Interaction Design (IxD)  
(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 & 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 homework

- **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)

http://www.designinginteractions.com/img/interviews/GillianCramptonSmith.jpg

source: [2]
705 ALMA ST.

ALL SYSTEMS NORMAL
01:53P Wed 09/04/02
Looking back... (Discussion Part)
Looking back... (Discussion Part)

-shaping our lives through digital artefacts...
Looking back...

-shaping our lives through digital artefacts...
-good IxD refers to a “mental model”
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
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-languages of interaction design
Looking back...

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-good IxD refers to a “mental model”
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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
New Challenges

(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
History

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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/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
Douglas C. Engelbart: *Augmenting human intellect: A Conceptual Framework*

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”).
1. **Artefacts**—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 organises his goal-centered (problem-solving) activity.
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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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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Palo Alto Research Center

founded 1970 by Xerox
founded 1970 by Xerox
Marc 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 freed information from the limits of individual memory. Today this technology is ubiquitous in sophisticated countries. Not only do books, magazines and newspapers convey written information, but so do street signs, billboards, sheet music and even graffiti. Carry any pen or typewriter or computer, and someone will say that computers are not just a “user interface” problem. If you imagine a world where your phone is always connected and you can type on it, or think about a world where your computer screen is always visible and you can type on it, or think about a world where your computer screen is always visible and you can type on it.

Silicon-based information technology, in contrast, is far from being a part of the environment. No more than 50% of people are using computers in their daily lives, and the computer nonetheless remains largely a tool of its own. It is approachable only through complex interfaces that have nothing to do with the tasks for which people use computers. The state of the art is perhaps analogous to the period when screens had to be closed as much as making ink or baking clay as they did about writing.

The essence of what surrounds personal computers is not just a “user interface” problem. Our colleagues at the Center for Advanced Communications at the University of California, Berkeley, think that the idea of a “personal” computer itself is misplaced and that the views of laptop machines, blackboards and “knowledge navigators” are only a transitional step toward achieving the full potential of information technology. Such machines cannot truly make computing an integral, invisible part of people’s lives. 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 systems to vanish into the background.

Such a disappearance is a fundamental consequence not of technology but of human psychology. Whenever people learn something sufficiently well, they cease to be aware of it. When you look at a street sign, for example, you absorb its information without consciously perceiving the act of reading. Computer scientists, in contrast, are not immune to the same phenomenon. When they use a computer, they are often unaware of its presence. The computer is simply a tool to get their work done. The computer is not a part of the environment. It is an object that is used to perform tasks.

The idea of integrating computers seamlessly into the world at large has run counter to a number of pessimistic predictions. "Ubiquitous computing" is this context does not mean just computers that can be used to find information, but allows them to be used to capture, analyze, and even generate new information. For example, a computer that can analyze social media trends and generate new information about a company's market position could be used to make decisions about future strategies. Ubiquitous computing also allows for the creation of new forms of communication and collaboration, such as the "sneakernet," where people can communicate without a network, and the "social network," where people can connect with others based on shared interests.


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...

-exploration of the design space through the integration of industrial design
-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

Communication design

Information architecture

User Interface engineering

Human factors

Usability engineering

Human-computer interaction

source: [3]
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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>Indent for paragraph</th>
<th>The injured were taken to MeritCare Hospital.</th>
</tr>
</thead>
<tbody>
<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. The driver of the southbound vehicle</td>
</tr>
<tr>
<td>Transpose (letters, words)</td>
<td>the spokesperson MeritCare said</td>
</tr>
<tr>
<td>Use figures (or words)</td>
<td>about seventeen workers attended 7 sessions</td>
</tr>
<tr>
<td>Spell out (or abbrev)</td>
<td>the delegate from N.D. came to Moorhead, Minn.</td>
</tr>
<tr>
<td>Uppercase</td>
<td>majored in english literature at Msum</td>
</tr>
<tr>
<td>Lowercase</td>
<td>Bachelor's Degree in Mass Communications</td>
</tr>
<tr>
<td>Remove space</td>
<td>extra effort will be required</td>
</tr>
<tr>
<td>Insert space</td>
<td>according to sources close to the president</td>
</tr>
<tr>
<td>Retain original</td>
<td>will be completed in early January</td>
</tr>
<tr>
<td>Delete</td>
<td>the very exciting climax of the film</td>
</tr>
<tr>
<td>Insert word</td>
<td>the winning 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)
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)
Looking back...

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- 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)
Office Schematic / Desktop Metaphor
Xerox Alto 1973

http://dl.maximumpc.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
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, 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 fonts and graphics as 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 pushing the MOVE, COPY, DELETE or PROPERTIES programmed keys. Text and graphics are edited with the same keys.

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 Apple’s “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.
-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)
User-experience design

Industrial design

Interaction design

Usability engineering

Human-computer interaction

Human factors

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Communication design

Information architecture
User-experience design

Industrial design

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Human factors
User-experience design

Information architecture

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Interaction design

Usability engineering

Human factors

Human-computer interaction

Industrial design
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"
-coinined by Merzouga Wilberts in 1980
-is often incorrectly used as an approximate synonym of "GUI".

http://media.ars technica.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: