Vorlesung
Mensch-Maschine-Interaktion

Communication

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WS2003/2004
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Conversation
Social aspects of HCI

- Conversational rules
  - Turn taking
  - Back channeling to signal to continue/stop
  - Farewell rituals
  - Implicit and explicit cues
- Breakdowns in conversation
  - Common and resolved in dialog
- Technology mediated communication
  - What rules apply?
  - How are breakdowns handled?
  - How do people make it work?
    - Phone, SMS, e-mail, chat?

(Preece, Rogers & Sharp, chapter 4)

Context Call

(European Project 1999)

Sharing of context before the call is established

- **In real life we have social protocols for initiating conversation**
  - social skill – knowledge from both sites required!
  - trained from early childhood on

- **context matters - manly implicitly**
  - how important is it for me?
  - how convenient seams it for the other person?
  - relation between the communication partners?
  - what type of conversation will it be?
  - is it socially acceptable (topic/situation)?
- **To avoid situations like:**
  - "if I would have known that you are in a meeting I would not have called you."
  - "if I would have known that you are still at work I would not have called you."
  - …
  - "if I would have known that the phone is off and I can only leave a message I would not have called."

Context Call cont.

Implementation example – extended phone book

- **User experience vs. technology**
- **phone users can selectively share context**
  - information about the situation
  - information about availability
  - ...
- **caller can decided**
  - knows her own constraints
  - has some information about the other side
  - can judge if the call will be appropriate
  - context matters - manly implicitly

Synchronous computer-mediated communication

- Conversations are supported in real-time through voice and/or typing
- Examples: video conferencing and chatrooms
- Benefits
  - Can keep more informed of what is going on
  - Video conferencing allows everyone to see each other providing some support for non-verbal communication
  - Chatrooms can provide a forum for shy people to talk more
- Problems:
  - Video lacks bandwidth so judders and lots of shadows
  - Difficult to establish eye contact with images of others
  - People can behave badly when behind the mask of an avatar

(Preece, Rogers & Sharp, chapter 4)

Asynchronous communication

- Communication takes place remotely at different times
- Email, newsgroups, computer conferencing
- Benefits include:
  - Read any place any time
  - Flexible as to how to deal with it
  - Powerful, can send to many people
  - Can make saying things easier
- Problems include:
  - Flaming
  - Spamming
  - Message overload
  - False expectations as to when people will reply

(Preece, Rogers & Sharp, chapter 4)

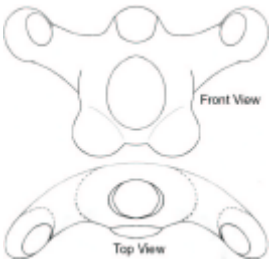
New communication technologies

- Move beyond trying to support face-to-face communication
- Provide novel ways of interacting and talking
- Providing presence and awareness

- Examples include:
  - Communicating implicit information (who is at the other side?, what are they doing?, …)
  - Communicating emotions (how do people at the other end of the communication line feel?)
  - Communication with more sense (e.g. touch)

The Hug: An Exploration of Robotic Form For Intimate Communication

Carl DiSalvo et al.



More in the Seminar “Novel User Interfaces” and in the reading…
http://www.peopleandrobots.org/admin/uploads/disalvoROMAN.pdf

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Models and Users (3)

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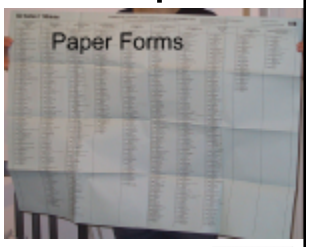
Table of Content
Models and Users (3)

Metaphors and Digital Remakes of Conventional Products

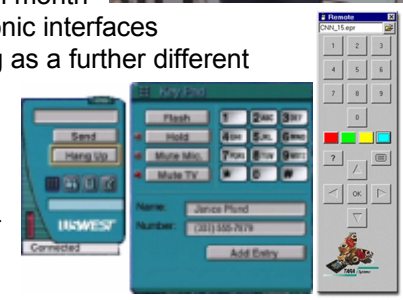
- Limitations of the physical world vs. advantages of the digital
- Sticking close the original (conventional) product in your design may be tempting, but you probably will miss advantages provided by the digital solution
- Basic rule
  - Build on the knowledge that is available from the conventional product
  - Integrate novel concepts offered by the digital solution (short cuts)
- Applies to digital “remakes” and Metaphors

Metaphors and Digital Remakes of Conventional Products - Examples

- Paper forms
  - in a digital form it is possible to eliminate fields that are not applicable based on a previous choice



- Calendars
  - in paper there was one page for each month
  - this limitation is not present in electronic interfaces
  - so why not have additionally scrolling as a further different visualization view in the digital …
- Remake control metaphor
  - E.g. for a software music player
  - constrained of the physical devices – buttons, no display, …
  - why replicate in the digital?



Example Conceptual Model (1) Supporting a Traffic Warden

- Analyse Problem Space
  - Understand and analyse the problem space
  - Approach that leads to ideas
- Understand the User's Goals
  - What is the user (or are the users) trying to achieve
  - Understand the tasks involved
  - Relate the user's goals and tasks to the business model of the envisioned solution
- Which tasks can humans perform better than systems?
- What is the computer and Technology good at?
- What parts are error prone?
- What parts are boring/tedious/dangerous?
- What Technologies exist that can help?

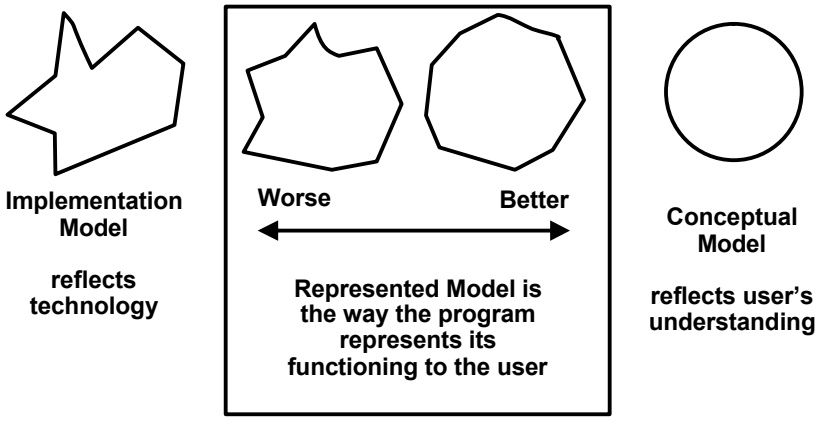
Example Conceptual Model (2) Supporting a Traffic Warden

- Make an explicit model
  - Identify explicitly the design options
  - Keep problem space and user's goals in mind
  - Make the conceptual model explicit (sketches, video, …)
- Activity based model / interaction mode
  - E.g. instructions, conversing, manipulating and navigating, exploring and browsing, or combination
- Interaction style:
  - E.g. command, speech, data-entry, form fill-in, query, graphical, web, pen, augmented reality, gesture, image capture
- Interaction metaphors
  - What objects have a meaning in the domain?
  - What activities are meaningful in the domain?
- Interaction paradigm
  - E.g. desktop, handheld, wearable, pervasive

Represented Model

- Chosen in the user interface design process
- The way in that the functionality of a system is presented to user
- “behavioural face”
- The represented model bridges the gulf between the implementation model and the user’s conceptual model
- The closer the represented model to the users conceptual model the easier is it for the user to operate
- The represented model however must deal with constraints from the implementation model (e.g. remote access, possible error conditions)

Implementation, Represented, Conceptual Model



From A. Cooper, About Face 2.0

Software is Often Close to the Implementation Model (1)

- If the UI is not designed but created on the fly as the software is implemented this will inevitably reflect the structure of the implementation, e.g.
  - Buttons to call functions
  - Dialog or Window for each module
  - Web page for each transaction step
- The resulting UI may still follow all guidelines, but logics and math (the thinking behind the implementation) is not widely known, e.g.
  - Boolean operators are used differently in computer science and natural language
  - Example: “give me all names of members in London **and** Manchester” → is a **OR** query in the database

Software is Often Close to the Implementation Model (2)

- Technical constraints are represented in the interface – often for no reason – and may have an influence on the metaphors used, e.g.
  - Local disk vs. remote disk
- Assumptions are made that need knowledge of the implementation model
  - Drag & drop in Windows
    on the same drive → move vs. on different drives → copy
  - Saving a file – why do I need to save a file? I have just written it!
  - USB memory – why do I have to stop the device before I remove it physically?

Bridging the gap between Conceptual and Implementation Model

- Educating the user about the implementation model
  - Traditional approach of training people to use a software system
  - In many cases there is no alternative
  - For new media applications education the user is difficult
  - In some cases it may be possible to educate the user “on the fly”
- Providing a represented Model that is close to the conceptual model
  - Knowingly using a design/representation that is not related to the implementation model
  - Creating systems that mediate between the conceptual and implementation model

- Design and model the user interface explicitly
- Record the mapping and relationship to the implementation