Interaction Design

Chapter 1 (May 4, 2011, 9am-12pm):
History
History

• Course Overview (Timetable) + Organizational Stuff

• What is Interaction Design?
• The Story of the Mouse
• PARC
• The Desktop Metaphor
• The GUI
Tutorials & Exam

-close to the lecture, rather theoretical (cf. Concept Development)

-no bonus!

-tutorial important preparation for exam

-Interaction Design required for Concept Development

-registration via UniWorx for tutorials starts: Today, 4th of May 13:00

-exam: Monday, 1st of August, 14:00-16:00

-no podcast
Course Overview:

I History & Fundamentals
History

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- What is Interaction Design?
  - The Story of the Mouse
  - PARC
  - The Desktop Metaphor
  - The GUI
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)
Looking back...

-shaping our lives through digital artifacts...
-good IxD refers to a “mental model”
-good IxD provides a “map” of where you are in a system, how you can move around and how you get back to the point where you started
-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 Everyday Life

25 years ago

today
Designing for Everyday Life

(1) Professional Tools
(2) Game Machines for Teenagers

(1) Larger user groups (e.g. Kids/Parents/Grandparents)
(2) Various Contexts of use (e.g. Work/School/Home/Leisure)

25 years ago to today
"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
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/_jhhJghwNlgp/ST01UsQ74oI/AAAAAAAAA7k/5xDWdR-4ODY/s400/worlds+first+mouse.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
User-experience design
Industrial design
Human-computer interaction
User Interface engineering
Communication design
Information architecture
Usability engineering
Human factors

source: [3]
Stanford Research Institute (SRI), 1962.
1. **Artifacts**—physical objects designed to provide for human comfort, the manipulation of things or materials, and the manipulation of symbols.

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 organizes his goal-centered (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 visualized as comprising a trained human being, together with his artifacts, language, and methodology.
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PARC
- The Desktop Metaphor
- The GUI
founded 1970 by Xerox

http://upload.wikimedia.org/wikipedia/commons/e/e8/PARC-logo-color.png
founded 1970 by Xerox

http://de.academic.ru/pictures/dewiki/80/Parentrance.jpg
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 behavior 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
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-designers and engineers had to work together (interdisciplinary approach)
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-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
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Microprocessor early 1970s
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 centered 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 seven 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)
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- 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)
Interaction design

- User-experience design
- Information architecture
- Communication design
- User Interface engineering
- Usability engineering
- Human-computer interaction
- Human factors
- Usability engineering
- Industrial design
Office Schematic / Desktop Metaphor
Xerox Alto 1973
"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
XEROX 6085 Workstation

User-Interface Design

To make it easy to compose text and graphics, to do electronic filing, printing, and mailing all at the same workstation, required a revolutionary user interface design.

Bit-map display - Each of the pixels on the 19" screen is mapped to a bit in memory. Thus, arbitrarily complex images can be displayed. The 6085 display all fonts and graphics so they will be printed. In addition, familiar office objects such as documents, folders, file drawers and in-trays are portrayed as recognizable images.

The mouse - A unique pointing device that allows the user to quickly select any text, graphic or office object on the display.

See and Point

All functions are visible to the user on the keyboard or on the screen. The user does filing and retrieval by selecting them with the mouse and invoking the word, COPY, DELETE or PROPERTIES commands. Text and graphics are edited with the same keys.

Figure 7: Data from Table 1 drive

Workstation usage percentages

Table 1 and illustrated in Figure 1085 users are likely to do the composition and layout, many times including printing and

Text and Graphics

To replace typsetting, the 6085 offers a choice of type fonts and sizes from 6 point to 36 point.

18-point text.
24-point text.
36-point text.
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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)
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- 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 centered 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)
- 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.

October 2007: Mac OS X 10.5
over 25 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: