Design and Evaluation of Interactive Systems

Designing your system (Phase III)

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lectures adapted from Wendy E. Mackay

Homework due today
8 January 2013

midterm evaluation (content adjusted)

1. Individual: Interview, web search
2. Group: Executive summary PDF (5 pages max) to describe:
   - Who is the audience of your system? (User Profile)
   - What is the design concept?
   - Initial design scenario
   - NO Storyboard: will do in class in January

Keep in mind you will need to hand in all exercises done in class at the end of the class. Prepare for it during the holidays …

Generative Design

Discovery
Who is the user?

Invention
What is possible?

Design
What should it be?

Evaluation:
Does it work?

Generative Design

Discovery
Who is the user?

Invention
What is possible?

Design
What should it be?

Evaluation:
Does it work?
Design: What should it be?

- Collect or sample information
- Design brief
- + results from earlier phases

- Analyze information
- Interaction table
- Alternative designs

- Create resources for design
- Design scenario
- Storyboard
- Mockup
- Video prototype

Remember there are many methods!

<table>
<thead>
<tr>
<th>Understand the user</th>
<th>Analyze the user</th>
<th>Invent new ideas</th>
<th>Prototype the system</th>
<th>Evaluate the system</th>
<th>Redesign the system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fly-on-the-wall observation</td>
<td>Interactive thread</td>
<td>Critical incident interview</td>
<td>Usability study</td>
<td>Focus group</td>
<td>Generative Walkthrough</td>
</tr>
<tr>
<td>Ethnography</td>
<td>Contextual inquiry</td>
<td>Design space</td>
<td>Usability study</td>
<td>Technology probe</td>
<td>Design Artefact</td>
</tr>
<tr>
<td>Questionnaire</td>
<td>Task analysis</td>
<td>Sketching</td>
<td>Wizard of Oz</td>
<td>Design critique</td>
<td>Design rationale</td>
</tr>
<tr>
<td>Cultural probes</td>
<td>Scenario analysis</td>
<td>Video Prototyping</td>
<td>Design rationale</td>
<td>Design critique</td>
<td>HCI</td>
</tr>
<tr>
<td>Grounded Theory</td>
<td>Protocol analysis</td>
<td>Participatory Design</td>
<td>Design rationale</td>
<td>Design critique</td>
<td>HCI</td>
</tr>
<tr>
<td>Cognitive Psychology</td>
<td>Cognitive Psychology</td>
<td>Computer science</td>
<td>Design rationale</td>
<td>Design critique</td>
<td>HCI</td>
</tr>
</tbody>
</table>

Different Types of Scenarios

- Different types of scenarios
- All scenarios tell a step-by-step story that illustrates how people interact with technology in a real-world setting

- **Use scenario**: focus on what is now
  - Draws from real-world observation of people who face challenges that a new technology might address

- **Design scenario**: focus on what could be
  - Builds upon use scenario and speculates how these people would interact with your new technology in this setting

Edit your existing use scenario

Ensure that it is written like a tiny one-act play, sub-divided into one-paragraph micro scenes that describe a series of ‘interaction points’

- Include one or more personas (characters), each with: name, age, gender, motivation, usually with a profession, expertise, usually with a goal or motivation

Create one or more realistic setting(s):
- date, time, place, context

Identify a series of events over a period of time
Revise it to create a design scenario

Think about your design concept, including the alternatives and the function-interaction table

Go through each interaction point:
what does the user see (or hear)?
what does the user do?
what does your system do?

Remember: tell a story, step-by-step, about how your personas will interact with your new system.

Use the process to help you define the details of your system

Scenarios: what to do

Create a theme ... and variations to explore alternatives

Balance both 'normal' and unusual situations especially breakdowns and errors (.. and normal is rarely normal)

Consider external events that affect interaction as well as motivated action by the user

Include patterns of interaction over time including repetitions and wasted effort

Highlight surprises

Scenarios: what NOT to do

Avoid 'selling' the technology
Explore options rather than one solution

Avoid irrelevant detail
Focus on interaction, not users' personal lives

Avoid flowery description
Stick to the facts

Avoid humor (or not, up to you)
Difficult to do well
Often distracting

Exercise: Create a design scenario

Create a realistic account, ideally grounded in real-world observation of users, of a series of activities that serve to illustrate and challenge the use of a new technology

Goal: to help you think through interaction issues NOT to 'sell' the prototype

Techniques:
Extreme users
Theme and variations
Breakdowns
Exercise: Design scenario

Include:
- Title: Event or technology being designed
- Who?: Characteristics: name, sex, age, profession, ...
- What?: Event that sparks the story
- Where?: Location
- When?: Date, time

Motivation: Why is this happening?
Situation: Relevant detail to aid understanding

Prototyping interaction

Design scenario
- Imagine the system from the user's perspective

Wizard of Oz
- Simulate the system live
  - with a human operator 'behind the curtain'

Video Prototype
- Illustrate the use of the system in context
  - “sketch” dynamic, interactive user experiences

Simulation
- Create a working subset of the system

What is a prototype?

Prototype = concrete representation of an interactive system

Characteristics
- Representation: form of prototype sketches - simulation informal - complete
- Precision: level of detail watch - interact
- Interactivity: interaction
- Evolution: lifecycle of prototype throw out - iterative

The choice of prototype depends upon the design phase and the specific needs of the designers

Prototyping helps you ...

Consider different design alternatives

Ensure usability under diverse conditions

Help users and other stakeholders imagine the interface

Focus on problematic parts of the interface
### Rapid prototypes

**Goal:** Design the interface as rapidly as possible to explore ideas

**Materials:**
- Paper (white, colored, transparencies, post-its)
- Colored pens and markers
- Tape, glue, scissors, cutters
- Foam, cardboard, etc.

Show how a user will interact with the device you are designing.

### Representation

**Paper prototypes**
- Easy and fast to create and to throw away
- Most useful at the beginning of the design process
  - Examples: sketches for an idea for an icon, storyboard sequences, mockups of screens, video prototypes of a complex interaction

**On-line prototypes**
- Use the computer, longer to create, more polished
- More appropriate later in the design process
  - Examples: animations, interactive videos, interface builders

### Precision

**Lo fidelity (lofi) prototypes with little detail**
- Great for rapid exploration of ideas
  - Example: paper sketches, SILK

**High fidelity (hifi) prototypes, very detailed**
- Good to communicate specific design considerations
  - Example: dialog box with layout alternatives

Note: A detailed representation is not always precise. It is possible to omit aspects that have not yet been decided.

### Details

A system can be good in theory but unusable in practice because of flaws in the interface ... even small ones.

Good prototypes let designers work with different sets of details at the same time.

Good prototypes allow users to envision the final system: but also to feel comfortable suggesting changes.
### Level of Interactivity

**Non-interactive** *(fixed)*
- No interaction, but can show potential interaction
- Example: a video clip showing user interacting with a device

**Low interaction** *(pre-determined path)*
- Can test several alternative forms of interaction
- Example: designer shows a screen shot, user indicates her action, the designer shows the result

**High interaction** *(open)*
- Users interacts with the system, with some limitations
- Example: Wizard of Oz or computer-based simulation

### Wizard of Oz

**Technique for prototyping novel user interfaces**

**Wizard of Oz:** Designer ‘plays computer’ to create an interactive experience for the user

Useful for creating video prototypes but also for creating live experiences that rapidly explore different design alternatives

### Evolution

**Rapid prototypes:** Early exploration of diverse alternatives
- Easy to create, check, throw away afterwards
- Example: paper prototype or interface like SILK

**Iterative prototypes:** create individual modules
- Create successively more refined versions
- Example: series of prototypes, successively more detailed

**Evolving prototypes:** may become the final product
- Different completed sections are successively added
- Example: a software module has functionality added before being added to the final system

### Prototyping strategies

**Horizontal:** complete one layer of functionality at a time
- Example: develop the interface details without a working database

**Vertical:** complete functionality of part of the system
- Example: develop the spelling checker first

**Task:** create functionality necessary for a single task
- Example: develop the interface for adding and editing an image

**Scenario:** create functionality needed to run a scenario
- Example: develop the functions needed to edit three images and spell-check a document within a design scenario

Design Scenarios lead to storyboards

Title: What is the name of your system? (you may use a subtitle too)
Who? Personas: name, sex, age, profession, ...
Where? Location
When? Date, time
Motivation: Why is this happening?
Situation: Relevant detail to aid understanding
Story: Paragraph-by-paragraph description of who does what and why, from one interaction point to the next

Regular storyboard

Identify key interaction points in the scenario
Examine the key ideas from the design space (brainstormed ideas)
Illustrate the interaction between user and novel system
Describe key issues on the right

Storyboard structure

another example

this one focuses on a complete interaction

From Wendy Mackay
another example

this one focuses on detailed interaction sequences
from the book “Sketching User Experiences: The Workbook”

In-class Exercise

Storyboard
60 min

Prototyping

Next we will turn our storyboard to a prototype

Video prototyping

Goal:
Provide more detail on the interaction with the designed system
Finalize details
See if things do not work well in sequence
Explore interesting alternatives (if you have more than one ideas
for specific interactions)
Demonstrate what the final interface could look like in order to
get feedback
Video prototyping

Procedure:
- Begin with existing design scenario and storyboard
- Shoot your storyboard in sequence
- Use “Wizard of OZ” to show ideas
- Shoot a title card for the video at least 15sec
- Use also if you have multiple sequences
  (sequence 1,2,3 … – take 1,2,3 …)

The goal is to share this with others, so quality matters!

Roles: Cameraman, a director, if needed narrator, makers, actors

Remember:
- keep camera stable (hold against your body)
- 3 - 2 - (1)
- practice and reshoot
- use “take” cards in same color for every scene you reshoot
- use stop-motion, projectors, transparencies, etc. for effects

Observations from other video sessions:
- Too much talking over
- Camera position, or item position changed
- “helper hands” visible

In-class Exercise

Video Prototype
60 min