Übung zur Vorlesung
Mensch-Maschine-Interaktion

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Design Cycles & Prototyping

• Creating prototypes is important to get **early** feedback
  – from the project team (prototypes help to communicate)
  – from potential users

• Different types of prototypes
  – Low-fidelity prototypes (e.g. paper prototypes, sketches)
  – Hi-fidelity prototypes (e.g. implemented and semi-functional UI, could look like the real product)
  – Fidelity is referring to detail
Design Cycles & Prototyping

• Tools & Methods
  – Sketches & Storyboards
  – Paper prototyping
  – Using GUI-builders to prototype
  – Limited functionality simulations
  – Wizard of Oz
Sketches & Storyboards

- Storyboards as in movies
  - A picture for each key scene
- Sketch out the application
  - Key screens
  - Main interaction
  - Important transitions
- Helps to communicate and validate ideas
  - Easy to try out different options.
- Ignore details, e.g.
  - what font to use, how icons will look like
Paper Prototypes

• Specify the set of tasks that should be supported
• Create a paper prototype using office stationery
  – Screens, dialogs, menus, forms, …
  – Specify the interactive behavior
• Use the prototype
  – Give users a specific task and observe how they use the prototype
  – Ask users to “think aloud” – comment what they are doing
  – At least two people
    » One is simulating the computer (e.g. changing screens)
    » One is observing and recording
• Evaluate and document the findings
  – What did work – what did not work
  – Where did the user get stuck or chose alternative ways
  – Analyze comments from the user
• Iterate over the process (make a new version)
Low-Fidelity Prototyping

• Advantages of paper prototypes
  – Cheap and quick – results within hours!
  – Helps to find general problems and difficult issues
  – Make the mistakes on paper and make them before you do your architecture and the coding
  – Can save money by helping to get a better design (UI and system architecture) and a more structured code
  – Enables non-technical people to interact easily with the design team (no technology barrier for suggestions)

• Get users involved!
  – To get the full potential of paper-prototypes these designs have to be tested with users
  – Specify usage scenarios
  – Prepare tasks that can be done with the prototype
Minimize the time for design Iterations
Make errors quickly!

- Idea of rapid prototyping
- Enables the design team to evaluate more design options in detail
- If you go all the way before evaluating your design you risk a lot!
- Sketches and paper prototypes can be seen as a simulation of the real prototype

- Without paper prototyping:
  - Idea – sketch – implementation – evaluation

Slow Iteration

- With paper prototyping:
  - Idea – sketch/paper prototype – evaluation – implementation - evaluation

Quick Iteration
Video – N&N Paper Prototyping

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

- Looks & feels like the final product to the user
  - Colors, screen layout, fonts, …
  - Text used
  - Response time and interactive behavior
- The functionality however is restricted
  - Only certain functions work (vertical prototype)
  - Functionality is targeted towards the tasks (e.g. a search query is predetermined)
  - Non-visible issues (e.g. security) are not regarded
- Can be used to predict task efficiency of the product
- Feedback often centered around the look & feel
- Standard technologies for implementation
  - HTML, JavaScript
  - Flash, Director, Presentation programs
  - GUI Builder (e.g. Visual Basic, Delphi, NetBeans)
Video – N&N High Fidelity

Functional Prototypes

• Often used as synonym for high-fidelity prototype

• To encourage feedback that is not related to the look & feel it may be helpful to make the GUI look rough, see reading: R. Van Buskirk and B. W. Moroney: Extending Prototyping, IBM Systems Journal - Vol. 42, No. 4, 2003 - Ease of Use.
Addition – about Prototypes
Horizontal Prototyping

• Demonstrate the feature spectrum of a product
• Allows the user to navigate the system
• The actual functions are not implemented
• Helps to evaluate/test
  – Navigation (e.g. finding a specific function or feature)
  – Overall user interface concept
  – Feature placement
  – Accessibility
  – User preferences
• Applicable in low-fidelity prototyping and high-fidelity prototyping
• Used in early design stages
  – To determine the set of features to include
  – To decide on the user interface concept
• Example: overall usage of a mobile phone
Vertical Prototyping

- Demonstrate a selected feature of a product
- Allows the user only to use this specific function
- The details of the function/feature are shown/implemented
- Helps to evaluate/test
  - The optimal design for a particular function
  - Optimize the usability of this function
  - User performance for this particular function
- Mainly used in high-fidelity prototyping but can be applicable to low-fidelity prototyping
- Used in early design stages
  - To compare different designs for a specific function
- Used in later design stages
  - To optimize usage of a function
- Example: a new method for writing SMS on a mobile phone
Wizard-of-Oz

• “The man behind the curtain”
• Basically don’t not implement the hard parts in the prototype – just let a human do
• Typical areas
  – Speech recognition
  – Speech synthesis
  – Annotation
  – Reasoning
  – Visual Perception
• Provides the user with the experience without extensive implementation effort for the prototype
Video – N&N Wizard Of Oz

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