

Design Thinking and Electronic Prototyping

Week 02

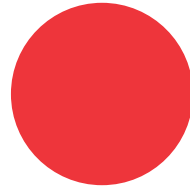


Aalto University
School of Electrical
Engineering

Salu Ylirisku

13.9.2022

Salu records the lecture



You need to also record your attendance!

Today's learning goals

- Learn one way to structure the Design Thinking process

Issues with Teaming up?

- Solving these after the lecture(s)

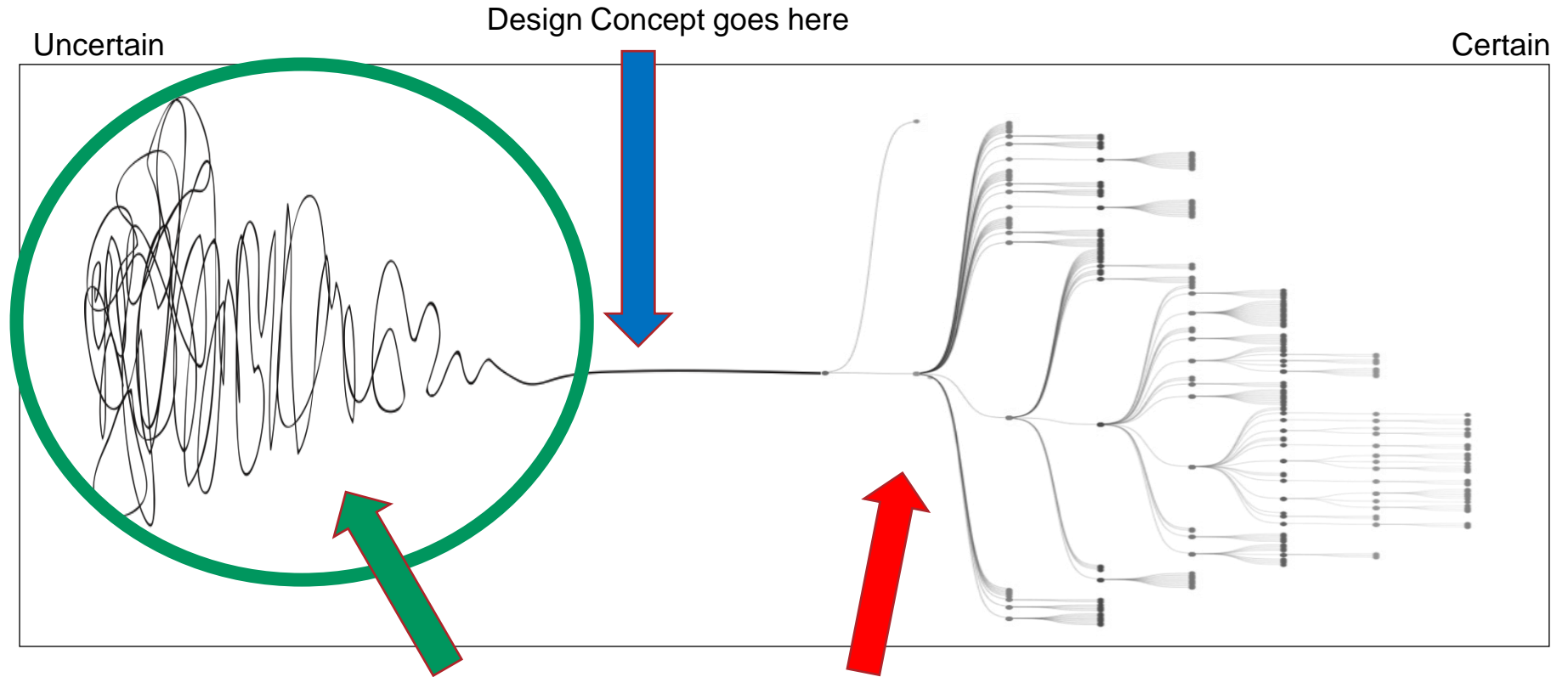
Design Thinking

My background in Design Thinking

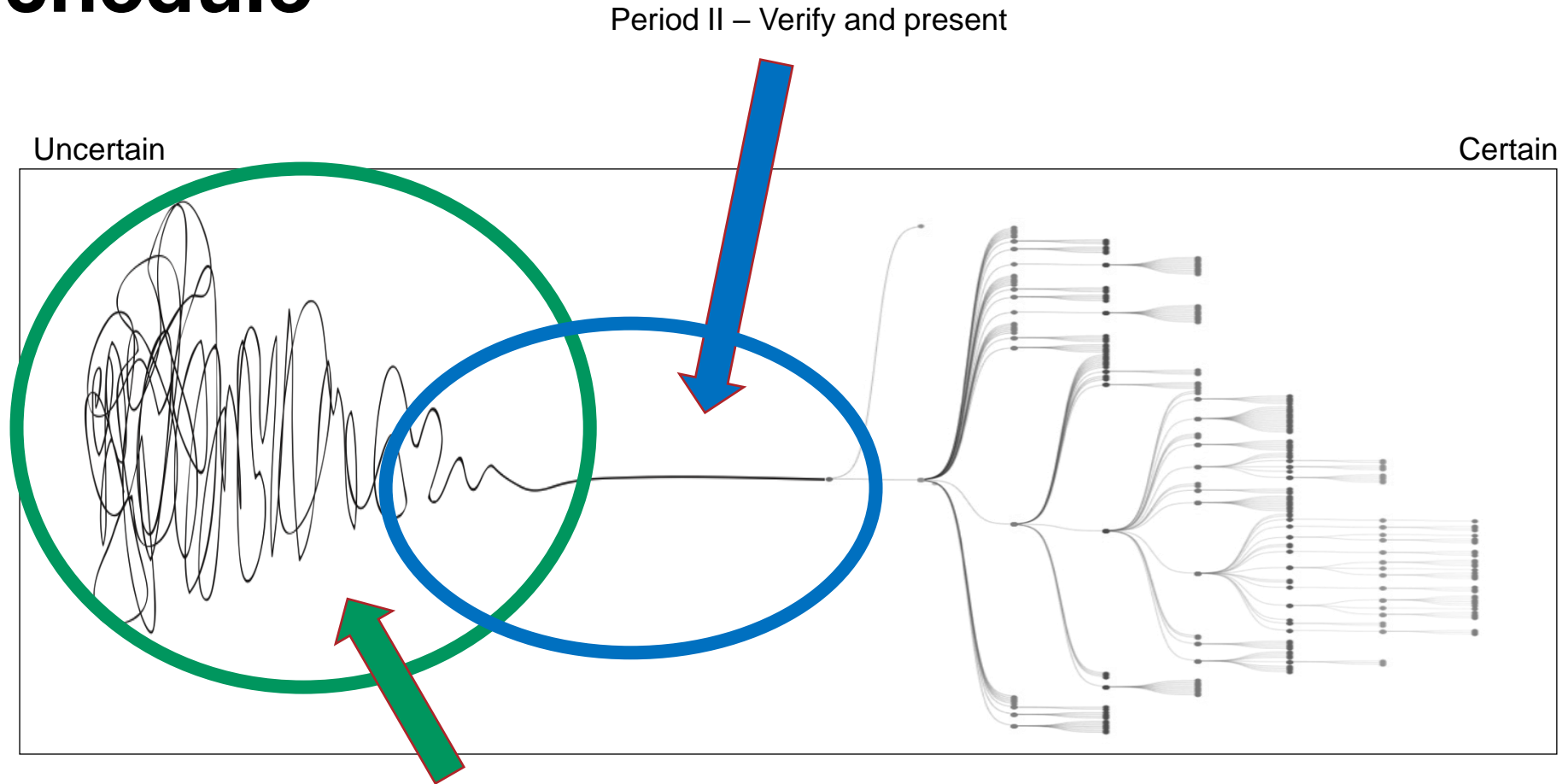
- **Worked in Design Research / Dept. of Design 2002-2015**
 - Under Prof. Keinonen, who developed DT in Nokia (late 1990s)
- **Did my Doctorate in Design Thinking**
 - “Framing” / “Conceptual Designing”
- **I have written several academic texts on the conceptual design process**



Aim



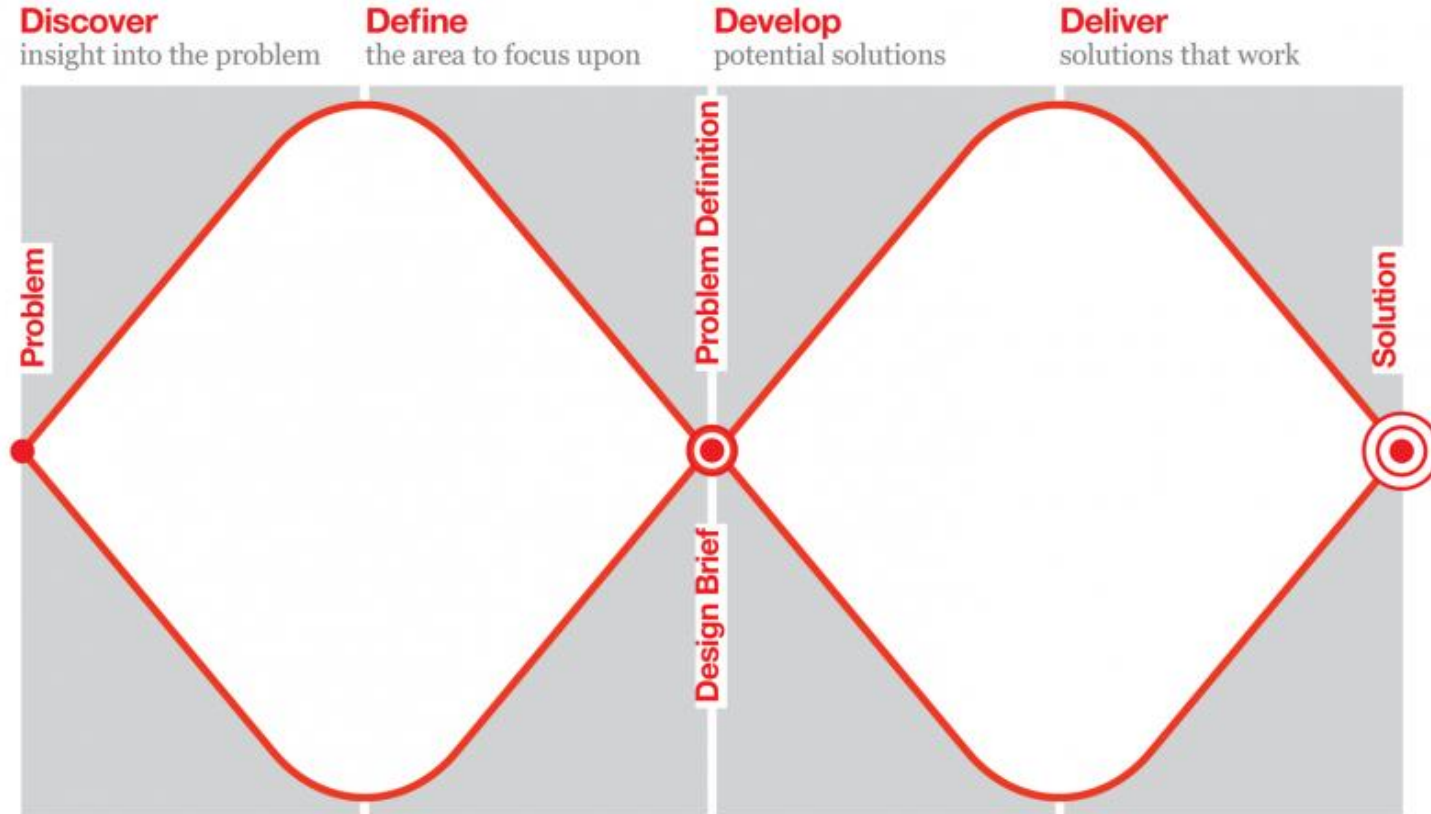
Schedule



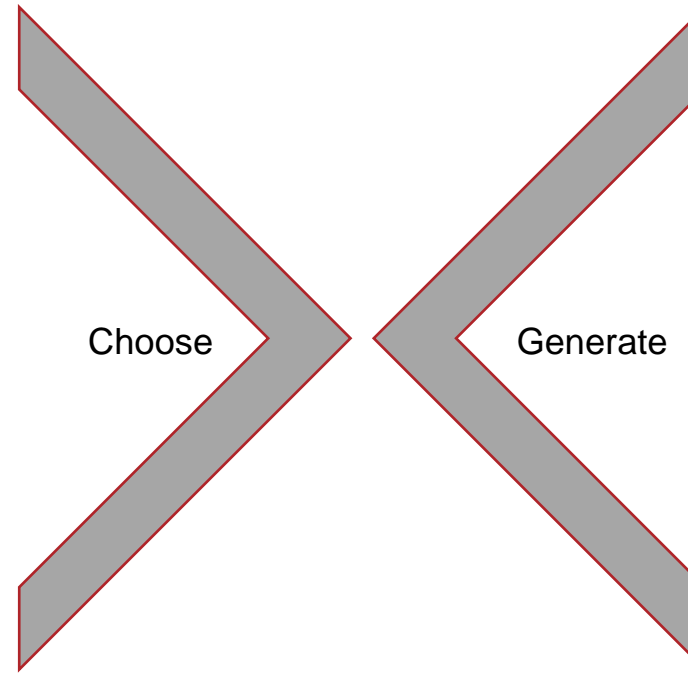
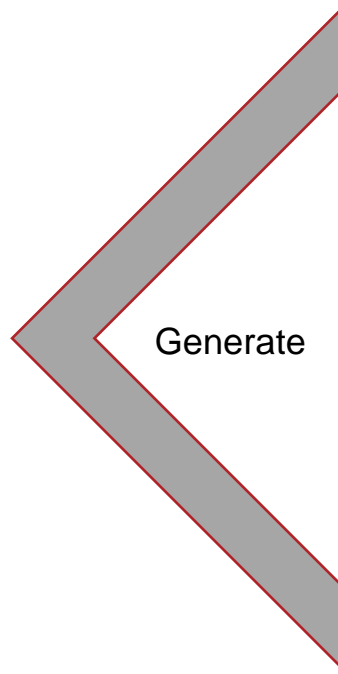
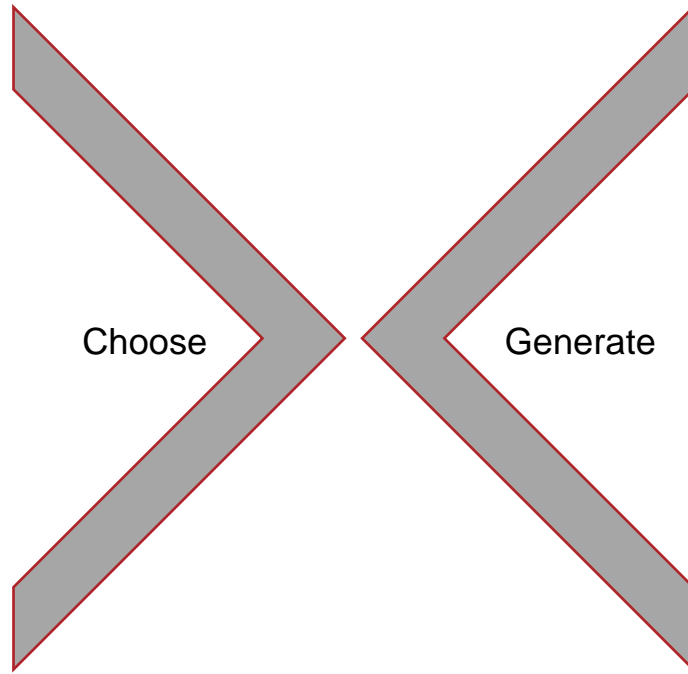
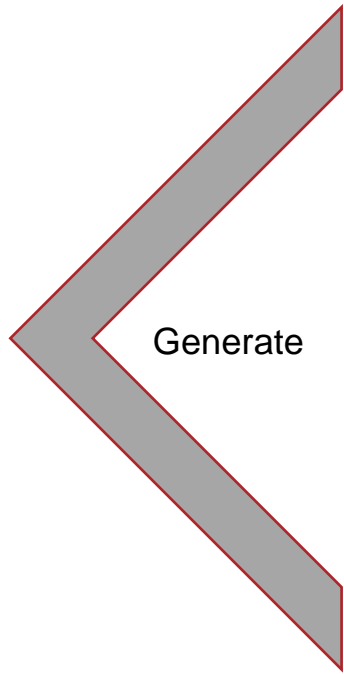
DTEP22 Activities / Period I

- **Context Mapping**
- **Electronics for Experience**
- **Interactions with Users**
- **Problems and Requirements**
- **Design Concept**

The Double Diamond



Council, D. (2007). *Eleven lessons: Managing design in eleven global companies. A study of the design process.*



Context Mapping =
Figuring out the key dependencies

The Project – “Habits”

The aim is to create a wearable/mobile device on the Arduino platform (or compatible).

The intended user of the device MUST be someone else than you, i.e., a professional, hobbyist, or person who is different from you / does something else than what you do.

The created device has to relate to habits.

How to get started?

**Start by finding different meanings for the theme “Habit”
- and different ways to see it**

Let's do it

INCREASINGLY RELATED TO ELECTRONIC PRODUCT →

Context 1

THEME MAP



Context 2

USER MAP

Context 3

ACTIVITY MAP

Context 4

SITUATION MAP

Context 5

PROBLEM MAP

Context 6

SOLUTION MAP

Context 7

REQUIREMENTS MAP

The Diary – How to Write

~600 words / week (about one page)

- **½ reflection on action, ½ reflection on readings/videos/...**

Write about:

- What you have done and learnt, own thoughts/experiences, +1 pt
- Cite the course book in your text, +1 pt
- Relate your activities/experiences on the course book, +1 pt
- Use academic referencing (either APA or IEEE), +1 pt
- Use relevant images, +1 pt
- **Delayed returns will lower the score with ‘-1pt’ / day**

Overall feedback

I am very impressed by the high quality! Best class so far.

Diary – Quotes of the Week

“One of the things that I like most about the course is that I can make use of any prior knowledge and combine every single knowledge to create something useful for people.”

Diary – Quotes of the Week

“I really enjoyed doing the basic exercises since I felt a whole new form of satisfaction when I got it to work.”

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 %
 - 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

Course Outline – Period I

1. L: Introductions
 2. L: Design Thinking and Context Mapping
 3. L: Electronics for Experience
 4. L: Interactions with Users
 5. L: Problems and Requirements
 6. L: Design Concept
- SEMESTER BREAK / Exam Week --

Course Outline – Period II

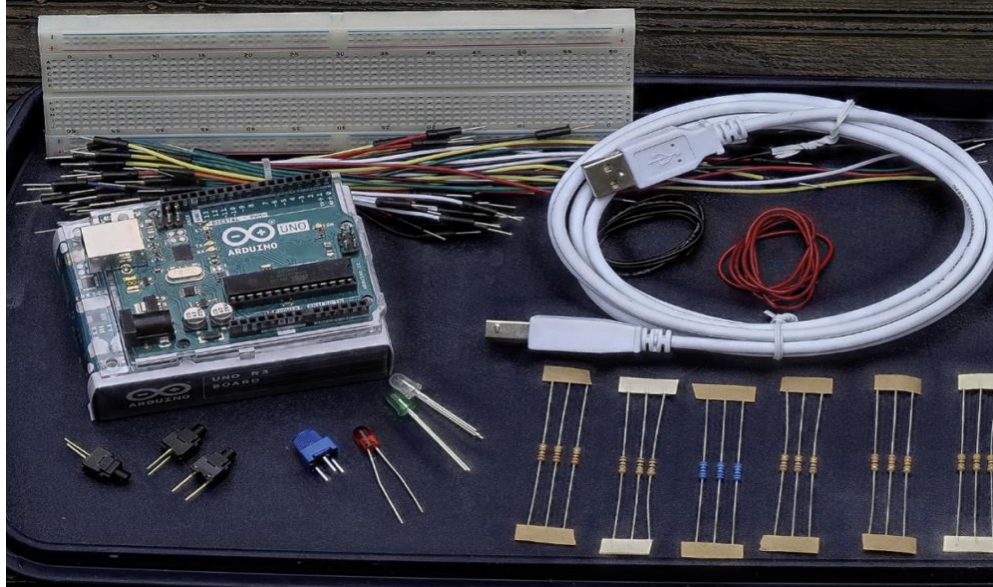
7. L: Prototyping and Testing (25.10.)

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

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

9. Final Presentations (29.11. 10-15, AS2)

Personal Electronic Snack Box



To be returned after the course.

Personal Tech Snack Box - DTEP

<https://forms.office.com/r/HTdi9nL2qV>



Only 26 have reported receiving the box.

Salu puts this QR code into Sähköpaja Lab space.

Fill in the answer, when you have filled and collected your box.

Requires Aalto account

- If you do not have one, and want the box, e-mail Salu Ylirisku (firstname.lastname@aalto.fi)

Sähköpaja Lab Works

	Mon	Tue	Wed	Thu	Fri
8-10		EP (MS)	EP		
10-12	NEPPI	EP (MS)	EP	DTEP	SP
12-14	SP	DTEP	SP	SP	EP
14-16	EP (MS)	EP	DTEP	SP	EP (MS)
16-18	EP (MS)	EP	NEPPI	SP	

SP: Sähköpaja

EP: Elektroniikkapaja

DTEP: Design Thinking & Electronic Prototyping

NEPPI: Networked Partnering and Product Innovation

Safety

Don't bring own batteries

- Alkaline battery voltage 1,5V
- NiMH battery voltage ~1,25V (4 x 5V)

Careful with LiPo batteries

- Can explode when treated wrongly

Safety

Risks



Record your attendance

This week's tasks

1. **Diary – Deadline on Friday 23:59**

2. **Reading: Chapter 1 – until p. 36**

Fundamental Principles of Interaction, The System Image,
The Paradox of Technology, The Design Challenge

3. **Exercises**

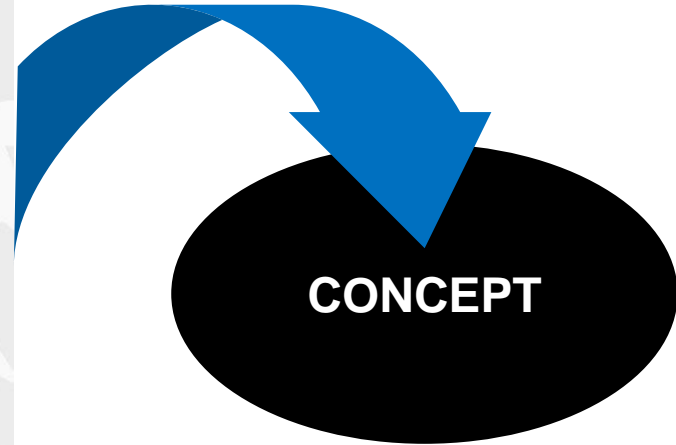
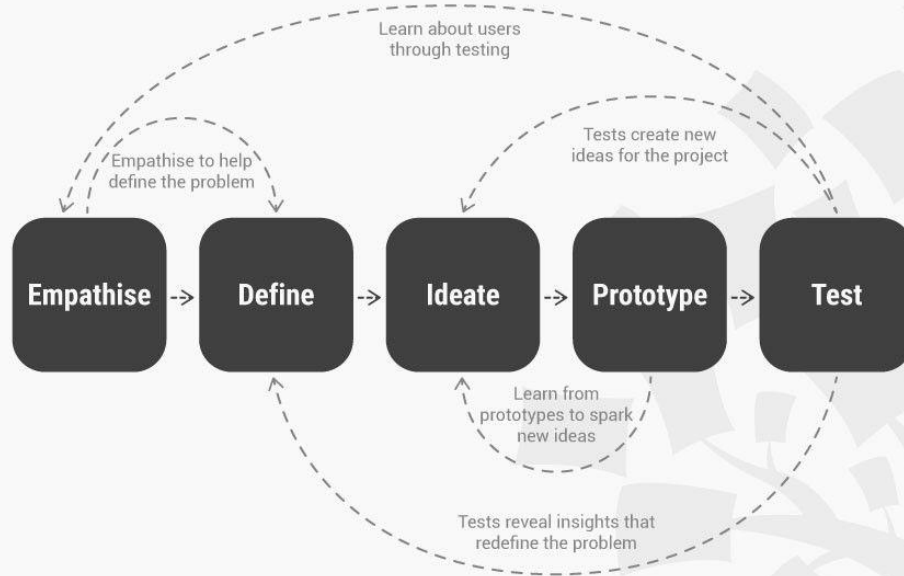
02 - RGB LED, LCD, Servo

4. **Project**

Context Mapping – Until requirements, generate alternatives!

Design Thinking

DESIGN THINKING: A NON-LINEAR PROCESS



INTERACTION DESIGN
FOUNDATION

INTERACTION-DESIGN.ORG