User Centered Design Process
January 4 - March 1

History of user centered design in HCI
March 6, March 8

Academic HCI
March 13, March 15

Special topics in HCI
March 20, March 22

Course Review
March 27

Presentation 2
March 29

Last class
April 3
History

Stages in the development of a technology
(by David Liddle)

Enthusiast stage

Professional stage

Consumer stage

http://www.candstech.com
https://www.falmouth.ac.uk/
https://www.slashgear.com/
“The need for the future is not so much computer oriented people as for people oriented computers” (Nickerson, 1969)
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Concept of Digital Natives and Digital Immigrants, Marc Prensky, 2001
User Centered Design in Computer Systems

History

- Waterfall Model
- GUI and WIMP
- Agile Development

HFE and Ergonomics

Socio-Technical Systems Design

Cognitive Psychology

Cooperative Design

Interaction Design
1880-90s - Frederick Taylor - "scientific management" method

Goals of occupational health and safety and Productivity

Maximizing the safety and healthiness of work environments and work practices

Gained popularity in 1940s

Concept of ergonomic fit:
“fitting the man to the job and the job to the man”
(Alec Rodger)

http://www.computerhistory.org/timeline/1951/
User Centered Design in Computer Systems

History

- Waterfall Model
- Term was coined by Fred Emery and Eric Trist (1950s)
- Describes systems that involve a complex interaction between humans, machines, and the environmental aspects of the work system

Socio-Technical Systems Design

STSD guiding principles:
- Meaningfulness of tasks
- Whole task and minimal critical specification
- Responsible autonomy
- Adaptability

HFE and Ergonomics

Cognitive Psychology

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STSD guiding principles:
- Meaningfulness of tasks
- Whole task and minimal critical specification
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- Adaptability
“Digital Equipment Corporation (DEC) had a family of expert systems that were developed using STSD to support the configuration and location of DEC VAX computers”

Cognitive modeling - approximation of human reasoning
Developed as a method in late 50s - early 60s
Computational process as a metaphor for human reasoning:
- Input
- Memory and storage
- Information manipulation
- Output

Early models focused on separate stages, then
Unified theories of cognition by Allen Newell, 1990
How people reason and problem solve when using complex interfaces?
Originated in Scandinavia in 1970s from an action research approach.

In North America, referred to as participatory design / co-design approach.

Focused on process, not style.

<table>
<thead>
<tr>
<th>Degrees of participation:</th>
<th>Weak participation</th>
<th>Strong Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction</td>
<td>Indirect</td>
<td>Direct</td>
</tr>
<tr>
<td>Length</td>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td>Scope</td>
<td>Small</td>
<td>Large</td>
</tr>
<tr>
<td>Control</td>
<td>Very limited</td>
<td>Very broad</td>
</tr>
</tbody>
</table>

Baek, Eun-Ok, et al. "User-centered design and development."
The design of the interaction between users and products

First design programs:
- the Visible Language Workshop, Muriel Cooper, MIT, 1975
- the Interactive Telecommunications Program, Martin Elton, NYU, 1979

The first academic program: