Designing Interactive Systems

rooms: B109 – B107
time: 14h00 – 17h00

Wendy E. Mackay
Tuesday, 11 December 2012
lecture 3

* topics we did not have time to cover in class

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Go to: insitu.lri.fr/People/Mackay
and click on: Design and Evaluation of Interactive Systems
or
Website: http://insitu.lri.fr/People/DesignAndEvaluationOfInteractiveSystems

Generative Design

Discovery
Who is the user?

Invention
What is possible?

Design
What should it be?

Evaluation
Does it work?

Redesign
How to improve it?

Today

Homework: User profiles, personas, use scenarios (group)
Web search ideas (individual)

Lecture: Developing a design concept

Class work: Create a design concept
Consider at least three alternatives
Functional Table

due Dec. 18: Design concept & alternatives (group)
Design scenario (with 6-8 interaction points) Functional Table

Next week: Film a video prototype, based on your design scenario and storyboard
Design and Evaluation of Interactive Systems

Design: What should it be?

- Collect information
  - Design brief
  - plus results from earlier phases
- Analyse information
  - Function-Interaction table
  - Design alternatives
- Resources for design
  - Design scenario
  - Storyboard
  - Mockups & Paper prototypes
  - Video prototype

How do you find the design concept?

- Based on your studies of users, choose a problem to solve specific to your audience.
- Generate a variety of ideas that offer potential solutions.
- Create a design space to embody the set of alternatives.
- Choose a concept to explore not just functionality, but also interaction.

Design brief

- Key project planning document, usually generated by a client for a design firm.

  - Specifies:
    - Design problem: what the project has to achieve,
    - Design method: means, timeframes and measures of success

  - Remember:
    - One can always question the design brief.
    - Your job is to match a solution to a problem.
    - Finding the right problem may be more of a challenge than creating a solution.

Creating a concept

- Define your project within the scope of the design space.
- Identify a real, specific problem.
- Real problems tend to be complex and messy.
  - Look for a small, simple aspect of a real problem.
  - Rather than a stereotypical ‘toy’ problem.
- Trade-off between power and simplicity: less is more.
- Be curious, be creative, seek surprises and new opportunities.
Design and Evaluation of Interactive Systems

Design concept

Starts vague, becomes clearer over time
change direction as you get new insights
consider alternatives

Some examples:

Remote Window

Create an interactive window on the wall
Always connected to Grandma’s house
Walk up and create link

Tangicam

Child’s camera
Frames the image
Squeeze handles to take a picture
Hold, share, wear around neck, throw like a frisbee

A-book: Physical ‘magic lens’

Turn your smart phone into a physical interactive ‘magic lens’
Annote physical objects
Interactive jewelry
Identify someone via a ring or bracelet
Communicate with a smart phone

Lego Znap
Pose design questions about how users will interact
Propose ways to address them
How to introduce ‘big moments’ into the model?

How to describe a design concept?
- How will the system work?
  - Functionality: what should it do?
  - User guide: how does it work?
  - Scenario: what happens in real-world contexts?
- Justification
  - What are the alternatives?
  - What are the advantages and disadvantages of this solution?
Iterating on a design concept

Based on the use scenario, personas and user profile together with the key ideas from your design space.

Discuss your design concept:
- Consider how the users in the scenario will react.
- Does it respond to real user needs?
- Is it specific?
- Is it technically possible?

Build on your design resources:
- User perspective:
  - User profile
  - Personas
  - Use characteristics
  - Use scenario

System possibilities:
- Design problem
- Design space dimensions
- Key or favorite ideas
- Design space

Exercise: Design concept

What is your design concept?

Describe your design idea:
- what technology does it use?
- how does it help the users?

Identify three alternative designs:
- don’t stop with your first design idea
- don’t explore 50 ideas
- carefully consider three...

Design alternatives

Which technologies?
Which interaction techniques?
Which metaphors?
Which use settings?

Function-Interaction Table

Goal
- Top-down description of the key functions
- Exploration of the interaction details

Procedure
- List the conceptual objects in the system
- List the functions available for manipulating those objects
- Describe how each object is represented in the interface
- Describe how to access each function via interaction techniques
- Describe which interaction techniques affect which functions
- Ensure completeness
- Ensure coherence
Function-Interaction table

Identifies the relationships among:
- Objects-of-interest to the user:
  - Nouns: song, calendar entry, video clip, sport
- Functions that users can perform on these objects:
  - Verbs: search, delete, send, register
- Interaction techniques so users can manipulate objects:
  - Phrases: scroll through song list, click on delete button, type email address, tap tennis ball

Interaction includes:
- System representation: appears on the screen
- User action: what the user does
- Result: how the system responds

Exercise: Function-Interaction table

Choose three objects-of-interest
Choose three functions
Choose three interaction techniques for each object-function pair

object-of-interest: song
function: search
interaction techniques: scroll down a list of songs, hum the song, click on a song in a tag cloud

Design space

Gather ideas relevant to your design problem:
- Some are your own brainstormed ideas
- Some are from others, e.g., your web search

Extract different design dimensions that characterize the ideas

Place the ideas along the design dimensions:
- At least three ideas per dimension
- Generate new ideas if you find gaps
- Explore the intersections of different dimensions

Select a subset of dimensions and ideas to create a design space
**Exercise: Design space**

- Identify the key ideas
- Extract different design dimensions that characterize the ideas
- Place the ideas along the design dimensions
  - at least three ideas per dimension
  - generate new ideas if you find gaps
  - explore the intersections of different dimensions
- Select a **subset** of dimensions and ideas to create the design space

**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 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 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.

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**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

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**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, at least for now
  - Difficult to do well
  - Often distracting

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**Exercise: Create a 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

Homework: due Dec. 18

Design concept & alternatives (group)
Design scenario (with 6-8 interaction points)
Functional Table

Next week: Bring a video camera (or ipad) if you have one
We will: turn your design scenario into a storyboard
create cardboard mockups of the technology
record your first video prototype

The complete version of the video prototype is due on:
January 8, 2013