LUT
University

User Interfaces and Usability

Antti Knutas

Overview of the human-centered design process

Introduction

Structure of this presentation: Going through the HCD process model step by step, explaining it further and recommending activities to accomplish each step.

Content: Recommendations from ISO standard and specific techniques from Sharp, Benyon, HCD field guide, and the lecturer's experience.

Disclaimer: This lecture introduces the process and gives an overview. Many individual techniques are discussed in detail in future lectures.

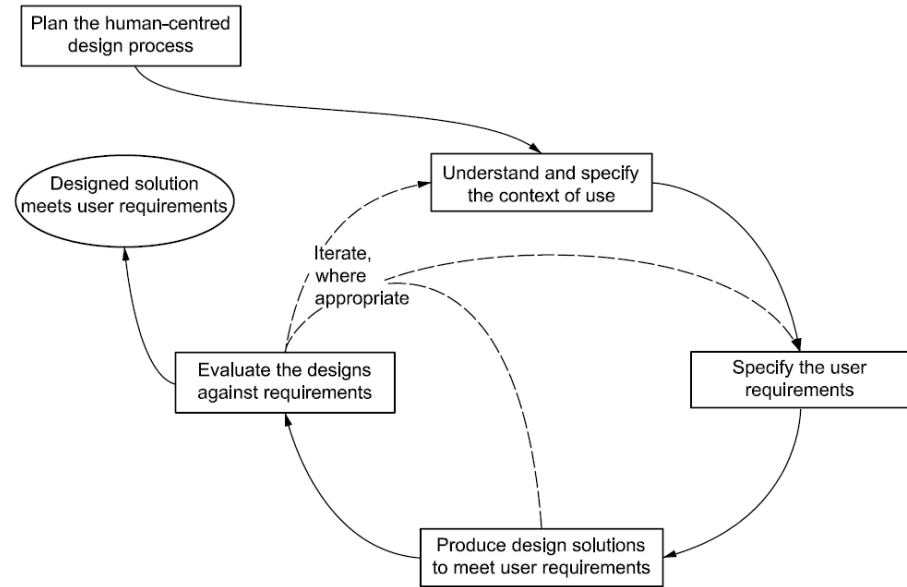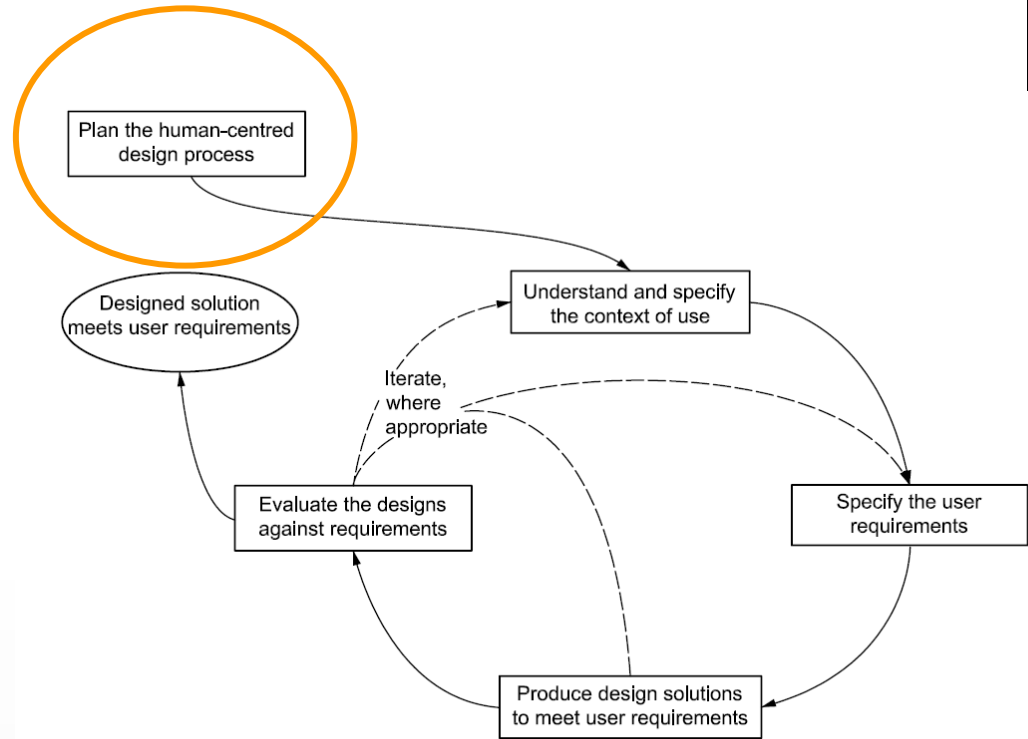# Human-Centered Design, ISO standard process model

Figure 1 — Interdependence of human-centred design activities

ISO 9241-210:2010 Human-Centred Design for Interactive Systems

PLAN the design process

Figure 1 — Interdependence of human-centred design activities

ISO 9241-210:2010 Human-Centred Design for Interactive Systems

Plan the design process

- Firstly, refer to your software engineering and project management expertise (courses in our curriculum; lecturer copout!!)
- Secondly, consider the following
  - Appropriate methods and resources
  - Development processes
  - Individuals and organizations (skills and viewpoints)
  - Feedback processes and communication
  - Milestones and timescales
- Integrate with software engineering process

Plan the design process
Techniques from the literature

- HCD field guide: Inspiration section
  - Create a project plan
  - Build a team
  - Recruiting tools
- Benyon
  - Chapter 3, "The Process"
- Sharp
  - Chapter 2, "The Process"
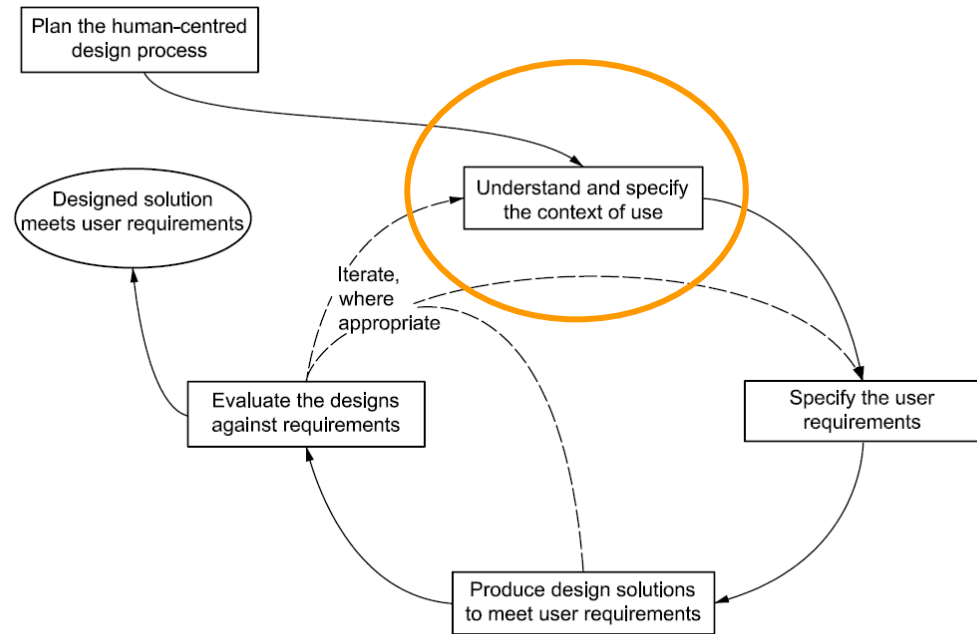
UNDERSTAND and specify the context of use

Figure 1 — Interdependence of human-centred design activities

Plan the human-centred design process

Designed solution meets user requirements

Understand and specify the context of use

Iterate, where appropriate

Evaluate the designs against requirements

Specify the user requirements

Produce design solutions to meet user requirements

ISO 9241-210:2010 Human-Centred Design for Interactive Systems

UNDERSTAND and specify the context of use

- Context is defined by
  - User and task characteristics
  - the environment (organizational, technical, physical)
- Analyze and define the context of use:
  - Users and stakeholder groups
  - User and group characteristics
  - Goals and tasks
  - Environments
- Specify this information at a sufficient level to support design

UNDERSTAND and specify the context of use
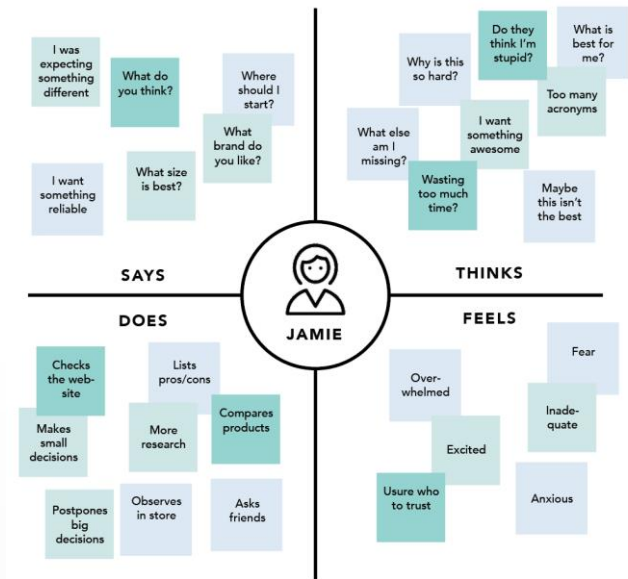Techniques from the literature

- HCD field guide: Inspiration section
    - Secondary research
    - Immersion
    - Guided tour
    - Extremes and mainstream
    - Conversation starters
    - (Group) interviews

UNDERSTAND and specify the context of use
UX maps: Empathy map

From https://www.nngroup.com/articles/ux-mapping-cheat-sheet/
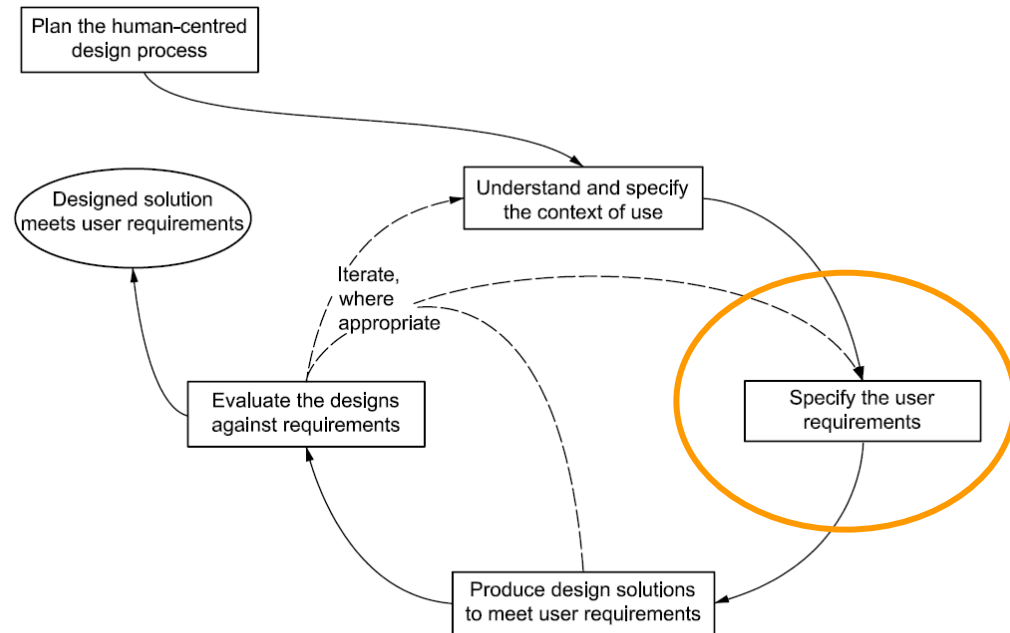
SPECIFY the user requirements

Figure 1 — Interdependence of human-centred design activities

ISO 9241-210:2010 Human-Centred Design for Interactive Systems

SPECIFY the user requirements

Firstly, refer to the knowledge that you'll have (in the future) in the requirements engineering course (course in our curriculum)

- Requirements provide basis for design and evaluation => contains measurable usability requirements and objectives
- Systematic description of "what it does, who uses it, how should it do things, and where it should be used"
- Confirmed with the users and updated when necessary
- Can be enlivened with personas, user stories, scenario descriptions

"User requirements provide the basis for the design and evaluation of interactive systems to meet user needs."

SPECIFY the user requirements
UX maps: Customer journey map

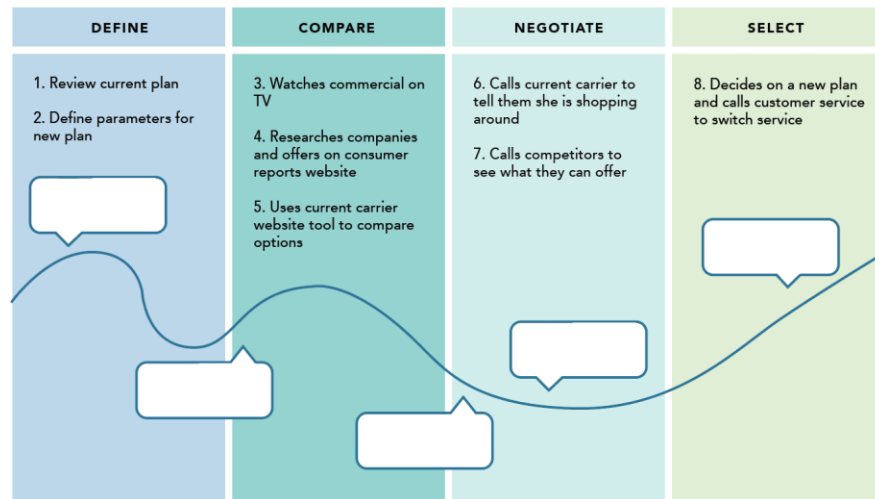CUSTOMER JOURNEY MAP *Example (Switching Mobile Plans)*

JAMIE
Scenario: Jamie needs to switch her current mobile plan. She wants a plan that can save her money without having to sacrifice usage limits.

EXPECTATIONS
• Clear online information
• Ability to compare plan breakdowns
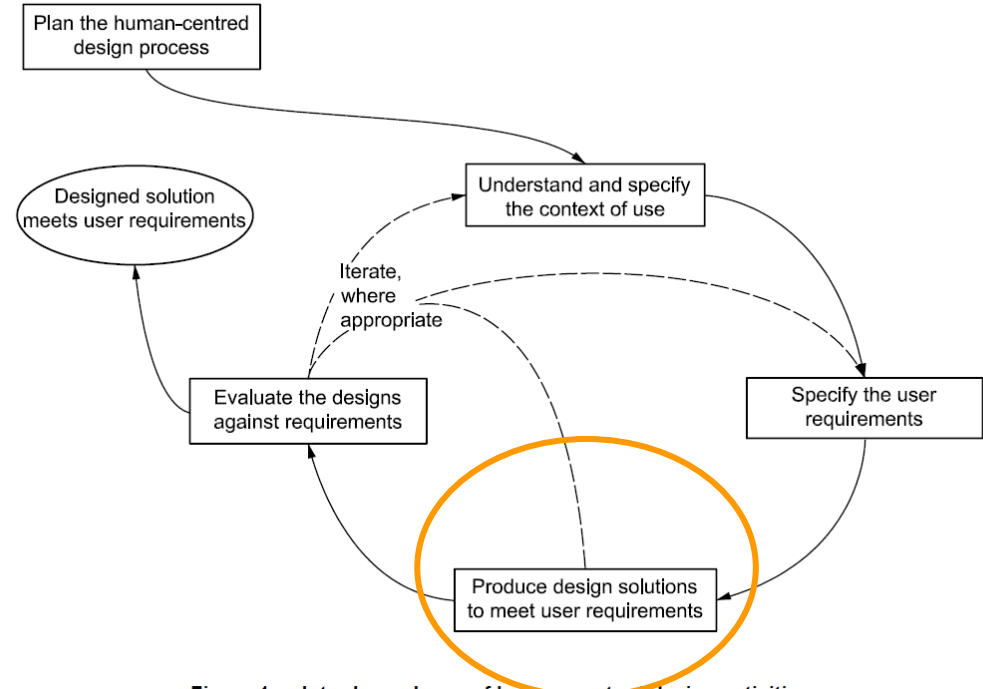• Friendly and helpful customer support

DEFINE	COMPARE	NEGOTIATE	SELECT
1. Review current plan 2. Define parameters for new plan	3. Watches commercial on TV 4. Researches companies and offers on consumer reports website 5. Uses current carrier website tool to compare options	6. Calls current carrier to tell them she is shopping around 7. Calls competitors to see what they can offer	8. Decides on a new plan and calls customer service to switch service

NNGROUP.COM NN/g

From

15

PRODUCE
design solutions

Figure 1 — Interdependence of human-centred design activities

ISO 9241-210:2010 Human-Centred Design for Interactive Systems

PRODUCE design solutions

Ideally, you would have a multidisciplinary team
Involved activities
- Design user tasks, interactions, interfaces to meet requirements
- Make design solutions more concrete (scenarios, simulations, prototypes, or mockups)
- Alter design solutions in response to user-centered evaluation and feedback
- Communicate design solutions to implementers (e.g. programmers)

Will be discussed in detail in interface design lectures and exercises, with design steps and good UX/usability principles and guidelines.

PRODUCE design solutions
Example: Storyboards and prototyping
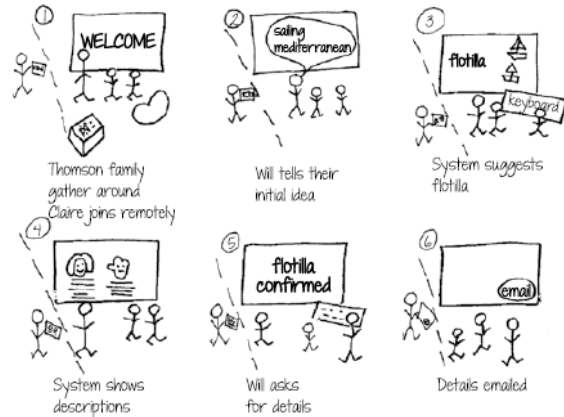
From Sharp (2019), pg. 447 & 431
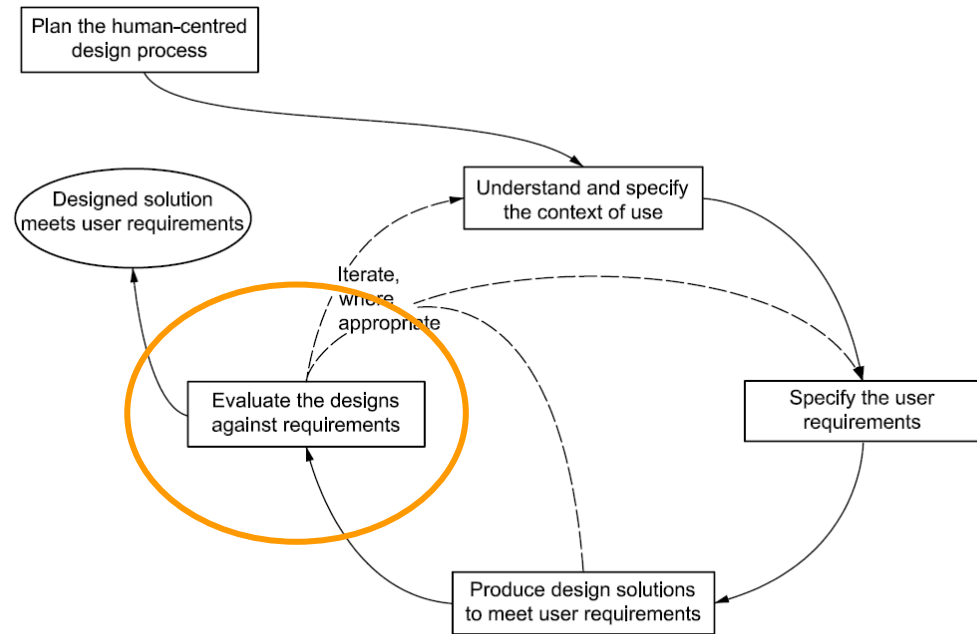
EVALUATE the designs against requirements

Figure 1 — Interdependence of human-centred design activities

ISO 9241-210:2010 Human-Centred Design for Interactive Systems

EVALUATE the designs against requirements

Perhaps the most essential part, and user-centered evaluation is a required activity. UI/UX evaluation skills will supplement your software testing skills.

- Informs the next iteration
- Provides feedback on strengths and weaknesses
- Whether user requirements have been achieved? (contractual obligations in commercial development!)

Approaches include user-based testing and inspection-based evaluation
Data collection? Interviews, observation, survey forms, workshops with feedback and sketching

We will discuss this topic in more depth during the last quarter of the course.
HOWEVER, remember that creating designs is an iterative process. You also need to evaluate designs and prototypes, not only programs! (and then improve the designs based on feedback)

Summary and thoughts

- Who are your users?
- Can too much of a good thing (user involvement) be bad?
    - Know your users and how much they have time
- Have a domain expert involved and have a multidisciplinary team
- Test honestly and iterate!
- Base yourself in data - for example sometimes personas or user descriptions are based on "wishful thinking"

Plan the design process
Recommended reading (repeated here as reminder)

- HCD field guide: Inspiration section
    - Create a project plan
    - Build a team
    - Recruiting tools
- Benyon
    - Chapter 3, "The Process"
- Sharp
    - Chapter 2, "The Process"