User Experience Design I

History
History

• Course Overview (Timetable) + Organizational Stuff

• What is Interaction Design?

• The Story of the Mouse

• PARC

• The Desktop Metaphor

• The GUI
Tutorials

• UX1 (Interaction Design) required for UX2 + UX3 (Concept Development)
• register via Un2Work!

• tutorials (online) close to the lecture
• practical exercises to apply theoretical knowledge
• important preparation for the exam
• will be held in breakout sessions during the lecture
• including homework (classroom sessions mainly for briefing & presentations)
• separate Zoom meeting (details shortly)
• work with online tools for wire framing and prototyping
Exam and Online Lecture

• **Bonus** of 5% in exam possible if you hand in deliverable at the end
  • deliverable: sketchbook with works during and inspired by the course / documentation of the course to be delivered at the end of the semester (at the last lecture)
• Hybrid *written/oral Exam* will be announced on the website shortly
• Reflection report and random questions form the lecture content
• exact time will be announced soon

• Online teaching concept in the winter term 2020/21
• Tutorials reflect and deepen learning of the content
• Materials of previous UX1 lectures at: https://videoonline.edu.lmu.de/
• Lecture slides will be available on the website
• Reading assignments will be send out via Uni2Work
• Questions via chat or “raise hand” feature
• Permanent Zoom link
Lecture Overview:

II Applying UX

First Part  Second Part  Third Part
Lecture Overview:

III UX Beyond the Desktop
EUROPÄISCHE NORM

EUROPEAN STANDARD

NORME EUROPÉENNE

EN ISO 9241-10

1995-02-09

ICS 331.101.1.-651.2.,681.31.022

Deskriptoren: Ergonomie, Büromaschinen, Datenverarbeitungseinrichtung, Textverarbeitung, Datenendeinrichtung, Bildschirmgeräte, Leistungsbewertung, Grundlagen, Softwaregestaltung

Deutsche Fassung

Ergonomische Anforderungen für Bürotätigkeiten mit Bildschirmgeräten
Teil 10: Grundsätze der Dialoggestaltung
(ISO 9241-10 : 1995)

Ergonomic requirements for office work with visual display terminals (VDTs) -

Exigences ergonomiques pour travail de bureau avec terminaux à écrans de visualisation (TEV) - Partie 10: Principes de dialogue (ISO 9241-10 : 1995)

ISO 9241
Unterschiede zwischen Usability und User Experience

• Die DIN EN ISO 9241-210 versucht die beiden Begriffe Usability und User Experience voneinander abzugrenzen.

• User Experience umfasst demzufolge alle Effekte, die ein Produkt bereits vor der Nutzung (antizipierte Nutzung), während, als auch nach der Nutzung (Identifikation mit dem Produkt oder Distanzierung) auf den Nutzer hat.

• Usability wiederum fokussiert auf die eigentliche Nutzungssituation (Effektivität und Effizienz)
Standart UCD Design Process Model

source: [4]
Double Diamond

DISCOVER  |  DEFINE  |  DESIGN  |  DELIVER

source: [2]
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Gillian Crampton Smith

-established the first Interaction Design MA program at the Royal College of Art (RCA)
-was the founder and academic director of the Interaction Design Institute Ivrea (IDII)
705 ALMA ST.

ALL SYSTEMS NORMAL
01:53P Wed 09/04/02
Looking back... (Discussion Part)
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-shaping our lives through digital artefacts...
Looking back...

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-good UX/IxD refers to a “mental model”
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-languages of interaction design
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-languages of interaction design
-elements of interaction design
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-languages of interaction design
-elements of interaction design
-the part of the interaction designer is to design the **quality** on how the interaction is performed, how the system behaves
Designing for Limited Contexts of Use

(1) Professional Tools

(2) Game Machines for Teenagers

30 years ago  today
Designing for Various New Contexts of Use

Bears Several Challenges

(1) Professional Tools

(2) Game Machines for Teenagers

(1) Larger user groups (e.g. Kids/Parents/Grandparents, etc.)

(2) Various Contexts of use (e.g. Cars/Work/School/Home/Leisure/etc.)

30 years ago  today
Novel Design Contexts
Example: Self-Driving Transportation
Novel Design Contexts
Example: Voice Operated Home Devices

https://thewirecutter.com/reviews/google-home-voice-controlled-speaker/
As well as Ethical Challenges...

"I just don't think I'm ready for the responsibility of an AI smart speaker."
User-experience design

- Information architecture
- Communication design
- Interaction design
- User Interface engineering
- Usability engineering
- Human-computer interaction

Industrial design

Human factors

source: [3]
"Great design is as much about prospecting in the past as it is about inventing the future."

Bill Buxton
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The **Beginnings**…
(let’s jump back to 1943)
P 38 Lightning Cockpit (1943)

http://www.world-war-2-planes.com/lockheed-p-38.html
EDSAC computer (1949)

http://www.xgn.nl/images/upload/20080908172430.jpg
"I think there is a world market for maybe five computers."

Thomas Watson, chairman of IBM, 1943
Mid sized ICs

http://upload.wikimedia.org/wikipedia/commons/8/80/Three_IC_circuit_chips.JPG
Punch Card

http://datenraeger-museum.de/Media/Shop/lochkarte_01.jpg
Douglas Engelbart

“When you were interacting considerably with the screen, you needed some sort of device to select objects on the screen, to tell the computer that you wanted to do something with them.”

Douglas C. Engelbart, 2003, referring to 1964
Looking back... (Discussion)

http://1.bp.blogspot.com/_jhhJghwNlgo/ST01UsQ74ol/AAAAAAAAA7k/5xDWdR-4ODY/s400/worlds+first+mouse.JPG
Telefunken RKS-100

https://de.wikipedia.org/wiki/Datei:Telefunken_Rollkugel_RKS_100-86.jpg
Looking back... (Discussion)

-reflection of the process (concept generation)
Looking back... (Discussion)

- reflection of the process (concept generation)
- construction of different prototypes (alternative design)
Looking back... (Discussion)

- reflection of the process (concept generation)
- construction of different prototypes (alternative design)
- iterative development of prototypes (prototyping and testing)
Looking back... (Discussion)

- reflection of the process (concept generation)
- construction of different prototypes (alternative design)
- iterative development of prototypes (prototyping and testing)
- tests with users to validate the approach and make decisions (usability testing)

http://www.usabilis.com/img/user-research-france/usability-testing.jpg
The Mother of all Demos

Computer Society's Fall Joint Computer Conference in San Francisco, which was presented by Douglas Engelbart on December 9, 1968
Douglas C. Engelbart: *Augmenting human intellect: A Conceptual Framework*

*Stanford Research Institute (SRI), 1962.*
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2. **Language**—the way in which the individual classifies the picture of his world into the concepts that his mind uses to model that world, and the symbols that he attaches to those concepts and uses in consciously manipulating the concepts (“thinking”).
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2. **Language**—the way in which the individual classifies the picture of his world into the concepts that his mind uses to model that world, and the symbols that he attaches to those concepts and uses in consciously manipulating the concepts (“thinking”).

3. **Methodology**—the methods, procedures, and strategies with which an individual organises his goal-centered (problem-solving) activity.
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3. **Methodology**—the methods, procedures, and strategies with which an individual organises his goal-centred (problem-solving) activity.

4. **Training**—the conditioning needed by the individual to bring his skills in using augmentation means 1, 2, and 3 to the point where they are operationally effective.
“The system we wish to improve can thus be visualised as comprising a trained human being, together with his artefacts, language, and methodology.”
1. **Artefacts**—physical objects designed to provide for human comfort, the manipulation of things or materials, and the manipulation of symbols.

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founded 1970 by Xerox
founded 1970 by Xerox
Marc Weiser

The Computer for the 21st Century

Specialized elements of hardware and software, connected by wires, radio waves and infrared, will be so ubiquitous that no one will notice their presence

by Mark Weiser

The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.

Consider writing, perhaps the first information technology. The ability to represent spoken language symbolically for long-term storage and retrieval was an enormous advance. Today technology is ubiquitous in industrialized society. Computers in households, schools, businesses, and factories have become an integral part of our daily lives. The impact of the computer is not just a "user interface" problem. Our colleagues and I at the Xerox Palo Alto Research Center think that the idea of a "personal" computer is manipulated and that the vision of the "intelligent," "knowledgeable" computer is an integral part of modern society. We are therefore trying to conceive a new way of thinking about computers, one that takes into account the human world and allows the computer to function as a natural part of the environment.

Silicon-based information technology, in contrast, is far from having become part of the environment. More than 50 million personal computers have been sold, and the computer nonetheless remains largely in the world of its own. It is difficult to imagine modern life without it.

Such a disappearance is a fundamental consequence of technology. But of human psychology. Whenever people learn something sufficiently well, they do not become aware of it. When you look at a street sign, for example, you absorb its information without consciously performing the act of reading. Computer scientist, economist and Nobel laureate Herbert A. Simon calls this phenomenon "compilability." Psychologist Michael Posavac calls it the "saturation" phenomenon. Psychologists Hiroshi Georgia Cardenal and Martin Hargrave call it the "instinct" and the "ready-to-hand." John Seely Brown of Xycall the "perpetual." All say, in essence, that when one thing becomes internalized, it becomes part of the environment.

The idea of integrating computers seamlessly into the fabric of everyday life is not just a matter of meeting demand. "Ubiquitous computing" in this context does not mean just computers that can be carried to the beach, jungle, or airport. Even the most powerful notebook computer, with access to a worldwide information network, still focuses attention on a single box. By analogy with writing, carrying a supercomputer is like owning just one very important book. Customizing this book, even writing millions of other books, does not begin to capture the real power of literacy.

Furthermore, although ubiquitous computers may be used and visible in addition to text and graphics, that does not make them "multimedia." Today's multimedia machine makes the computer screen into a de-centralized focus of attention rather than allowing it to fade into the background. Perhaps most dramatically opposed to our vision is the notion of virtual reality, which attempts to make a world inside the computer. Users wear special goggles that project an artificial scene onto their eyes, they wear gloves or even haptic suits that sense their motions and gestures so that they can move about and manipulate virtual objects. Although it may have its purpose in allowing people to explore reality otherwise inaccessible—the inside of cells, the surfaces of distant planets, the information web of data—virtual reality is only a map, not a territory. It excludes doctors, officers, other people not wearing goggles and haptic suits, weather, trees, walls, choice economies and, in general, the infinite richness of the universe. Virtual reality forces an enormous apparatus on stimulating the world rather than on sensibly enhancing the world that already exists.


Stu Card

-joined Xerox Palo Alto Research Center (PARC) in 1974
-aimed at perfecting scientific methods to integrate with creative design
-developed a process to predict the behaviour of a proposed design, using task analysis, approximation, and calculation
-proposed a partnership between designers and scientists, by providing a science that supports design.

http://www.designinginteractions.com/interviews/StuCard
Looking back...

-exploration of the design space through the integration of industrial design
Looking back...

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-designers and engineers had to work together (interdisciplinary approach)
Looking back...

- exploration of the design space through the integration of industrial design
- designers and engineers had to work together (interdisciplinary approach)
- science served to constrain the design space
User-experience design

Industrial design

Human-computer interaction

User Interface engineering

Communication design

Information architecture

Human factors

Usability engineering

source: [3]
MINIMUM Viable PRODUCT

Crappy products  
MINIMUM  
/viable  
BEST PRODUCTS TO STARTUPS  
Better-financed products
Microprocessor early 1970s

img src: wikimedia creative commons
Tim Mott

-collaborated remotely with Xerox Palo Alto Research Center (PARC) and Larry Tesler
-worked on a new publishing system that included a “desktop metaphor”
-invented a “user centred design process” with Larry Tesler
-later co founded Electronic Arts (EA)

http://www.designinginteractions.com/interviews/TimMott
The injured were taken to MeritCare Hospital, where they were treated. According to Sheriff Larry Costello, none were seriously hurt. The driver of the southbound vehicle the spokesperson MeritCare said about seventeen workers attended sessions the delegate from N.D. came to Moorhead, Minn. majored in English literature at Msum Bachelor's Degree in Mass Communications extra effort will be required according to sources close to the president will be completed in early January the very exciting climax of the film winning the exciting climax of the film
Looking back...

-spending time to understand users (design research)
Looking back...

- spending time to understand users (design research)
- designing by involving the users of the system (participatory design techniques)
Looking back...

- spending time to understand users (design research)
- designing by involving the users of the system (participatory design techniques)
- prototyping parts of the system with non functional elements (wizard-of-oz prototyping)
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- spending time to understand users (design research)
- designing by involving the users of the system (participatory design techniques)
- prototyping parts of the system with non functional elements (wizard-of-oz prototyping)
- asking users to “walk” them through the system (think aloud method)
Looking back...

- spending time to understand users (design research)
- designing by involving the users of the system (participatory design techniques)
- prototyping parts of the system with non functional elements (wizard-of-oz prototyping)
- asking users to “walk” them through the system (think aloud method)
- designing the system using mental models user could refer to (metaphors+scenarios)
**User-experience design**

- Information architecture
- Communication design
- User Interface engineering
- Interaction design
- Usability engineering
- Human-computer interaction
- Human factors

**Industrial design**
Office Schematic / Desktop Metaphor
Xerox Alto 1973

http://dl.maxumpc.com/galleries/oldpcs/xerox_alto_front_full.jpg
"There is no reason anyone would want a computer in their home."

Ken Olson, president, chairman and founder of DEC, 1977
Now you can create documents with words and pictures

1981 Xerox Star Workstation
1981 Xerox Star Workstation Interface
Larry Tesler

-involved users also in the software design process
-joined PARC in 1973
-moved to Apple in 1980
-was the core designer of Apples “Lisa” computer
-invented the “copy and paste” function

http://www.designinginteractions.com/interviews/LarryTesler
So it became a kind of contest. An unofficial and completely unacknowledged competition to see which of us was the toughest, the coolest, the hardest to get.

(He was, but there were times when he didn’t know that.) **“Who is smarter, you or me?”** he asked me again and again: once as he left the apartment in the morning, me wrapped in a towel; once over our whiskies at the King Cole Bar in the St. Regis. And that became the most important question.
Looking back...

- brainstorming and iterative trying and testing (iterative design process)
Looking back...

- brainstorming and iterative trying and testing (iterative design process)
- constant, quick and efficient tests with users to improve the system
  (experience prototyping)
Looking back...

- brainstorming and iterative trying and testing (iterative design process)
- constant, quick and efficient tests with users to improve the system (experience prototyping)
- developing products for the users’ core needs (user centred design process)
Bill Atkinson

-was hired by Apple as the “Application Software Department”
-invented the “pull down” menu structure
-was the lead designer of the “Lisa” and the initial “Mac”

http://www.designinginteractions.com/interviews/BillAtkinson
Looking back...

-alternative designs in a variety (sketches & prototypes)
Looking back...

-alternative designs in a variety (sketches & prototypes)
-proposal of a participatory design approach, creating better UIs
Apple Lisa 1983

http://media.arstechnica.com/images/gui/11-Mac1.gif
Macintosh System 1.0. January 1984
**WIMP**
- stands for "window, icon, menu, pointing device"
- coined by Merzouga Wilberts in 1980
- is often incorrectly used as an approximate synonym of "GUI".

WYSIWYG

-user interface that allows the user to view something very similar to the end result
-implies the ability to directly manipulate the layout of a document/presentation/3D model without having to type or remember names of layout commands.

Mac OS X
36 years in between....
interaction design

Know?

Feel?

...Do?
“There is an objectivity in the process of letting the user decide, the value of which is a recurring theme in this story of designing the desktop and the mouse. **Come up with an idea, build a prototype, and try it on the intended users.** That has proved, time and time again, to be the best way to create innovative solutions.”

*Bill Moggridge - Designing Interactions*
References (Books):


References (Papers):


Articles: