User Experience Design I
(Interaction Design)

Day 4/5 (November 25th, 2021, 9am-12pm):

Usability Basics II + User Centred Design

Remember that sketch ? ;-)

FEEL?
KNOW?
...DO?

Design is a funny word. Some people think design means how it looks. But of course, if you dig deeper, it's really how it works.

Steve Jobs

3 Grundsätze der Dialoggestaltung

Die Grundsätze der Dialoggestaltung werden zusammen mit einer kurzen Beschreibung und typischen Empfehlungen, gefolgt von Beispielen, dargestellt. Die Beispiele veranschaulichen mögliche Realisierungen. Empfehlungen und Beispiele wurden zur Verdeutlichung ausgewählt und sind nicht erschöpfend.

3.1 Aufgabenangemessenheit

Ein Dialog ist aufgabenangemessen, wenn er den Benutzer unterstützt, seine Arbeitsaufgabe effektiv und effizient zu erledigen.

Empfehlungen:	**mögliche Beispiele:**
Der Dialog sollte dem Benutzer nur solche Informationen anzeigen, die im Zusammenhang mit der Erledigung der Arbeitsaufgabe stehen.	Formatierungen wie z.B. Farbe und Informationen wie z.B. Wochentag, Datum usw. werden nur angezeigt, wenn sie die Erledigung der Arbeitsaufgabe erleichtern.
Die angezeigte Hilfe-Information sollte von der Aufgabe abhängen.	Wenn der Benutzer Hilfe aufruft, zeigt das Dialogsystem Informationen zur gegenwärtigen Aufgabe an (z.B. während des Editierens eine Liste der Editierbefehle). Wenn eine Dialog-Box angezeigt wird und der Benutzer Hilfe aufruft, zeigt das Dialogsystem Informationen zu dieser Dialog-Box an.
Alle Aufgaben, die sinnvollerweise dem Dialog-	Die Positionsmarke wird automatisch auf das

Bei der Gestaltung des Dialogs sollte der Komplexität der Arbeitsaufgabe unter Berücksichtigung der	In einem öffentlich zugänglichen Dialogsystem wird dort, wo es eine Reihe alternativer Eingabe-

Differences between usability and user experience

- DIN EN ISO 9241-210 tries to differentiate the two terms usability and user experience.
- User experience therefore includes all effects that a product has on the user before use (anticipated use), during and after use (identification with the product or distancing).
- Usability, in turn, focuses on the actual usage situation (effectiveness and efficiency)

https://www.dakks.de/sites/default/files/71_sd_2_007_leitfaden_usability_1.3_0.pdf

source: [5,6,7]

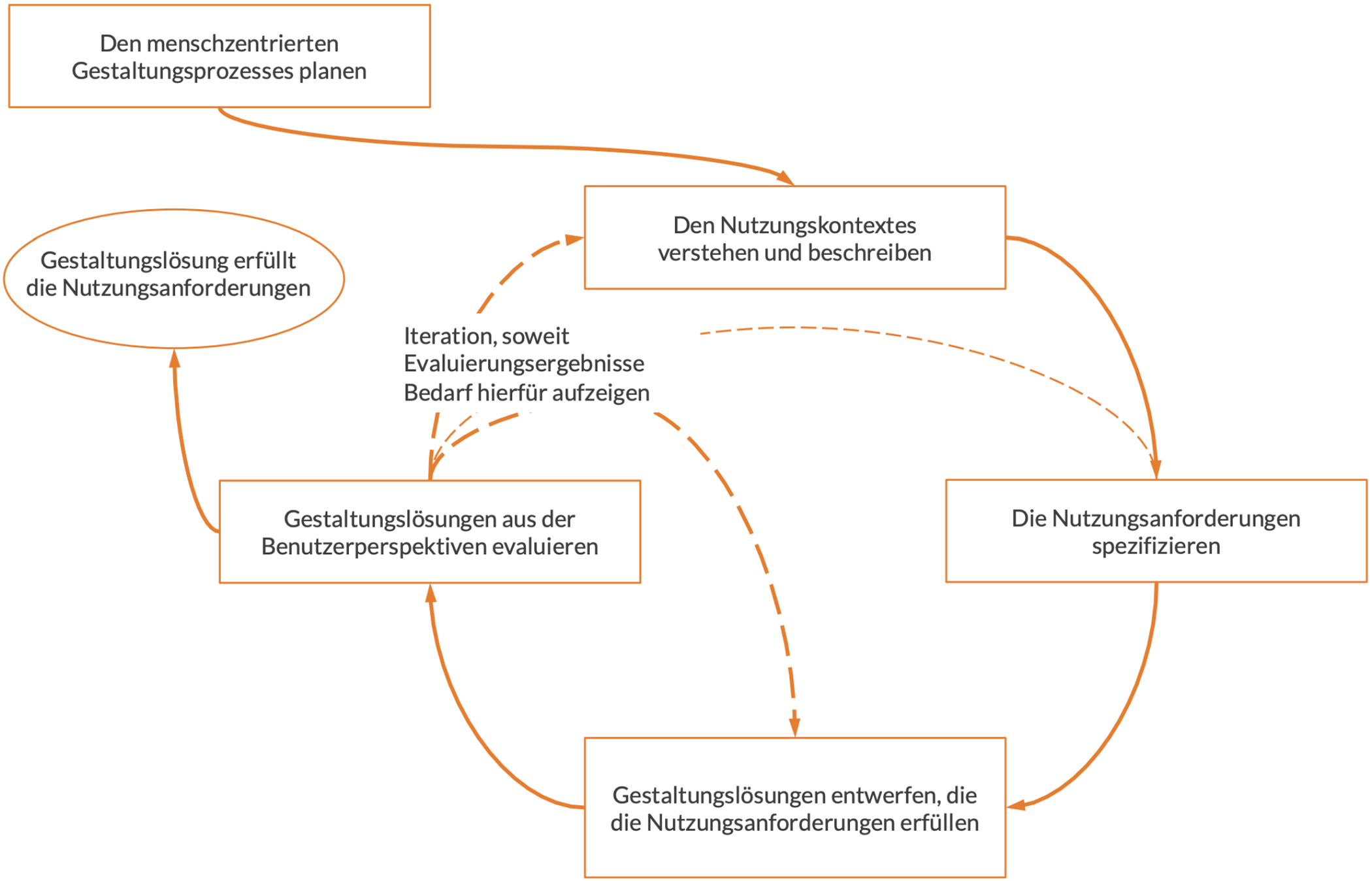
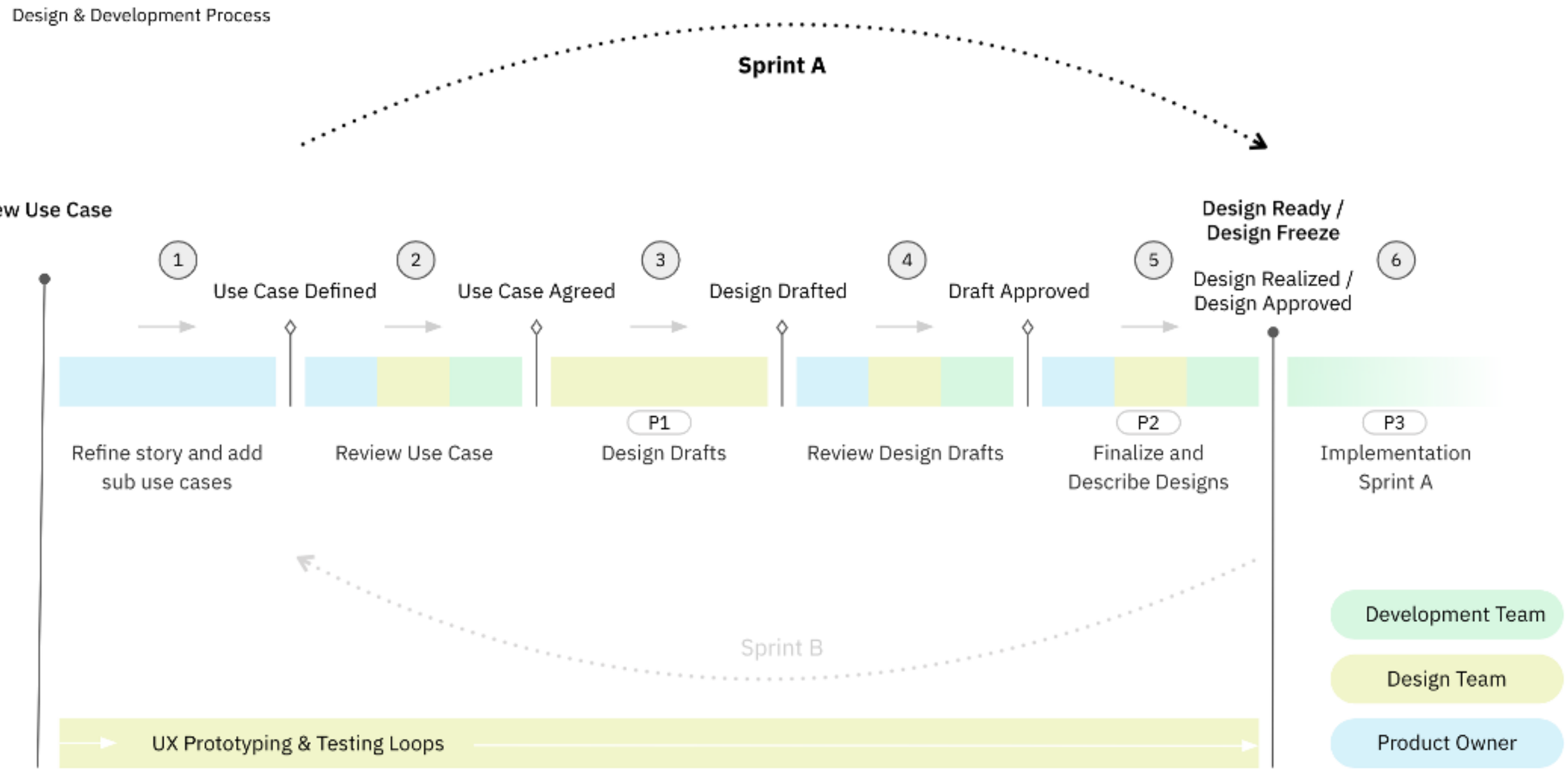


Abbildung 1: DIN EN ISO 9241-210 „Prozess zur Gestaltung gebrauchstauglicher interaktiver Systeme“

https://www.germanupa.de/sites/default/files/public/content/2018/2018-03-03/qualitaetsstandardusabilityengineering.pdf

SCRUM Based UI Development Process



NN/g

Desktop Test Setup

Standart Usability Lab Layout

Observer Room

- Screen-Capture Software
- Audio
- Live-Video (3 Cameras)
- Space for Attendees

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User Room

- Screen(s) for Testing Prototypes
- Microphones (2)
- Pleasant Atmosphere

Usability lab testing

Specifically constructed testing room
…instrumented with data collection devices

Separate observation room
…usually connected to the testing room by one-way mirror and audio system / data recording and analysis

Test users perform prepared scenarios
…and use the ”Think aloud” technique

Problem
…very artificial setting
> bias in test results

source: [5,6,7]

Usability concept

- **Recognisability** (the user's attention is drawn to the information required)
- **Distinctness** (the information displayed can be precisely distinguished from other data)
- **Readability** (the information is easy to read)
- **Clarity** (the information content is conveyed quickly and accurately)
- **Comprehensibility** (the information is understood in the context of the task)
- **Compactness / conciseness** (users are only given the information they need to complete the task)
- **Consistency** (the same information is always presented in the same way within the application according to the user's expectations)

ISO 9241

https://www.dakks.de/sites/default/files/71_sd_2_007_leitfaden_usability_1.3_0.pdf

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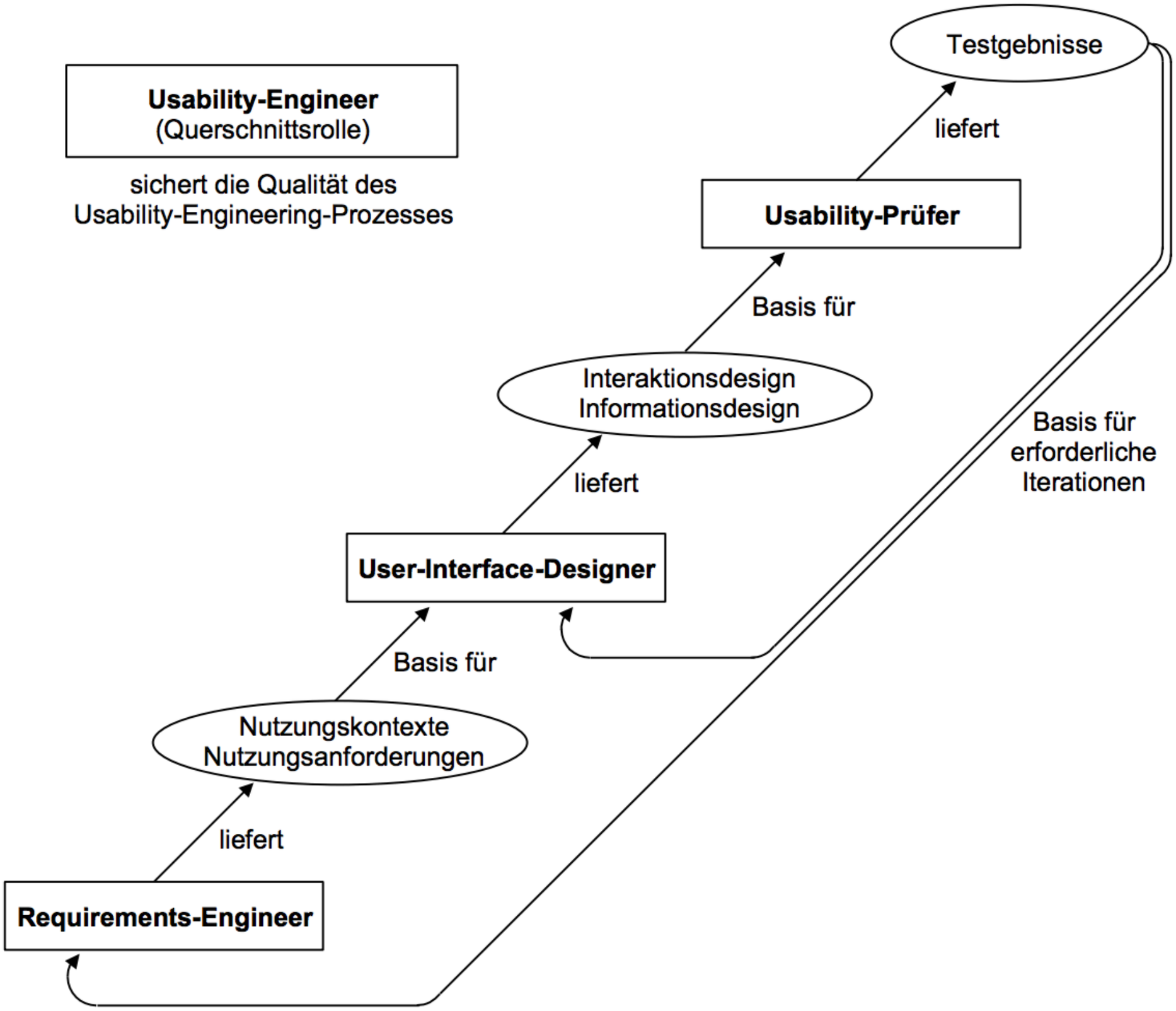


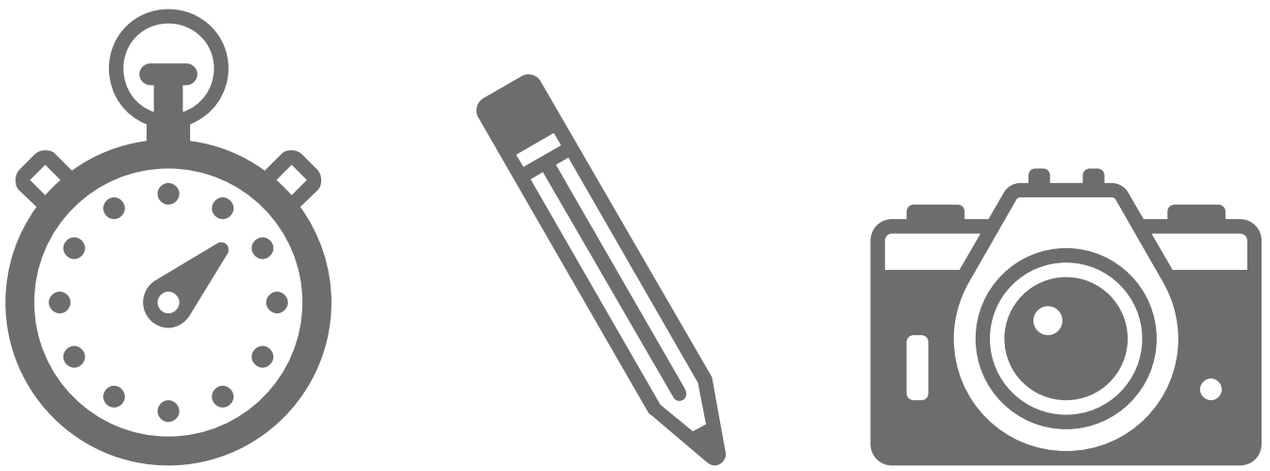
Abbildung 5: Zusammenspiel der Rollen und Ergebnisse im Usability-Engineering-Prozess

https://www.dakks.de/sites/default/files/71_sd_2_007_leitfaden_usability_1.3_0.pdf

source: [5,6,7]

Usability concept

ISO 9241:
effectiveness (% of goal achieved)
+ efficiency (time to complete a task, or the error rate, or the amount of effort)
+ satisfaction (subjective rating scale)
= Usability



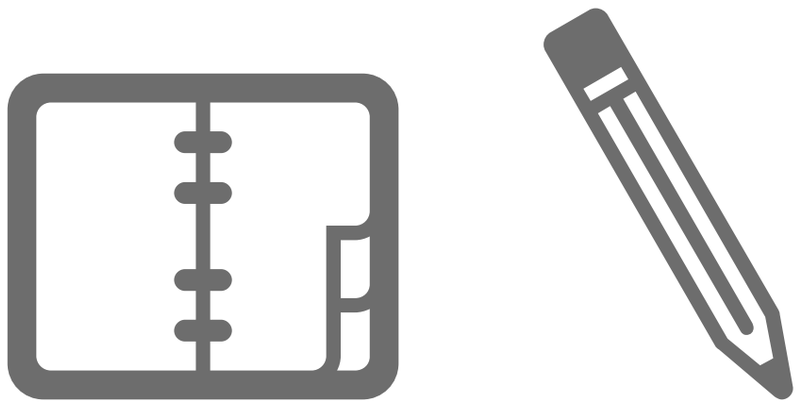
ISO 9241

source: [5,6,7]

(User) Satisfaction

Satisfaction: the level of comfort that the users feel when using a product and how acceptable the product is to users as a means of achieving their goals

- Subjective aspect
- Difficult to measure
- Often be strongly correlated with effectiveness and efficiency



ISO 9241

source: [5,6,7]

Usability testing

Usability testing determines whether the users can find and use the features in the amount of the time and effort they willing to expend searching.

- Primary goal – improve the usability
- Real users do the real task(s)
- Observation
- Analysis

ISO 9241

http://www.usabilis.com/img/user-research-france/usability-testing.jpg

source: [5,6,7]

Usability Inspection Methods Overview

Inspection methods: need to be carried out by cognitive expert.

They are good in finding problems

- **Heuristic evaluation**: better predictor
- **Cognitive walkthrough**: finding end-user problems towards ease-of use

  (The cognitive walkthrough method is a usability inspection method used to identify usability issues in interactive systems, focusing on how easy it is for new users to accomplish tasks with the system)

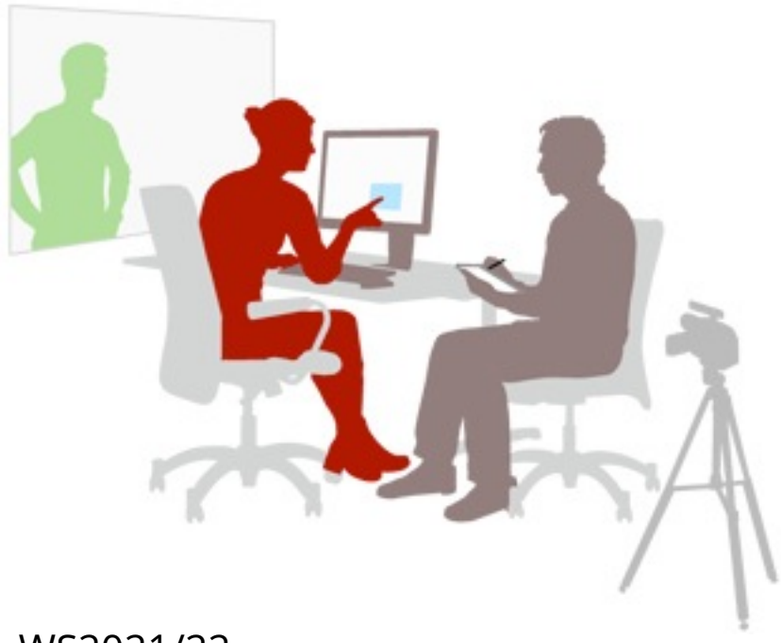
Actual user testing is **still very important (Triangulation)**

User testing and inspection methods do not have a high degree of overlapping findings

source: [5,6,7]

Usability Test Plan I

- What kind of knowledge they need to have before so they can carry out the usability tests of the product?
- Where and how can you/they get the knowledge?
- Do you need any skill training as well? You need to specify the discussion as detailed as possible.
- What kind of team members do you like to have when you are asked to organise the usability tests?
- Would you prefer to carry the test in the lab, or in the field, or both? Why?



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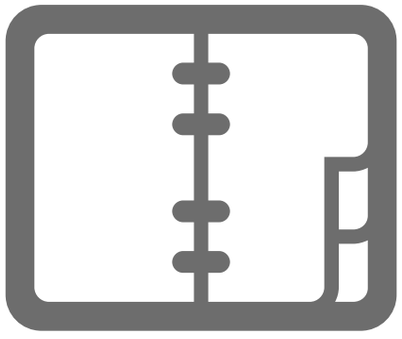
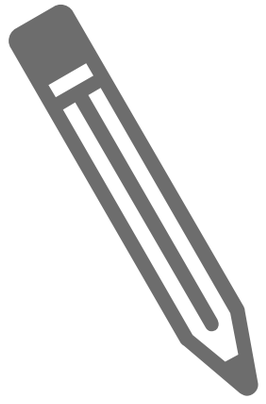
source: [5,6,7]

Usability Test Plan II

- What kind of preparations do you need to do
  before you can design the tests?
- What can be the best schedule ?
- Who shall be your tests subjects? How many of them in
  each group? How can you find them?
- How many tests you plan to carry out? How would you
  design your testing scenarios? What kinds of design
  features and functions you are planning to test?

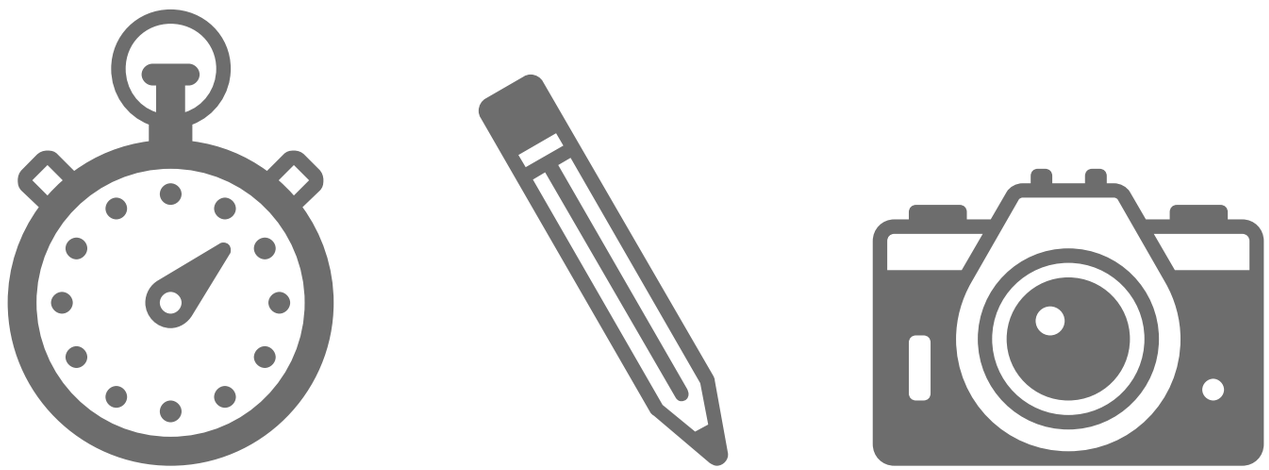




source: [5,6,7]

Usability Test Plan III

- **Prepare your testing tools**. What kind of tools will you need? How shall they look? What do you plan to measure?
- **Data analysis.** Based on your study plan, test your plan of measurements: How will you analyse the results? What kind of conclusions are you expecting from the data analysis ?
- Preparing your usability **testing report**. Structure how your usability testing report shall look.



source: [5,6,7]

Summary and Take-aways

Usability Basics I + II

Heuristic Evaluation

Visibility of system status

Match between system and the real world

User control and freedom

Consistency and standards

Error prevention

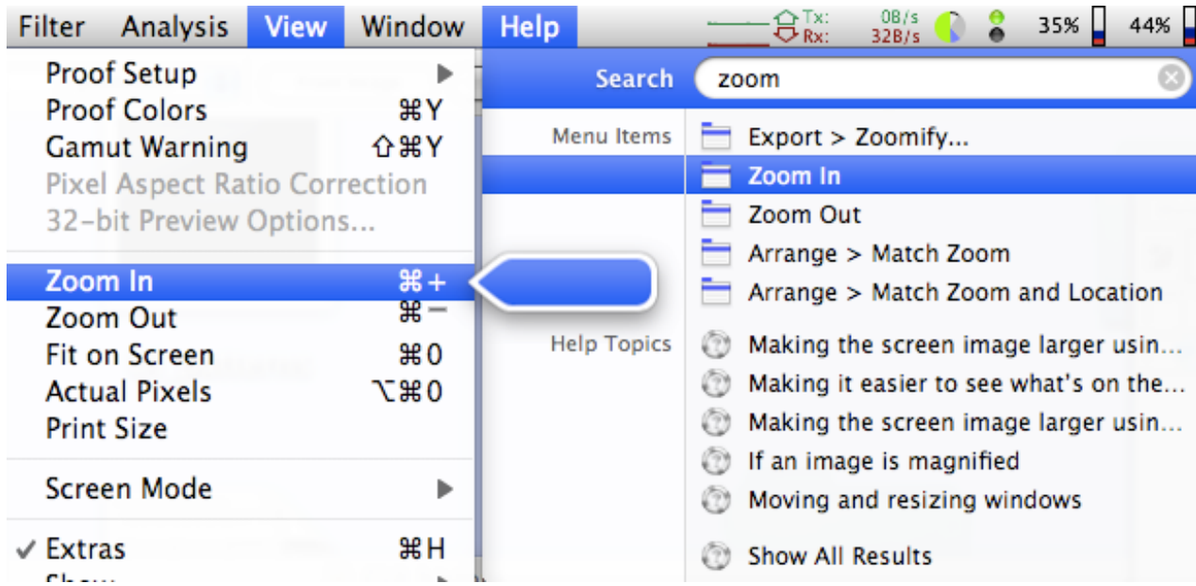
Recognition rather than recall

Flexibility and efficiency of use

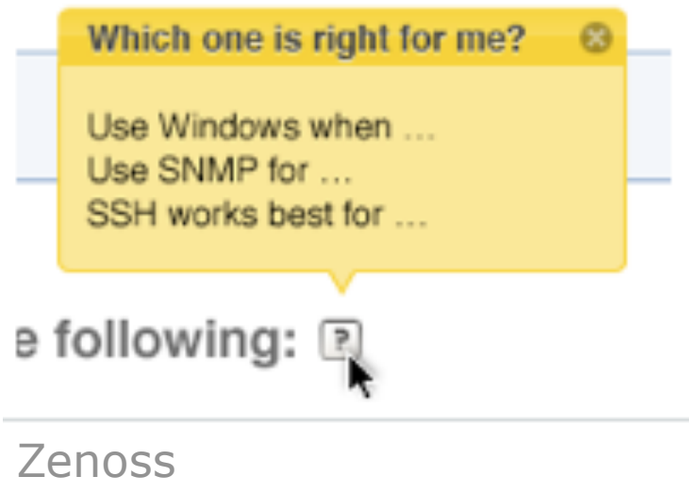
Aesthetic and minimalist design

Help users recognise, diagnose, and recover from errors

Help and documentation



Mac OSX 10.5 (Screenshot)



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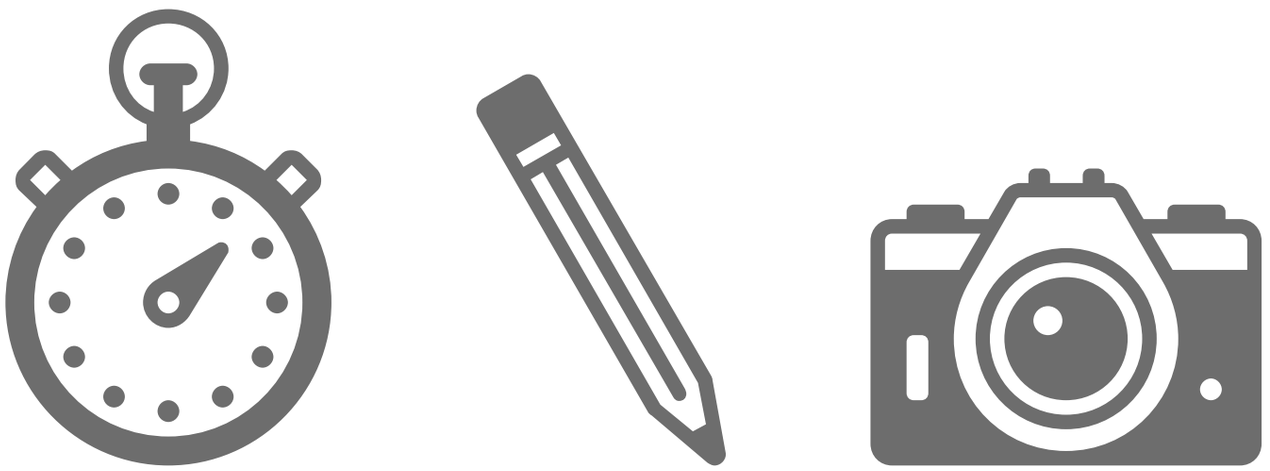

ISO 9241-10

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ISO 9241-10

http://www.usabilis.com/img/user-research-france/usability-testing.jpg

source: [5,6,7]

What is a “User Centred Design” (UCD) approach ?

source: [4]

User Centred Design (UCD)

Philosophy: Users know best

People who will be using a product or service know what their needs, goals and preferences are

Designers aren't the users.

Participation from users at every stage of the design process.

Roots in industrial design and ergonomics:
Industrial designer Henry Dreyfuss (Bell) popularised the method with his 1955 book "Designing for People".

Software designers were long time unaware of the method

source: [4]

Why a user centred approach?

- With increased memory and processor powers and color monitors different forms of interfaces were now possible
- In the early 1980´s a movement began focusing on the users not on computers. Remember Mark Weisers paper ?

source: [4]

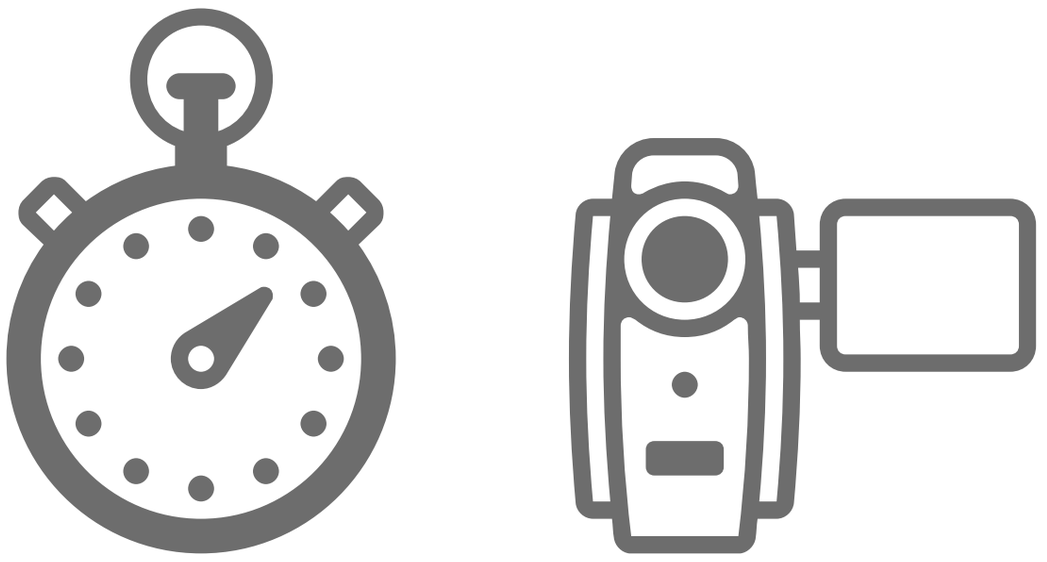
What is a user centred approach?

- User centred approach is based on:

  Early focus on users and tasks: directly studying cognitive, behavioural, anthropomorphic & attitudinal characteristics

  Empirical measurement: users' reactions and performance to scenarios, manuals, simulations & prototypes are observed, recorded and analysed

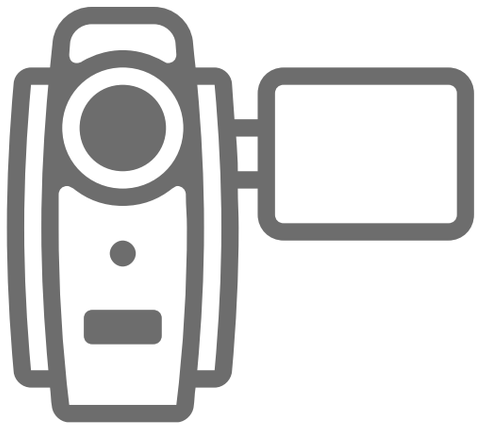
  Iterative design: when problems are found in user testing, fix them



source: [4]

Four basic activities

- Identifying needs and establishing requirements
- Developing alternative designs
- Building interactive versions of the designs
- Evaluating designs



source: [4]

Summary:

- Goals are important in UCD -> UX designer focus on what the user ultimately wants to accomplish. (Think about the real problem)
- UX designer determines the users task and means necessary to achieve those goals -> always with the users needs and preferences in mind
- UX designers involve users at every stage of the process
- Users are consulted of the very beginning of a new project
- UX designers conduct extensive research up front to determine what the users goals are in the current situation
- UX designers test and try prototypes of a system with users
- User data is a determining factor throughout the project when making decisions

source: [4]

References (Books):

[1] Buxton, W. Sketching User Experiences, *Morgan Kaufmann 2007.*
[2] Norman, D. The Psychology of Everyday Things, *Basic Books 1988.*
[3] Moggridge, B. Designing Interactions, *MIT Press, 2006.*
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[5] Usability Seminar - Chalmers - Gothenburgs University 2005
[6] German UPA Qualitätsstandard für Usability Engineering 2015
[7] DAkkS Leitfaden Usability v 1.3 2018