Interaction Design

Chapter 1 (April 09, 2014, 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

- **Interaction Design** required for Concept Development
- no Podcast, so be here every week :) 
- register via UniWorX!

- **tutorials** close to the lecture
- practical exercises to apply theoretical knowledge
- important preparation for the exam
- will be held in breakout sessions during the lecture
- sometimes a bit homework possible

- **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)
- **Written Exam** will be announced on the website shortly
- exact time and location will be announced soon
Course Overview:

I History & Fundamentals

April / May  June  July
Course Overview:

II Applying Interaction Design

April / May  June  July
Course Overview:

III Beyond the Desktop

April / May     June     July
History

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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 IxD refers to a “mental model”
Looking back...

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-good lxD 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
Looking back...

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-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
Looking back...

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-languages of interaction design
-elements of interaction design
Looking back...

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-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

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

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
“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/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)

![Diagram showing the process of Research, Analysis, Concepts, and Prototypes with Validate Concepts feedback loop]
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
Stanford Research Institute (SRI), 1962.
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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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 organizes 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.
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founded 1970 by Xerox

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

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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 centred design process” with Larry Tesler
- later co founded Electronic Arts (EA)

http://www.designinginteractions.com/interviews/TimMott
<table>
<thead>
<tr>
<th>Action</th>
<th>Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indent for paragraph</td>
<td>The injured were taken to MeritCare Hospital.</td>
</tr>
<tr>
<td>Begin new paragraph</td>
<td>where they were treated. According to Sheriff!</td>
</tr>
<tr>
<td>Eliminate paragraph</td>
<td>Larry Costello, none were seriously hurt.</td>
</tr>
<tr>
<td>Transpose (letters, words)</td>
<td>The spokesperson MeritCare said</td>
</tr>
<tr>
<td>Use figures (or words)</td>
<td>the driver of the southbound vehicle</td>
</tr>
<tr>
<td>Spell out (or abbrev)</td>
<td>about seventeen workers attended 7 sessions</td>
</tr>
<tr>
<td>Uppercase</td>
<td>the delegate from N.D. came to Moorhead, Minn.</td>
</tr>
<tr>
<td>Lowercase</td>
<td>majored in English literature at Msum</td>
</tr>
<tr>
<td>Remove space</td>
<td>Bachelor's Degree in Mass Communications</td>
</tr>
<tr>
<td>Insert space</td>
<td>extra effort will be required</td>
</tr>
<tr>
<td>Retain original</td>
<td>according to sources close to the president</td>
</tr>
<tr>
<td>Delete</td>
<td>will be completed in early January</td>
</tr>
<tr>
<td>Insert word</td>
<td>the very exciting climax of the film</td>
</tr>
<tr>
<td></td>
<td>the exciting climax of the film</td>
</tr>
</tbody>
</table>
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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- 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

Industrial design

Communication design

Information architecture

Usability engineering

User Interface engineering

Human-computer interaction

Human factors

Interaction design
Office Schematic / Desktop Metaphor
"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 Interface

User-Interface Design

To make it easy to compose text and graphics, to do electronic filing, printing, and mailing all at the same workstation, requires 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 displays all texts and graphics as they will be printed. In addition, familiar office objects such as documents, folders, file drawers and in-brackets 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 move, copy, delete or properties command keys. Text and graphics are edited with the same keys.

---|---|---|---|---|---
8000 | 1500 | 6000 | 2000 | 3000 | 4000

Activity under the old and the new keyboard.

1981 Xerox Star Workstation Interface
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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)
Looking back...

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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 centred design process)
User-experience design

Industrial design

Communication design

User Interface engineering

Information architecture

Usability engineering

Human-computer interaction

Human factors

Interaction design
User-experience design

Industrial design

Communication design

User Interface engineering

Usability engineering

Information architecture

Human-computer interaction

Human factors
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.technica.com/images/gui/11-Mac1.gif
Macintosh System 1.0. January 1984
WIMP
-stands for "window, icon, menu, pointing device"
-coinde by Merzouga Wilberts in 1980
-is often incorrectly used as an approximate synonym of "GUI".

http://media.arstechnica.com/images/gui/11-Mac1.gif
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: