

# Vorlesung Mensch-Maschine-Interaktion

## **Process, Methods & Tools**

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# Development Process

Separation between interaction design and technical design

- For interactive applications a separation into a two stage process is often advisable
  
- 1st – Interaction design (iterative)
  - concept
  - Interaction analysis
  - Prototypes
  - Evaluation
  - Stable and tested design
  
- 2nd – technical realization
  - Technical analysis
  - Technical specification (e.g. architecture, platform)
  - Implementation
  - Evaluation and Quality management

# Development Process

Logical User Centered Interactive development Methodology (LUCID)

<http://www.cognetics.com/lucid/index.html>

- Stage 1: **Envision**
  - Develop UI Roadmap which defines the product concept, rationale, constraints and design objectives.
- Stage 2: **Analyze**
  - Analyze the user needs and develop requirements.
- Stage 3: **Design**
  - Create a design concept and implement a key screen prototype.
- Stage 4: **Refine**
  - Test the prototype for design problems and iteratively refine and expand the design.
- Stage 5: **Implement**
  - Support implementation of the product making late stage design changes where required. Develop user support components.
- Stage 6: **Support**
  - Provide roll-out support as the product is deployed and gather data for next version.

# Brainstorming Sessions I

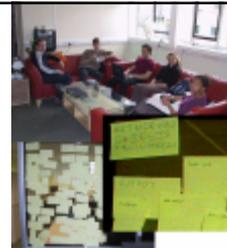
- Collect as many ideas/issues as possible
- Rules
  - During brainstorming NO criticism is allowed
  - Developers must not say “this can’t be implemented”
  - Graphics designers are not to comment on drawing styles
- Do a selection in a second step



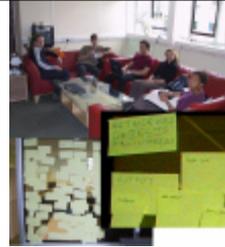
(Pin&Play Meeting, July 2002, Lancaster)

# Brainstorming Sessions II

- Some hints
  - Get a mixed set of people (developer, manager, admin, writer, students, sales, customer)
  - Allow people to have freaky / crazy / unrealistic ideas
  - Use low technology (e.g. paper, pens, post-its, posters)
  - Do not allow to fetch / lookup additional material during the session
  - Go to a neutral / different / inspiring place (e.g. meeting room in another building, meeting room in a hotel at the Starnberger See, a hut in the mountains)
- If you get stuck?
  - Ignore boundaries – assume there is a little magic available
  - Assume there is a human brain insight
  - Get another person to help (e.g. get another person and explain where you are stuck)
  - Go for a walk



# Brainstorming Sessions III



- Organize the ideas
  - Involve everybody
  - Identify concepts and themes
  - Group ideas that express the same concept or belong to a common theme
  - Identify conflicting ideas
  - Identify parallel ideas
  - Identify ideas that exclude each other
  
- Document the results!!!
  - Capture the raw material (usually you won't need it but it is no effort...)
  - Extract the design/product concepts
  - In the best case you have several competing concepts that can be evaluated

# Ethnographic Observation in HCI

- Traditional ethnographers immerse into other cultures over an extended period (weeks, months, years) and thereby study and understand the culture
  
- Ethnographic observations in HCI are a means of data collection
- Usually observing potential users (typical users) over a period of hours, days, or weeks. Include critical times (e.g. shift change)
  
- Goal
  - Acquire information that is required to create user interfaces and interaction mechanisms suitable
- Risk
  - Misinterpretation of observations (often due to a lack of insight)
  - Changing people's behavior, disrupt processes
  - Overlooking / missing important facts
  
- Some problems occur infrequently – if you can not observe them conduct interviews

# Guidelines for Ethnographic Observation in HCI

(Shneiderman, chapter 3)

- Preparation
  - Understand the current system in the context of the organization and culture – don't be ignorant!
  - Describe the goals of the observation and prepare questions
  - Get permissions for observations and interviews
- Field Study
  - Establish contact, talk to people
  - Observe, interview, and collect data in situ
  - Document observations
- Analysis
  - Compile data, summaries and quantify
  - Provide interpretation of the data
  - Refine the goals and record issues about the process
- Reporting
  - Describe findings – possibly for different audiences

# Ethnographic Observation in HCI

## Video Observation

- Capture work practices on video (consider legal and ethical issues)
- Different view points simultaneously
  - Camera overlooking the workplace
  - Camera looking from the screen to the user
  - Camera capturing what the user sees (e.g. camera mounted to glasses)
- User's view often provides significant insight
- Asking user's to talk (to describe) while doing a task provides generally a lot of useful information
- Raw material alone is of little value – need for analysis
- Analyzing video observations is hard and time consuming!
- Can be very useful
  - Multiple people interact (and observation of an individual and the whole group is of interest)
  - for tasks that are done very quickly or hard to observe
  - where observation is not possible (e.g. for safety or security reasons)
- Users may not like it! If they agree a person observing them they still may disagree to be videoed

# Ethnographic Observation in HCI

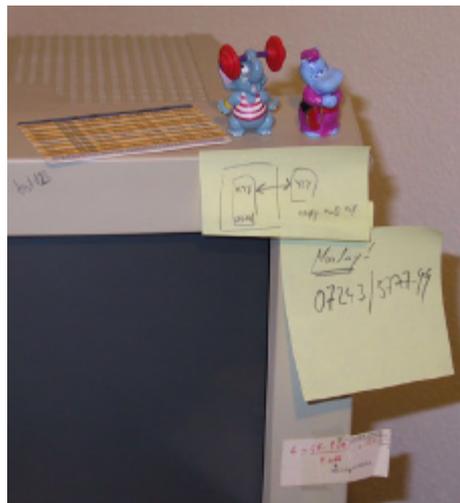
## Contextual Enquires

- Learning about the way user's work in the users workplace
- Understanding the work practices and why certain tasks are performed
- Master – apprentice relationship
  - User (master) teaches the observer (apprentice) what they do and how they do it
  - master explains while working
  - Validate your observation by re-phrasing and discuss interpretations made
  - apprentice asks whenever it is not clear
- This method allows to understand how people work and WHY it is done in a certain way
- The observer must be prepared before the interview (understand the language)
- Limit the time of contextual interviews

# Ethnographic Observation in HCI

## Interviews

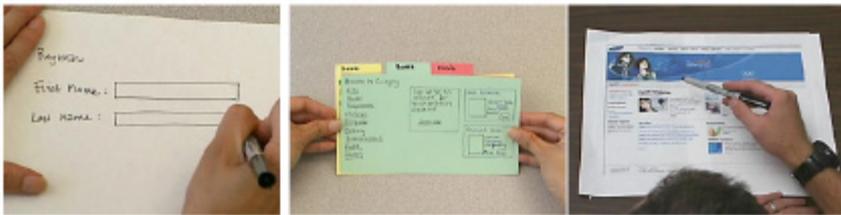
- Prepare a set of questions beforehand (e.g. what do you want to know from the user)
- Tell people what are you doing
- Use capture (audio/video) if your communication partners agree
- If applicable capture (take photos/video) material they use in their work (e.g. a manual, a checklist, the post-its around the screen)
- Be nosy ... ask for details
- If possible summaries what your interview partner told you (to minimize misunderstandings)



# Scenario Development

- Especially useful for novel systems where there is little experience or knowledge
- Important methods
  - **general scenario** (fictional story featuring the product to be developed and explaining implications on users experience) – similar to describing conceptual models
  - **“day in the life” scenario** (creating a fictional user, describing a day in her life augmented with the product to be developed)
  - **situation scenarios** (fictional story concentrating on a specific situation, e.g. an emergency case)
- Forms of presentation
  - writing
  - video
  - acting/playing it – connected to paper prototypes

## Video – N&N Paper Prototyping



Nielsen Norman Group Video:  
Paper Prototyping: A How-To  
Training Video



# References

- Alan Dix, Janet Finlay, Gregory Abowd and Russell Beale. (1998) Human Computer, Interaction (second edition), Prentice Hall, ISBN 0132398648 (new Edition announced for October 2003)
- Ben Shneiderman. (1998) Designing the User Interface, 3rd Ed., Addison Wesley; ISBN: 0201694972
- A. Cooper. About Face 2.0