Übung zur Vorlesung Mensch-Maschine-Interaktion

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Wintersemester 2006/2007

Design Cycles & Prototyping

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

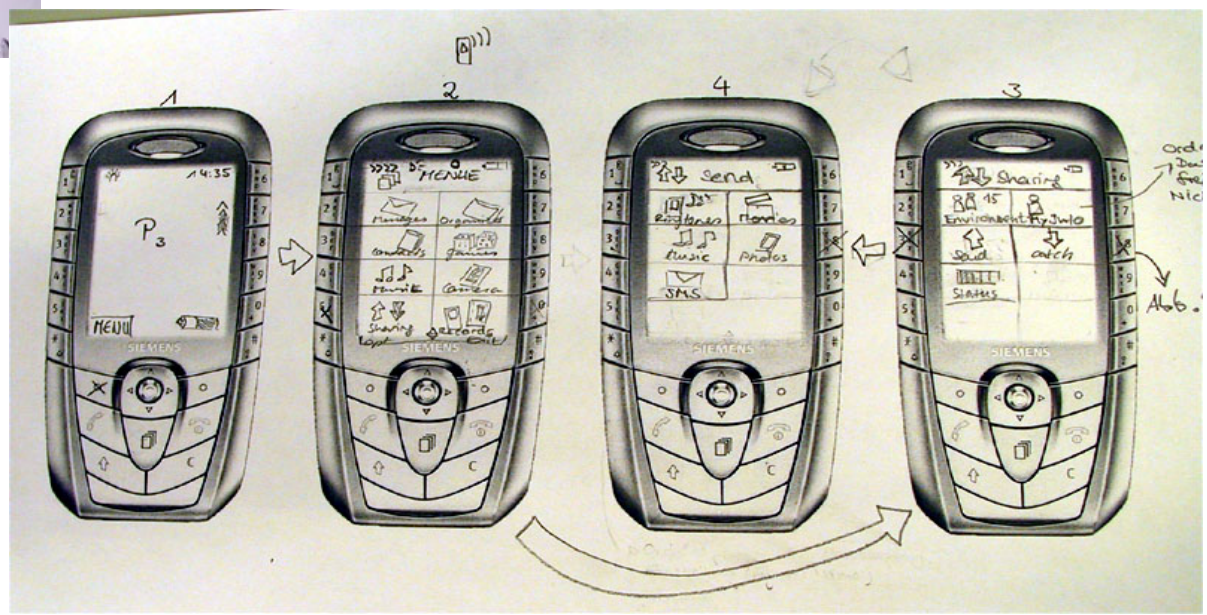
- Different types of prototypes
  - Low-fidelity prototypes (e.g. paper prototypes, sketches)
  - Hi-fidelity prototypes (e.g. implemented and semi-functional UI, could look like the real product)
  - Fidelity is referring to detail

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

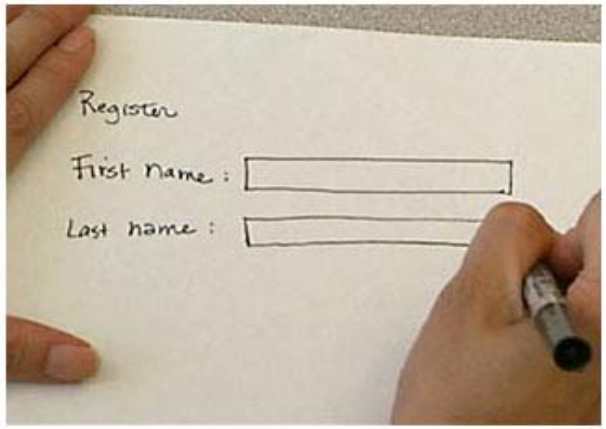
Slow Iteration

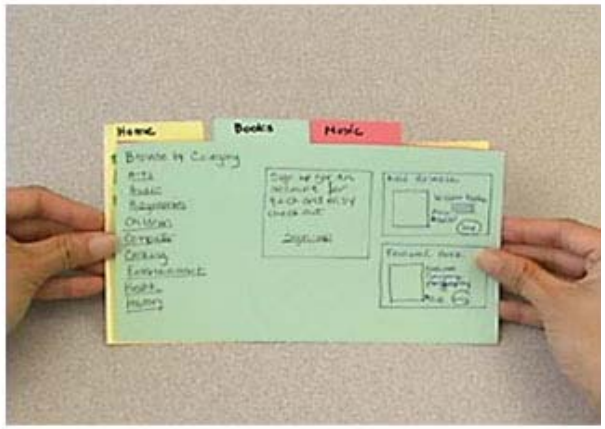
- With paper prototyping:
  - Idea – sketch/paper prototype – evaluation – implementation - evaluation

Quick Iteration

Slow Iteration

Video – N&N Paper Prototyping





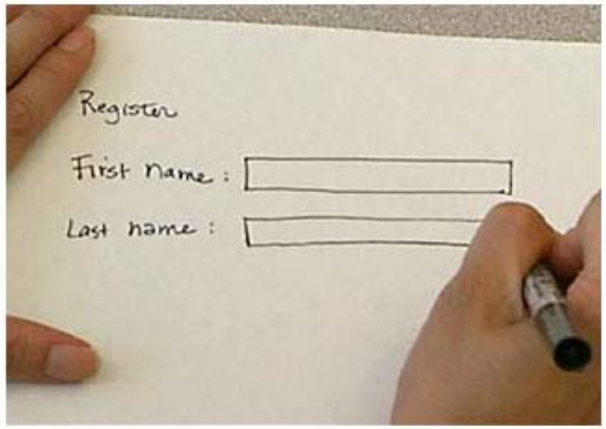
Nielsen Norman Group Video:

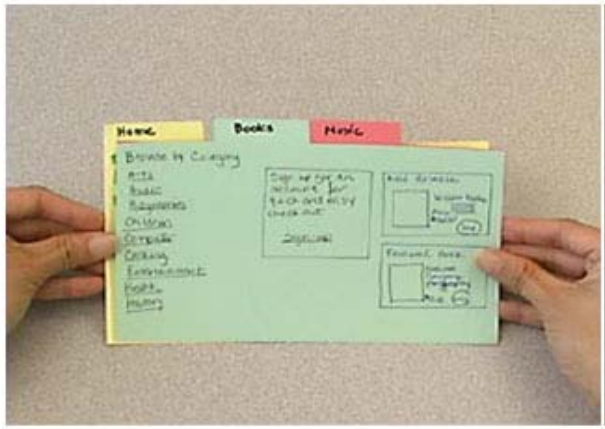
Paper Prototyping: A How-To Training Video

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





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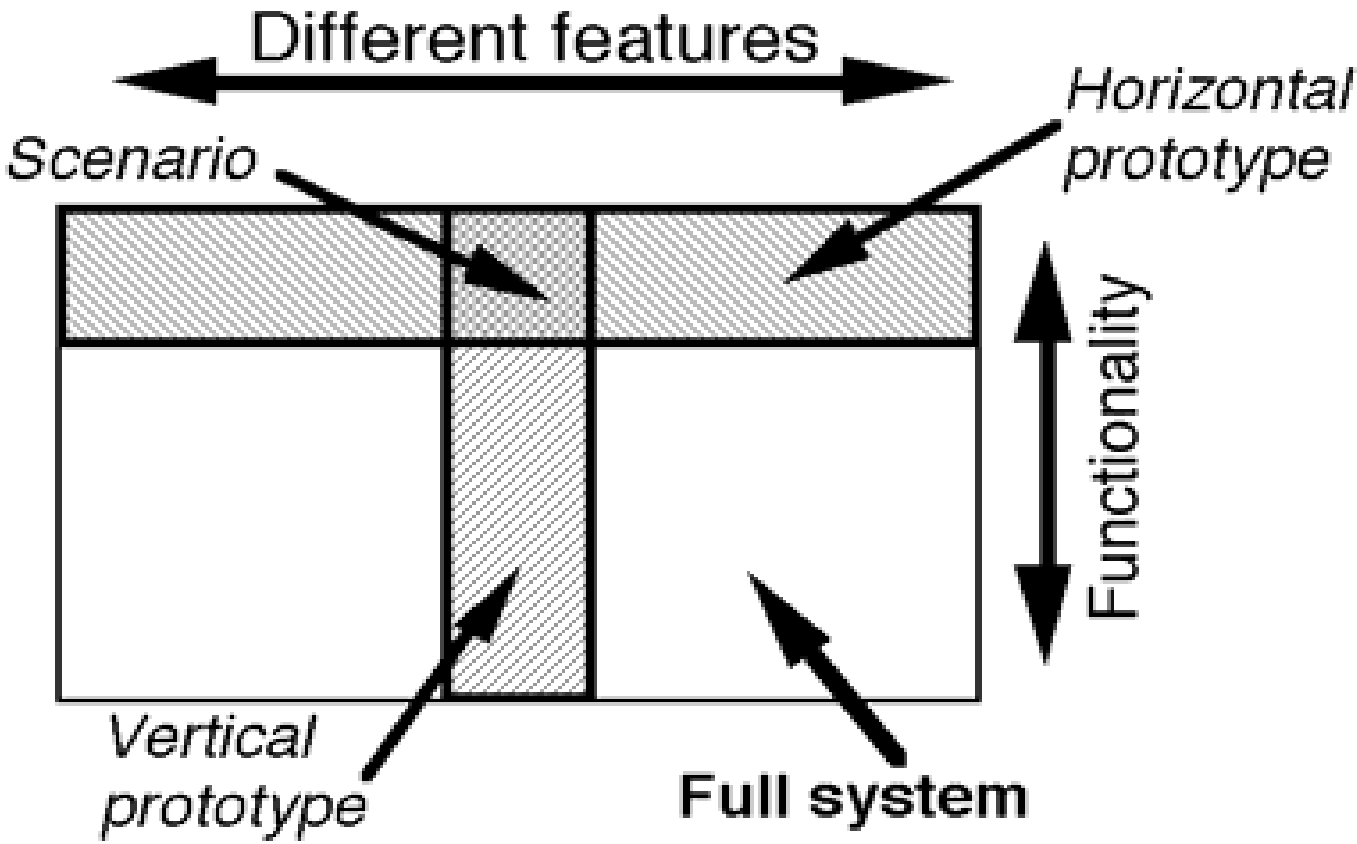
Functional Prototypes

- 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



http://www.useit.com/papers/guerrilla_hci.html

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

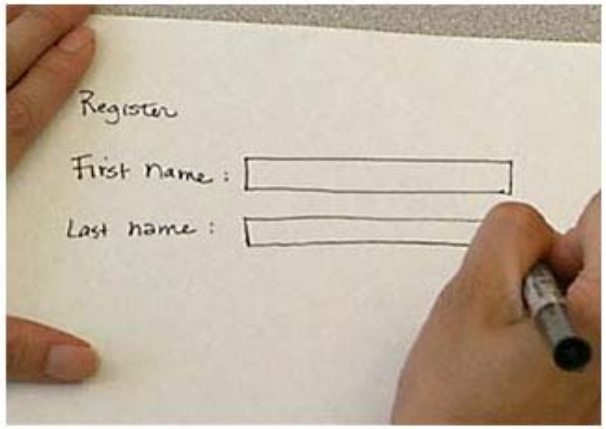
Vertical Prototyping

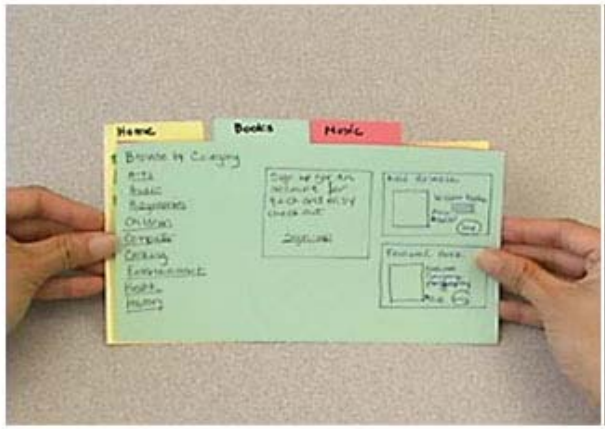
- Demonstrate a selected feature of a product
- Allows the user only to use this specific function
- The details of the function/feature are shown/implemented
- Helps to evaluate/test
  - The optimal design for a particular function
  - Optimize the usability of this function
  - User performance for 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





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