Human-Computer Interaction
Basic Terms

Goals of this Video
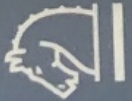
After watching this video you will be able to:

- Explain fundamental terms for HCI such as
  - Interactive System
  - User
  - User Interface
  - Usability
  - User Experience

Lars Lischke

Interactive System

An interactive system is a computational system that allows the user to exchange information between the user and the system.

Examples:
- Graphical user interfaces
- Mobile devices
- Gaming consoles
- Ticket vending machines
- Command line interfaces
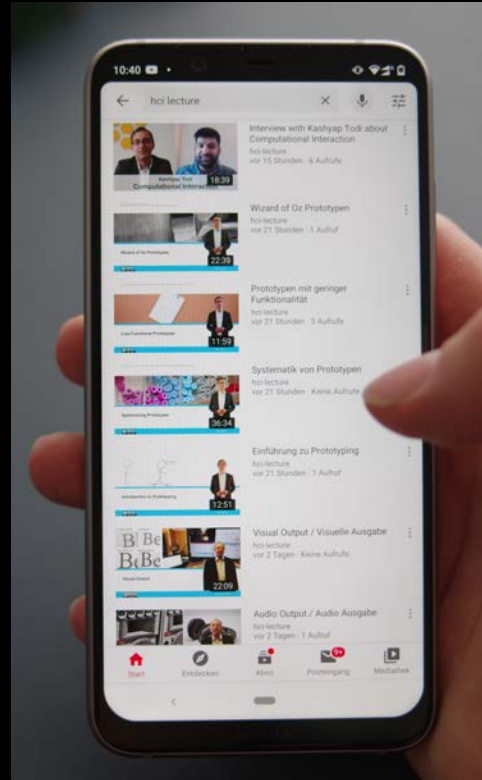
USER INTERFACE

The part of a system where a user can interact with a system, device or application.

The user interfaces can support input, output or both.

Examples:
- Graphical user interface (GUI) on a web page
- Voice user interface in a smart speaker (e.g. Alexa)
- Buttons, switches, wheels and levers in a cockpit

VU

- **User:** "person who interacts with a system, product or service"

- **Context of Use:** "combination of users, goals and tasks, resources, and environment"

- **Interactive System:** "combination of hardware and/or software and/or services and/or people that users interact with in order to achieve specific goals"

- **User Interface:** "all components of an interactive system (software or hardware) that provide information and controls for the user to accomplish specific tasks with the interactive system"

https://www.iso.org/obp/ui/#iso:std:iso:9241:-210:ed-2:v1:en

USER INTERFACE DESIGN

User Interface Design refers to the conception and design of the **user interface**, including the choice of **modalities**, selection of **interface elements** and their **placement** in the interface.

INTERACTION DESIGN VS. USER EXPERIENCE DESIGN

"**Interaction Design** (IxD) is the design of interactive products and services in which a designer's focus goes beyond the item in development to **include the way users will interact with it**." https://www.interaction-design.org/literature/topics/interaction-design

User Experience Design describes the more holistic approach in **designing the experience a person will encounter** when interacting with a devices, system or application. It considers the user interface design in the broader context of use.

Utility
a product can be used to reach a certain goal or to perform a certain task. This is essential!

Usability
relates to the question of quality and efficiency. E.g. how well does a product support the user to reach a certain goal or to perform a certain task.

Likeability
this may be related to utility and usability but not necessarily. People may like a product for any other reason…

"Usability is a quality attribute that assesses how easy user interfaces are to use. The word 'usability' also refers to methods for improving ease-of-use during the design process."
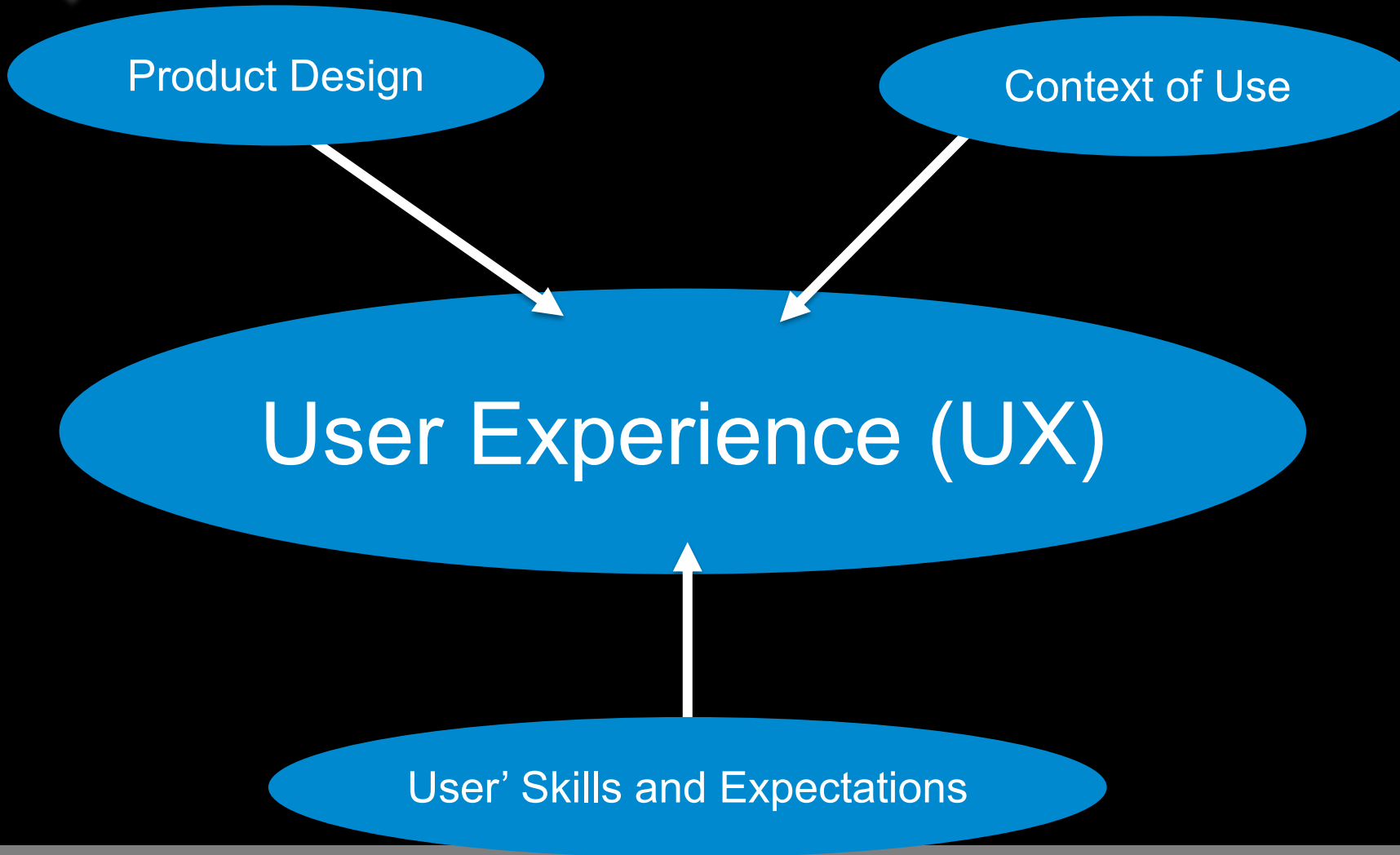
Usability has five quality components:
- **Learnability**: How easy is it for users to accomplish basic tasks the first time they encounter the design?
- **Efficiency**: Once users have learned the design, how quickly can they perform tasks?
- **Memorability**: When users return to the design after a period of not using it, how easily can they reestablish proficiency?
- **Errors**: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
- **Satisfaction**: How pleasant is it to use the design?

"A person's perceptions and responses that result from the use or anticipated use of a product, system or service"

ISO 9241-210:2008. Ergonomics of human system interaction - Part 210: Human-centred design for interactive systems

VU

Product Design

Context of Use

User Experience (UX)

User' Skills and Expectations

USER EXPERIENCE IN DETAIL

Video 3.1: Marc's introduction to User Experience and Experience Design.

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Hassenzahl, Marc (2013): User Experience and Experience Design. In: Soegaard, Mads and Dam, Rikke Friis (eds.). "The Encyclopedia of Human-Computer Interaction, 2nd Ed.". Aarhus, Denmark: The Interaction Design Foundation. http://www.interaction-design.org/encyclopedia/user_experience_and_experience_design.html

Effie Lai-Chong Law, Virpi Roto, Marc Hassenzahl, Arnold P.O.S. Vermeeren, and Joke Kort. 2009. Understanding, scoping and defining user experience: a survey approach. In Proceedings of the 27th international conference on Human factors in computing systems(CHI '09). ACM, New York, NY, USA, 719-728. DOI=10.1145/1518701.1518813 http://doi.acm.org/10.1145/1518701.1518813

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[1] Preece, Rogers and Sharp (2002): "Designing interactive products to support people in their everyday and working lives."
Jennifer Preece, Yvonne Rogers, Helen Sharp (2002) Interaction Design, ISBN: 0471492787, http://www.id-book.com/, Chapter 9
[2] Winograd (1997): "The design of spaces for human communication and interaction."
[3] Jakob Nielsen's Alertbox, August 25, 2003: Usability 101: Introduction to Usability https://www.nngroup.com/articles/usability-101-introduction-to-usability/
[4] ISO 9241-210:2008. Ergonomics of human system interaction - Part 210: Human-centred design for interactive systems