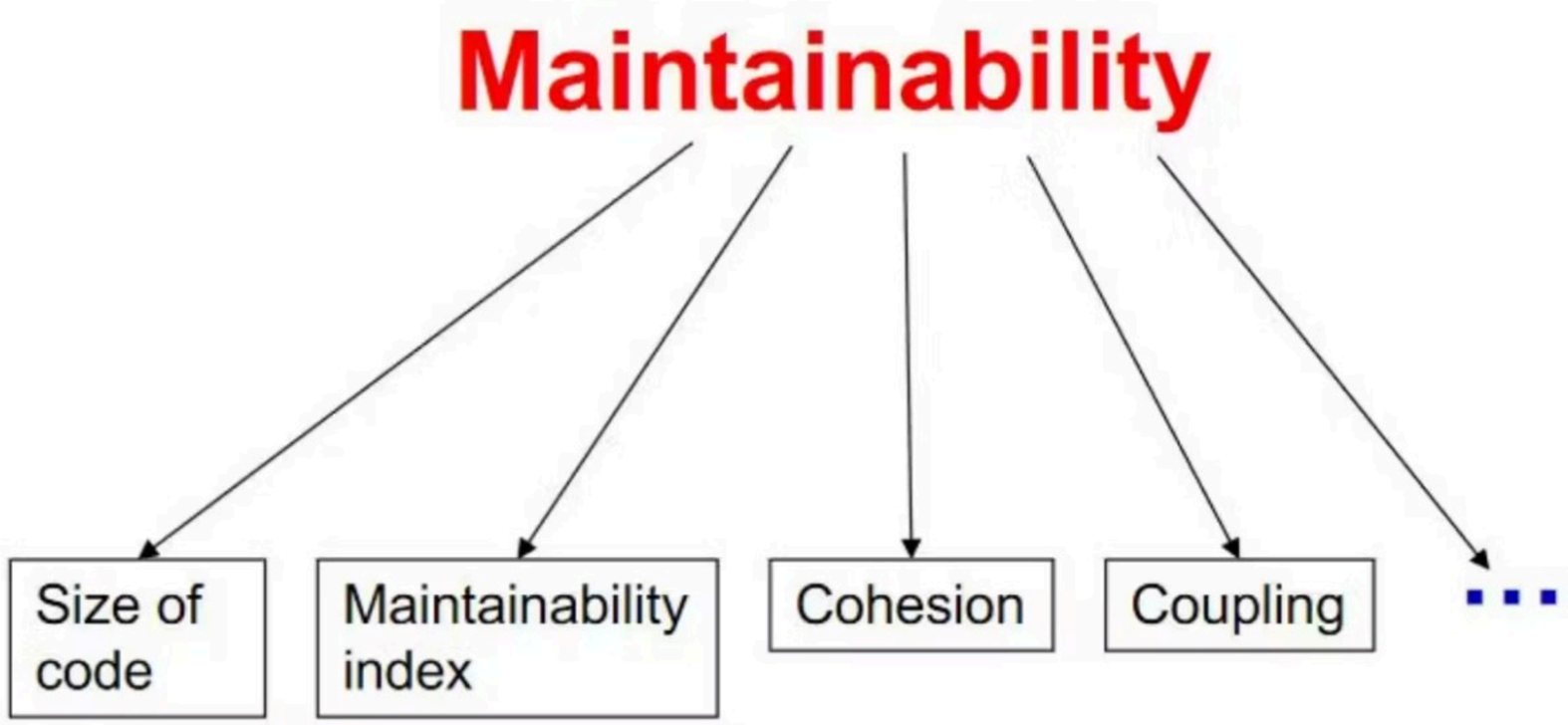
Maintainability

Conceptual level

Operational (measurable) level



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How to measure product quality?

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Conceptual level

Product quality

"mono-operation"

Operational (measurable) level

Number of weighted bugs in the severity levels: Blocking (weight 8), Critical (4), Moderate (2), and Minimal (1)

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How to measure (lead) time?

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How to measure (lead) time?

Conceptual level

Lead time

Operational (measurable) level

Number of days from state “Next” to state “Ready for release” on the Scrum/Kanban board

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How to measure cost?

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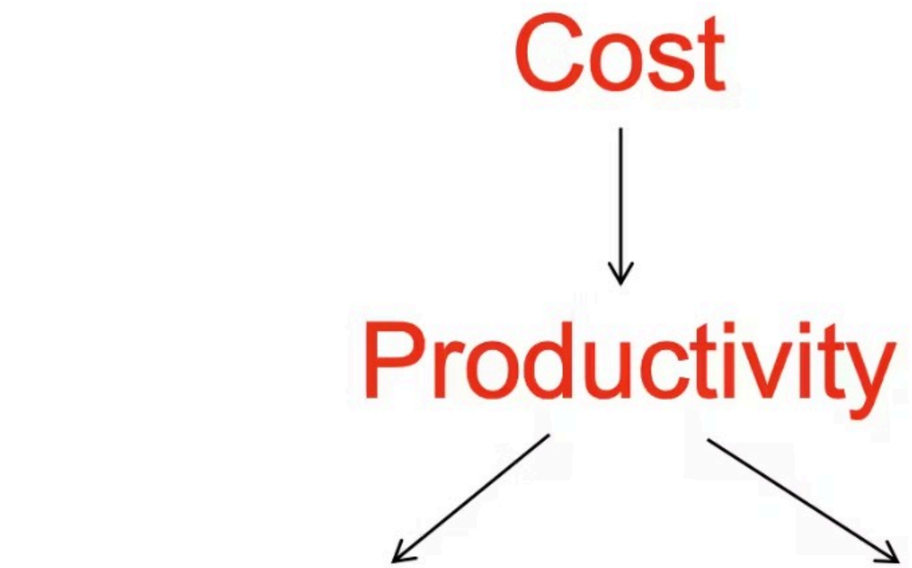
Conceptual level



Operational (measurable) level

Alt.1: Number of work items developed per developer per quarter	Alt 2.:Total churn (number of lines added, deleted, or modified) per developer per quarter

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15 minute break

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Previous Exam Questions

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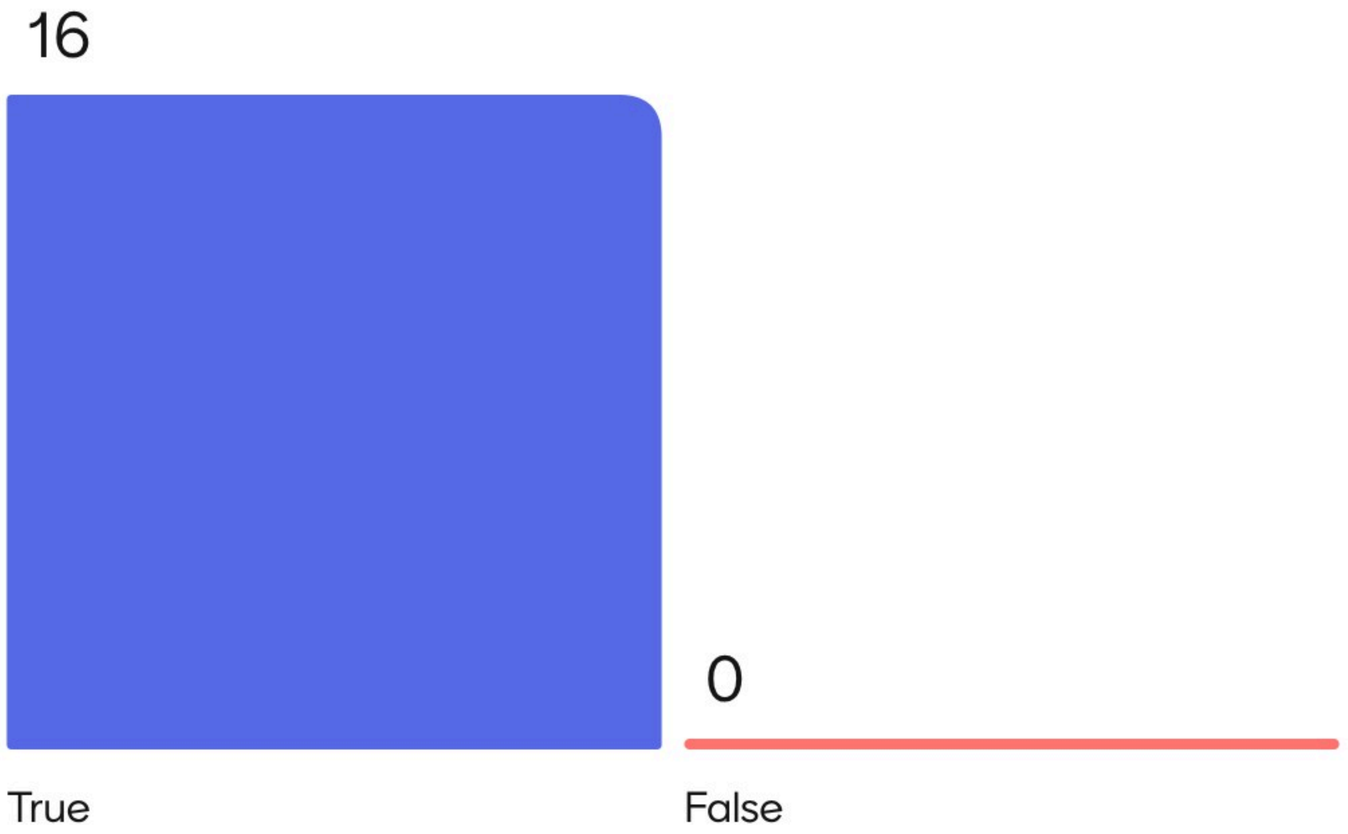
Objective data can be quantitative



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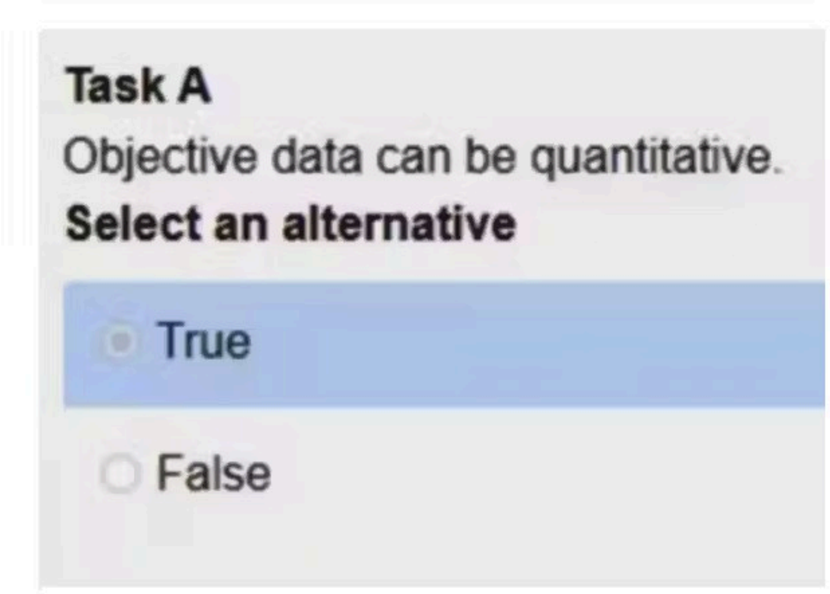

Objective:

- Based on facts rather than feelings, opinions, prejudices or interpretations [Merriam-Webster].

Quantitative:

- Data expresses quantity

- Data expressed as numbers

- Used in statistics

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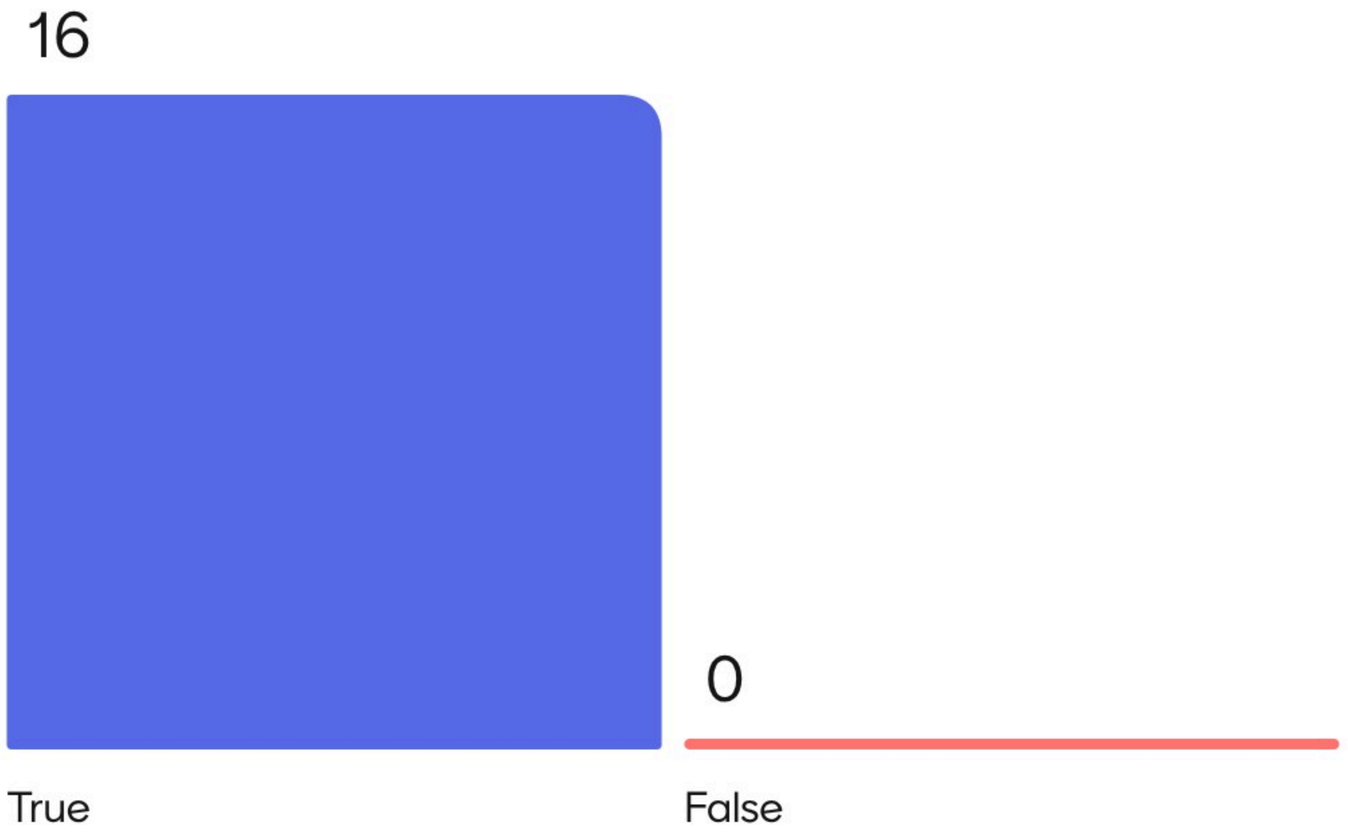
Subjective data can be quantitative



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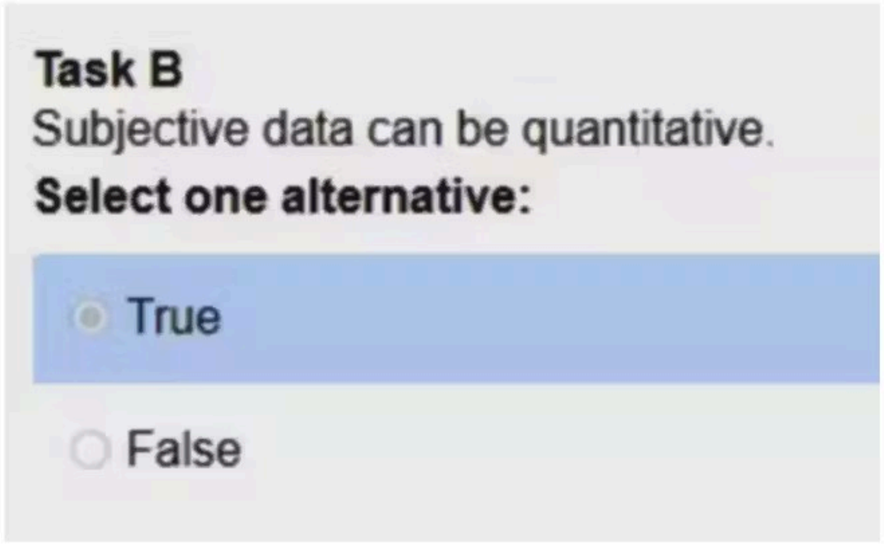


Subjective:

- Related to the way people experience things in their own mind - Based on feelings or opinions rather than facts, modified or affected by personal views, experience or background [Merriam-Webster]

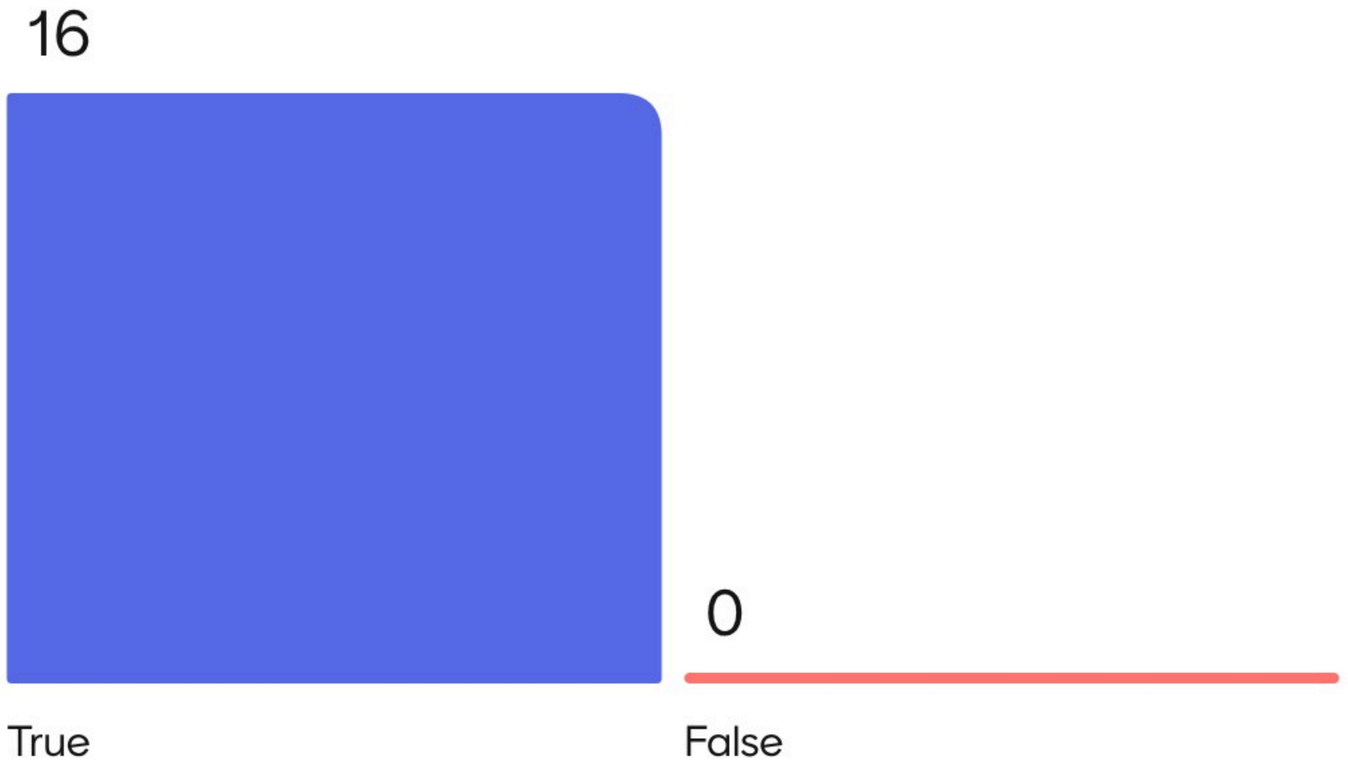
Qualitative:

- Data expresses quality in some sense

- Data expressed as text, images, audio or video but not numbers

- Not used in statistics

Subjective data on something relevant is more important than objective data on irrelevant aspects



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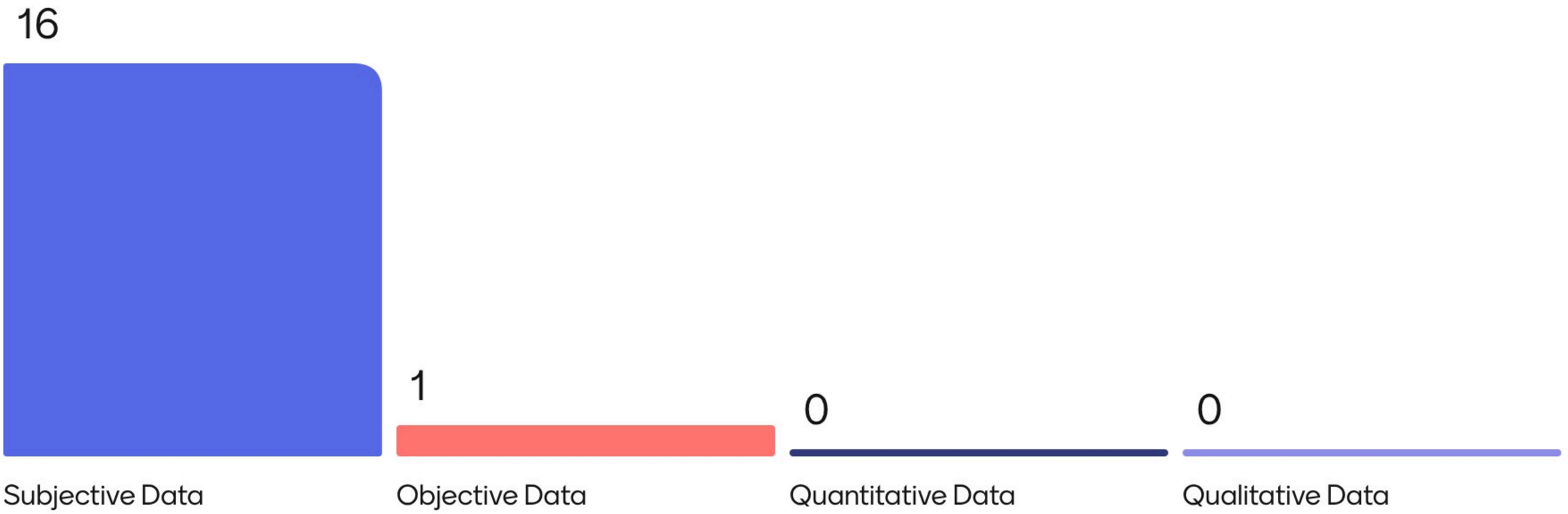
Task C

Subjective data on something relevant is more important than objective data on irrelevant aspects.

Select an alternative

- True
- False

What data best fits the following description? ***"Related to the way people experience things in their own mind"***



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[2023] What data best fits the following description : “Related to the way people experience things in their own mind”

Data

What data best fits the following description: "***Related to the way people experience things in their own mind***".

Select one alternative:

- Subjective data
- Quantitative data
- Objective data
- Qualitative data

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[2022]

4.2 Process improvements

Task A Describe **two** process improvement techniques you have learned about in this course. (6p)

- Two process improvement techniques from the course should be explained.
- 3p for each technique.
- Reduction in points if techniques are poorly explained or techniques not from the course are described.

2

[2024] Based on what you have learned in this course, suggest a process improvement for the case and describe at least two measures to assess the improvement.

Some examples:

Implement agile frameworks like Scrum or Kanban

- prioritize features with all stakeholders
- daily standup for globally distributed development teams
- measures: cycle time, stakeholder satisfaction, frequency of meeting

Use descriptive process modeling, such as BPMN (for transitioning from Financio to Zenith), or visualize the process using a Scrum or Kanban board.

- By using BPMN, it is possible to analyze the deficiencies in the existing process and improve them
- By using a kanban board, communication improves and everyone can follow the current status of the developed features
- measures: satisfaction, number of changed systems, decrease in transaction system, etc.

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[2023] Based on what you have learned in the course, suggest two process improvements for the case. For each suggested improvement also describe at least two measures to assess improvement

Case description

A small bank in Norway has three development teams that are responsible for the banks' digital services. The competitor banks offer continuously new features that this bank doesn't offer yet but needs to be developed. Otherwise, the small bank will lose customers. To develop such new features fast, the bank hires new developers.

The bank has a digital security team that needs to approve security related changes for each new feature. At present the team work on all the requests in parallel without prioritization. The lead time for resolving requests of this team is slowly decreasing on average as a result of the increasing number of requests from the development teams.

It is difficult to get hold of new employees for the digital security team as the onboarding process is long. Instead, the bank needs a short-term solution.

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Suggest two process improvments and and describe at least two measures to assess improvment

Kanban to rank which tasks are most important. SCRUM to work agile as they work JIT now would lead to faster development and good practice. you can measure it all with a burndown chart and velocity

WIP Improvement: Limit security team to maximum 3 requests simultaneously instead of parallel processing. Measurements: Track WIP count and average lead time for approvals

Use kanban method and rank tasks based on importance. They should focus on their most important tasks and work down the list. Use scrum for better communication, and more efficient work

kanban to limit how much they can work on at the same time and visualize the workflow. make a priorization list. Use JIT and a burn down chart to visulize and get overwiev over work done/not done

For digital team we propose a scrum method to work on the high prioritized tasks. We can also use kanban for better visualization. To measure this we can use OKR and GQM, to make lead time decreasing.

Lean, Agile. Scrum for continuesly deployment. Use kanban to limit WIP. Use OKR and burn down chart to see the goal and visualize the progress

Kanban to work just in time and do not work on to many task that security don't get problem. For digital security we suggest scrum to prioritise the task. To measure the GQM and OKR

Kanban -> Lead time, productivity SCRUM -> burndown chart, velocity

Suggest two process improvments and and describe at least two measures to assess improvment

Kanban: manage workload and prioritazion Lean(JIT), working slowly with the customers to save time ans less mistakes. Measurements for this would be, number of tasks done per week?

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[2023] Based on what you have learned in the course, suggest two process improvements for the case. For each suggested improvement also describe at least two measures to assess improvement

4.2 Process improvements (12p)

The answer should include:

- Two suggested process improvements. (8p) 4p each improvement.
  - The improvements should be briefly explained.
  - Should also include why they were chosen.
- Two measures for each of the improvements (at least 4 in total), 1p for each measure).

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Feedback

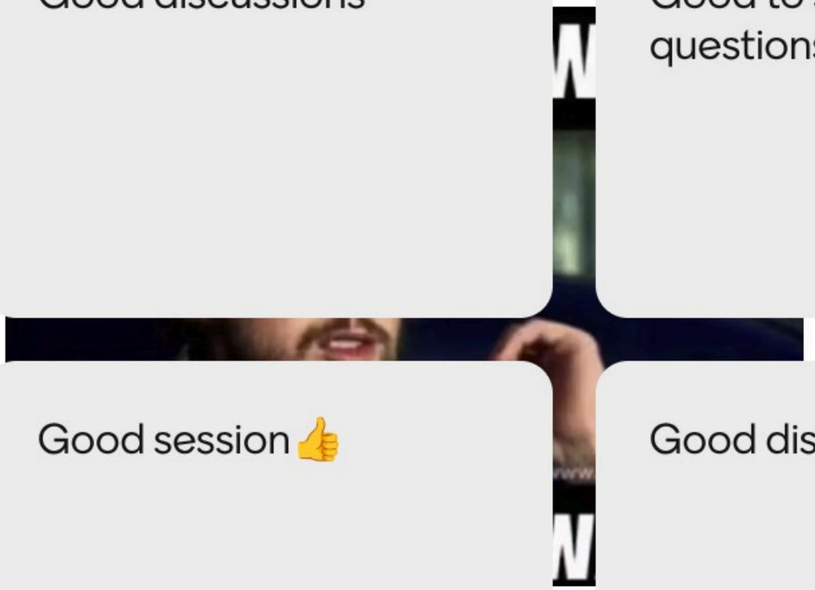
Give us feedback on the group session

Good discussions

Good to show exam questions and examples

this was perfect :D

Very helpful to going to through the exam questions with examples



Good session 👍

Good discussions

I enjoyed it, learned alot

Making us explain concepts our self is good, also I like that we go over previous exam questions

Give us feedback on the group session

These type of group sessions are perfect :)

Good discussions

very good balance between exam questions and group discussions :) the exam questions are hard, but important to learn

I like that you show us your exam answer

2 12

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Thank you for today!