

Design Thinking and Electronic Prototyping

Week 10



Aalto University
School of Electrical
Engineering

Salu Ylirisku

8.11.2022

Salu records the lecture

You need to also record your attendance!

Login to MyCourses

> DTEP22 > Assignments > Attendance

Write the password (on side screens)



Course Outline – Period II

7. L: Prototyping and Testing (25.10.)

8. L: Finalising the Design Concept (8.11.)

Presentation Rehearsals with Susan Gamache (21.-25.11.)

-> **Reserve** your time slot in MyCourses!

9. Final Presentations (29.11. 10-17, AS2)

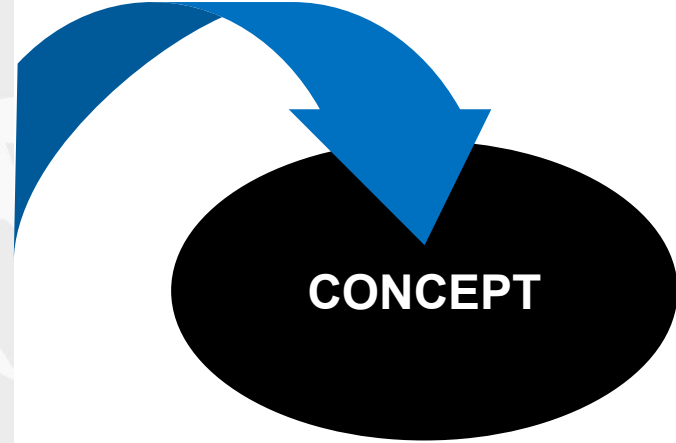
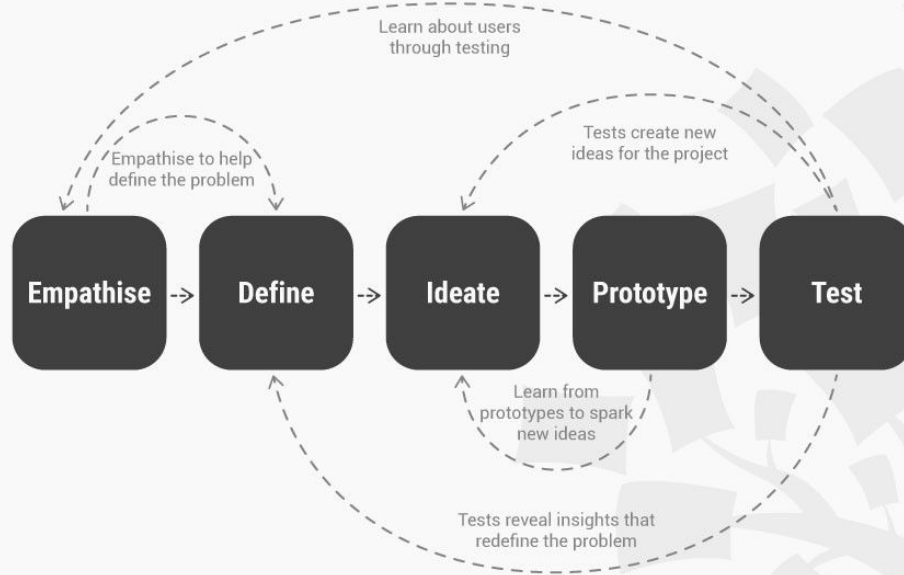
Today's learning goals

- Learn to differentiate between requirements for a **prototype** and a **design concept**
- Learn to see prototype and design concept in the broader **development context**
- Learn to set your expectations for the **final presentations**

Design Concept vs. Prototype

Design Thinking

DESIGN THINKING: A NON-LINEAR PROCESS



INTERACTION DESIGN
FOUNDATION

INTERACTION-DESIGN.ORG



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Design Concept vs. Prototype

- Prototype is a learning tool
- Concept is a management tool

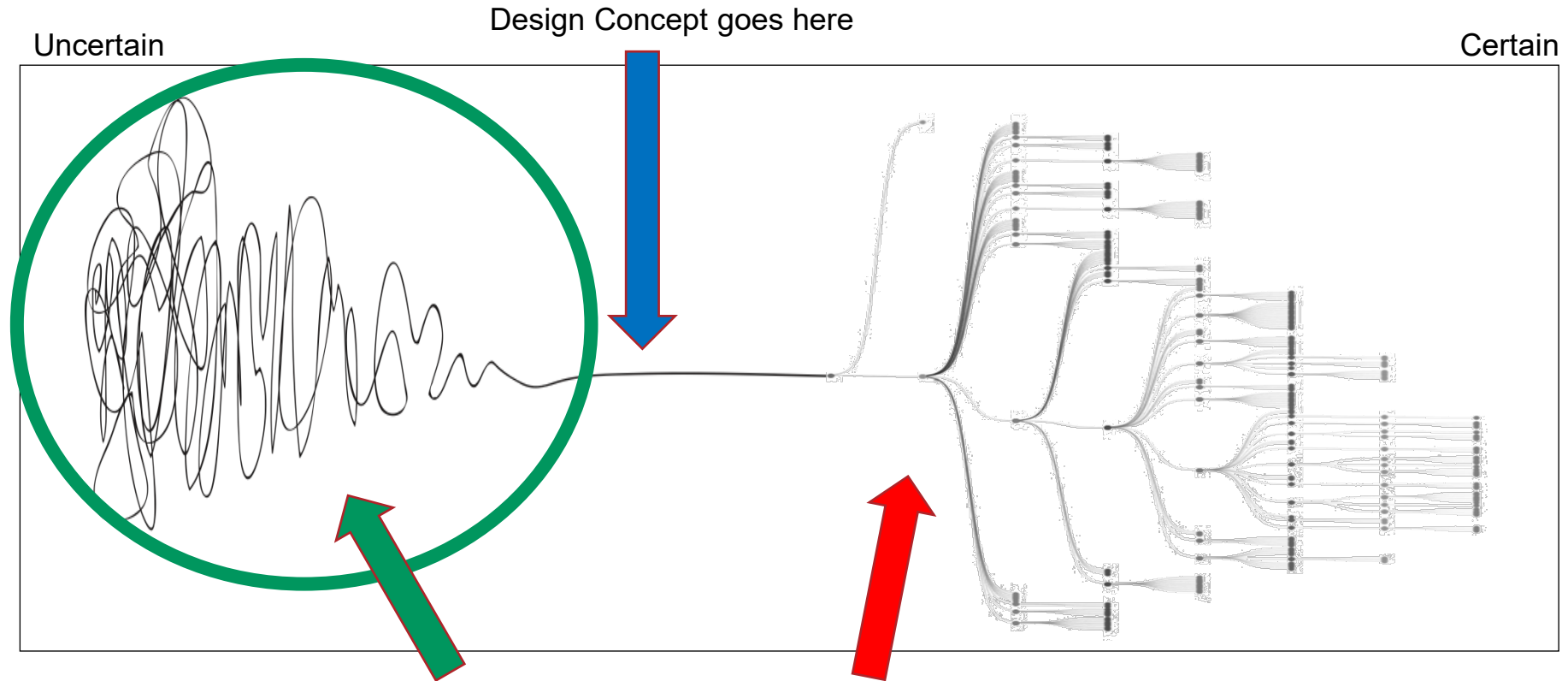
Possible learning goals w/ Proto

1. That you are creating the right product
2. That you have appropriate idea of the size and shape
3. That you have outlined the right functionalities
4. That users understand how your design works (usability stuff)
5. That people find your product desirable
6. That the functionality works as intended
7. That the structure holds together and works as intended
8. That the mechanical parts work as intended

Possible Management goals w/ Design Concept

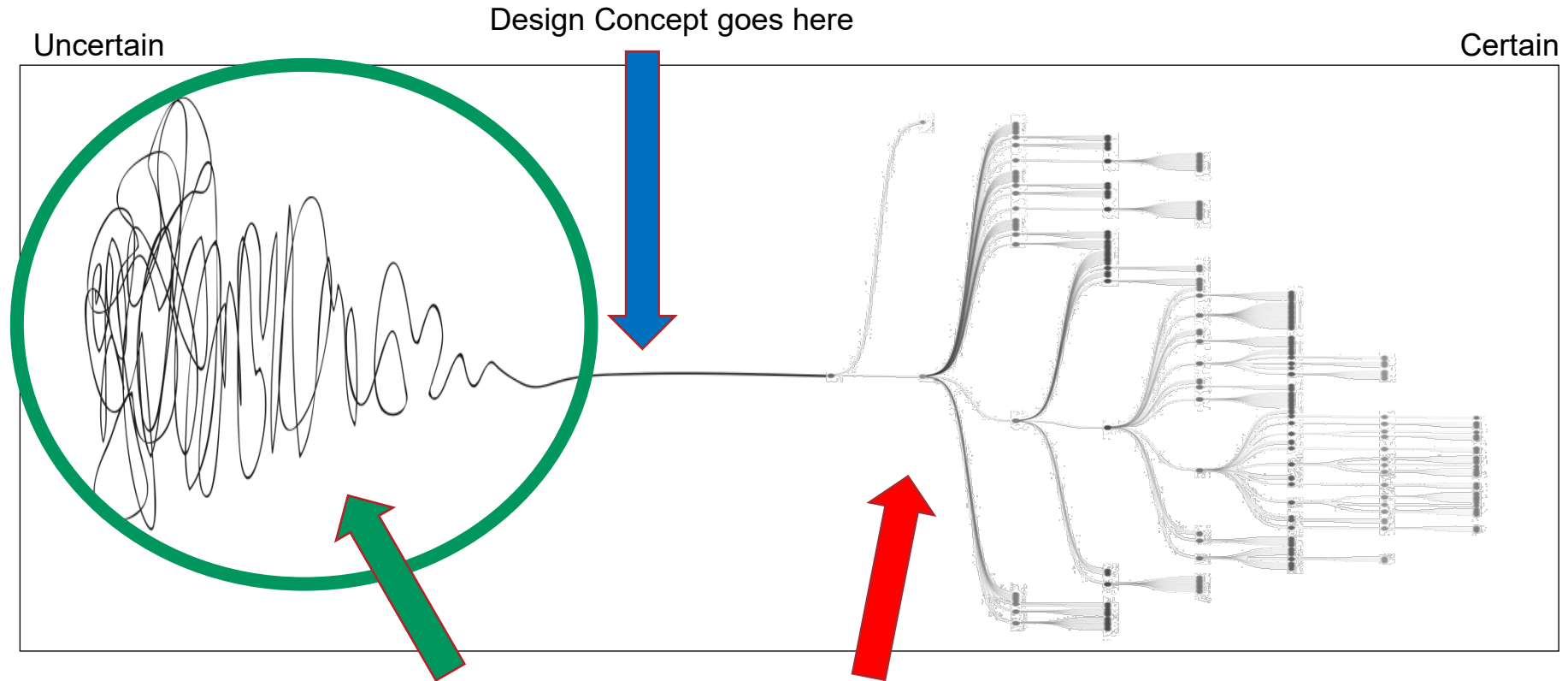
1. Selling your idea to potential partners and investors
2. Providing alternatives to consider in strategic decision-making
3. Expectation management – showing the possible future
4. Guiding decisions in product development
5. Fostering organisational learning

Design Concept and the Process



Roles for Requirements

Design Thinking

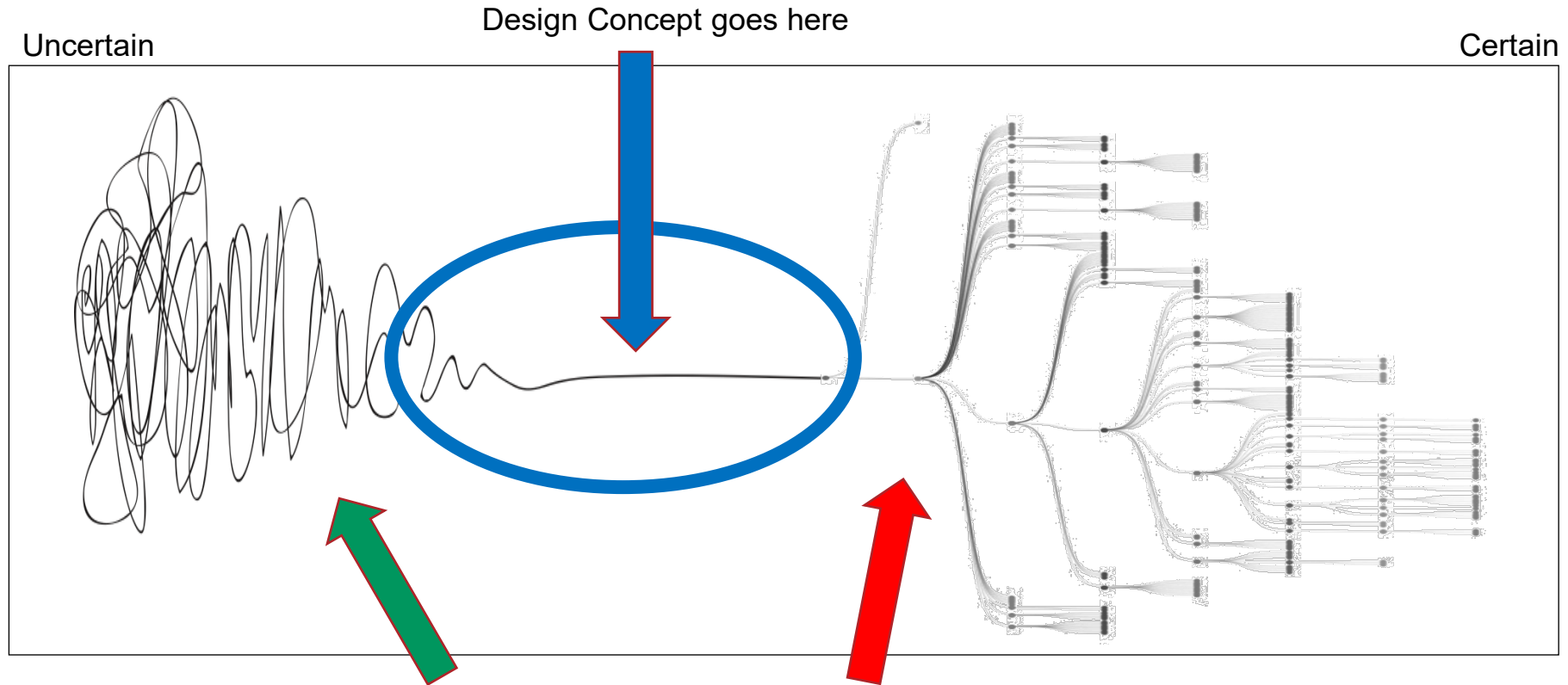


Three kinds of requirements

1. Requirements for a Prototype

- Orders that help to build a prototype that enables you to learn what you want with it

Design Concept



Design Thinking
happens here

Product development
happens here

Three kinds of requirements

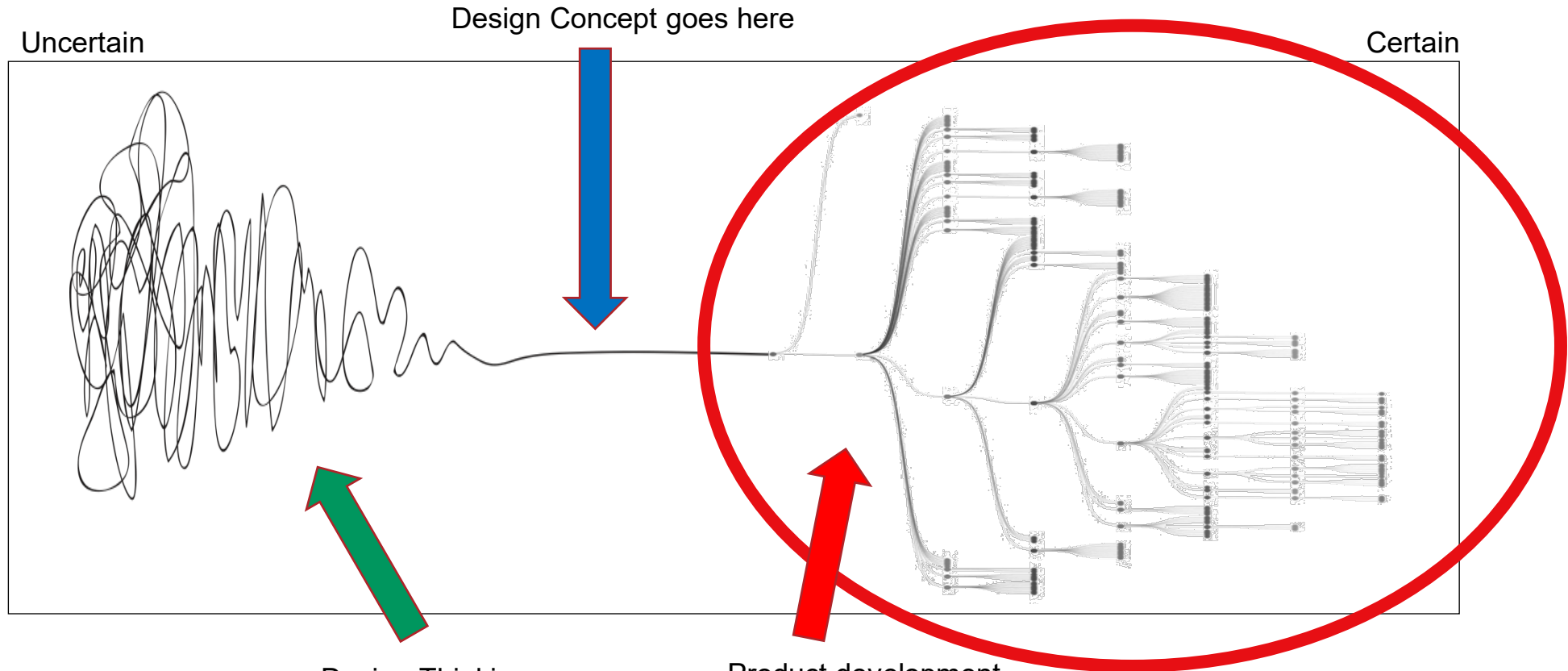
1. Requirements for a Prototype

- Orders that help to build a prototype that enables you to learn what you want with it

2. Key Design Requirements

- High-level orders that enable making a difference

Product Development



Three kinds of requirements

1. Requirements for a Prototype

- Orders that help to build a prototype that enables you to learn what you want with it

2. Key Design Requirements

- High-level orders that enable making a difference

3. Requirements for a product

- Very detailed (not used in this course) orders for ensuring a specific outcome

When to 'Freeze' Requirements

- With **concept** as late as possible – Why?
- With **prototype** (and **product**) as early as possible – Why?

Design Concept as a Learning Outcome

- **Design Concept**
 - captures what you have learned
 - displays this in a concise, clear, and convincing manner

Final Presentations

Final presentation requirements

Required elements:

1. Presentation, 10 minutes

1. Design concept
2. Design process

2. Demo, 3 minutes

Design Concept

- **Name**
- **Intended Users**
- **Design Problem**
 - What is the user problem that your concept solves
- **Design Solution**
 - What is your proposed way to solve the problem
 - Include a story (interaction scenario) how users achieve their goals with your design
- **Key Design Requirements**
 - What marks the difference with your design (in relation to all possible competing designs)

Design Process

- **Research / Context Mapping**
- **User studies**
 - How were users involved in informing your process
- **Technical studies**
 - Which technical approaches/tools/components were considered in your process
 - Which ones you chose, why?
- **Idea exploration / sketching / mocking up**
 - How did your idea emerge and what other ideas did you come up
- **Iterations with prototypes V1, V2**

Demo

- **Show how your prototype works**
 - Remember to mention the scope (=what it can do) and limitations (=what it cannot do)

Rehearse well!

- **Time-keeping is crucial – You will be cut after 13 minutes.**
 - Test everything (presentation slides, videos, proto), before your presentation
 - Make sure you have charged batteries
 - Prepare for a situation that your proto does not work -> video as a demo is a possible solution

Next in 3 weeks

Next 3 weeks

- **7.-11.11.**
 - Fix requirements for Proto V2, DL this Friday
- **14.-18.11.**
 - Proto V2 ready for user tests (video + explanation how meets the requirements), DL next Friday
 - Plan the final presentation
- **21.-25.11.**
 - Testing Proto V2 with users (at least 2 users), DL in 3 weeks
 - Rehearse the final presentation w/ Susan Gamache

Final presentation schedule 29.11.2022 (in classroom AS2)

Time: 10 – 15

Team 1 starts 10:15 sharp, so be on time!

Evaluation

- **Grading 0-5**
 - Reflexive Learning Diary 40 %
 - Active reflecting, connected with reading
 - Teamwork 20 % (Evaluated through diary)
 - Active contribution to team's progress
 - Presentations 20 % (coverage, clarity, argumentation)
 - Prototype 20 %
- **Attendance to lectures is required (max 2 missed)**
- **Exercises are required**
 - If you already know it – try the harder stuff and show it!
 - Add images to your learning diary

This week's tasks

1. **Diary – Deadline on Friday 23:59 (delays, -1pt/day)**
2. **Reading: At your own pace**
3. **Reserve your final presentation rehearsal slot!**
 - Also reserve your final presentation slot for 29th of Nov
4. **Project**
 1. Updated Requirements for 2nd proto – DL Friday
 2. 2nd functional prototype, DL Friday next week
 3. Test your 2nd proto with users, DL Friday before Final Presentations

[No more lectures! – Work on your project]