Advanced Design of Interactive Systems

Lecture 4: Participatory Design

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Participatory Design lecture

Introduction
Participatory Design workshops
Technology probes
Creativity methods
Field study
Interactive thread
Structured observation
Conclusion

Chapter 5: Participatory Design
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Participatory Design

... focuses on situated interaction between users and technology
... involves users throughout the design process
... is fundamentally generative not evaluative
... values iteration and rapid redesign
... explores breakdowns and the unexpected not just perfection

Participatory Design

Good User Experience design involves (at least):
user interviews, focus groups & user testing

Participatory design actively involves users throughout the design process

Why involve users throughout?

costs time and effort ...

But users can also:
save time
prevent making major errors
contribute to new insights
generate context-tested user innovations

Participatory Design

Users are expert at:
the *experience* of the design problem
but *rarely* the design solution

Don't ask users to design
Do ask them to participate!
Participatory Design

Compare ‘subject matter experts’ and ordinary users

Subject matter experts:
- provide expert advice on content
- often want to design solutions for you
- may not take the ‘ordinary user’ perspective

You need both!
Example: Boeing test pilots

Participatory Design

Key challenge: How to get access to users?

Some users are hard to get:
- Fragile: children, elderly, handicapped
- Busy experts: pilots, doctors, lawyers
- Location: waste water plant, air traffic control room

Participatory Design

How do you talk to them?
They come to you
- great if you can do it,
lacks context
Lab, office, café
Workshop setting

You go to them
- more trouble
worth it
Their workplace
Their home
Class
Conference
Reception
Museum

Participatory Design

How do you manage their expectations?
Context may be:
- Educational vs. Research vs. Corporate

Be careful what you promise:
Exploring ideas vs. building them a custom product

Be careful of their backgrounds:
example: ‘yellow family’
Participatory Design

Paper and video prototyping
lets everyone participate on an equal basis

Why participatory design?

Asking users ≠ letting them show you
It is hard to figure out what the user experiences…
especially if you are not one of your own users.

Your instincts are not enough and often wrong
…and get worse as you delve deeper into the design.

You will understand the system more
…but the user less.

Examples:

General Motors executives thought GM quality was great.
Every morning, their cars went to the shop
Experts tuned them, cars rarely broke down
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Examples:

General Motors executives thought GM quality was great.
  Every morning, their cars went to the shop
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BUT GM customers had a very different experience
  No daily tune-ups – poor reliability
  Executives had no clue about what was wrong

Examples:

California Department of Motor Vehicles was very, very slow
  Executives skipped the lines
  All other drivers forced to wait with regular customers

Innovation: Make all executives wait in line
  Result: Many innovations and reduced lines

Your design instincts are not good
  if you lack the user’s ‘lived’ experience

**Set up the environment so users experience real conditions**
Cultural Probes

Purpose
- Exploration of Research/Design Space
- Challenge assumptions
- Validate predictions
- Look for unexpected
- Gather subjective, intimate material
- Dialog with users

Deployment
- Involve users
- Consider privacy
- Required resources
- Length of time

Classic probes:
- Disposable camera with questions
- Diaries
- Dream recorder

Cultural probes
Cultural probes for InterLiving project

“Probe kit” sent to users with stamped envelopes to return materials

Perspectives on understanding users

<table>
<thead>
<tr>
<th>Scientific view</th>
<th>Design perspective</th>
<th>Engineering perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collect data about users</td>
<td>Seek design inspiration</td>
<td>Address a given problem</td>
</tr>
<tr>
<td>‘Objective’ analysis</td>
<td>Redefine the design problem</td>
<td>Make technical trade-offs</td>
</tr>
<tr>
<td>Inform designers</td>
<td>Generate innovations</td>
<td>Ensure that it works “in situ”</td>
</tr>
</tbody>
</table>

Technology Probes

Goals:
- Inspire users and designers to generate new design ideas
- Understand how a technology is used in a real world setting
- Study emergent behavior patterns around new technologies
- Create common ground for subsequent design

Combine three perspectives:
- **Scientific**: collect data about users in situ
- **Engineering**: test technical infrastructure
- **Design**: inspire new ideas
### Technology probes

<table>
<thead>
<tr>
<th>Three phases:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduce technology to users</td>
</tr>
<tr>
<td>2. Observe and interpret use in situ</td>
</tr>
<tr>
<td>3. Participatory design to explore alternatives and new ideas</td>
</tr>
</tbody>
</table>

### Compare:

<table>
<thead>
<tr>
<th>Technology probes</th>
<th>Prototypes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplicity:</td>
<td>Single function</td>
</tr>
<tr>
<td>Usability:</td>
<td>Not the focus</td>
</tr>
<tr>
<td>Logging:</td>
<td>Major focus</td>
</tr>
<tr>
<td>Flexibility:</td>
<td>Open-ended</td>
</tr>
<tr>
<td>Originality:</td>
<td>Unusual, provocative</td>
</tr>
<tr>
<td>Design cycle:</td>
<td>Early-middle</td>
</tr>
<tr>
<td>Longevity:</td>
<td>Throw away</td>
</tr>
<tr>
<td>Concept:</td>
<td>Still unclear</td>
</tr>
</tbody>
</table>

### Example: InterLiving

**Goals:**
- learn about family communication
- discover real-world technological constraints
- spark new ideas

**Technology probe, not a prototype:**
- Simple, single function technology
- Installed in home settings over time
- Open to reinterpretation by users
- Instrumented to log data
- Follow-up prototyping in participatory design workshops

### Participatory design with families

**Design methods:**
- Cultural probes
- Design workshops
- "Home" work
- In situ observation
Example: MessageProbe

- Hand-written notes on a tablet screen
- Synchronous or asynchronous
- Zoomable interface
- All notes shared among all households
- Temporal or selected order

Example: VideoProbe

- Images from a video camera
- No motion 3 sec. = 1 image
- Image archive
- Shared between households
- View images with a remote control
- Images fade unless explicitly saved

Example: MessageProbe

- Conversations between grandpa and grandchildren

Example: VideoProbe

- Testing in the home:
  - Must work for families
  - And sisters in tiny Paris apartments

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We’re going away for a week.
Happy Vacation to everybody!
Example: Marker Clock

Peripheral awareness for seniors at home
- Monitoring vs. Peer-care
- Implicit sharing: movement on clock face
- Explicit sharing: leaving markers
- Field tested with seniors in France
- Easily interpretable by people who know each other’s rhythms and routines

Example: MirrorSpace

Instead of a high-resolution video image
- Blur the image according to the distance:
  - Far away: blurry image
  - Approach: crisp image
- Users control their privacy simply by moving in space

Example: MirrorSpace

Exhibited at:
- La Villette
- Pompidou Centre
- We notice the people who know each other approach and play with each other’s faces...
- Strangers immediately step back

How to design a probe

Decide what you would like to find out about your users
- Choose an existing device that can:
  - Capture relevant information from them
  - Provide a new experience for them
  - Inspire ideas relevant to your project
- Cultural probes: Discover user characteristics
- Technology probes: Inspire new designs
Interactive Thread at DIS 2002

**Goal:** Create a dynamic, interesting event that
- increases audience participation?
- shares multi-disciplinary design methods?
- collects data for the interLiving project?

**Solution:**
- An 'interactive thread' of 10 design exercises
  woven through the 3-day conference
  - 15-minutes at the end of each 90-minute session

Interactive Thread at DIS 2002

**Begin with a focal point:**
Henrik Färling's 3 meter long poster included drawings of real stories collected from the interLiving project

**Ten 10-minute exercises built on each other**
# Interactive Thread at DIS 2002

<table>
<thead>
<tr>
<th>Front</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe goal and instructions</td>
<td>Specific task and workspace</td>
</tr>
</tbody>
</table>

**What worked well:**
- Poster as focal point
- Early, short exercises
- Data gathering exercises
- Participant interaction

**What worked less well:**
- Removing poster after day 1
- Longer exercises
- Too many exercises
- Stress from linked exercises

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# Interactive Thread at UIST ’07

**Two exercises:**

<table>
<thead>
<tr>
<th>Conference activity</th>
<th>Banquet activity</th>
</tr>
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<tbody>
<tr>
<td>Timeline to capture key influences from the past</td>
<td>Brainstorm new ideas from old publications</td>
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Interactive Thread at UIST ‘07

Capture the past on a timeline
Create interaction point cards
Participants fill in the history of interactive technology
Place them on the timeline

Possible interactive thread events

Post-class exercise
students perform exercises just before the bell rings
Experiment debriefing
subjects interview each other after a session
Corporate meetings
expose everyone to interactive design techniques
Seminars or conferences (sessions or banquets)
generate specialized interviews from doctors, air traffic controllers, fighter pilots and other hard-to-access users
Participatory design workshops

- Bring together users and designers
- Create an environment for collaborative exploration of ideas
- Activities can:
  - capture experiences
  - create scenarios
  - brainstorm ideas
  - explore ideas
- Do not ASK users what they think
- Instead, help them show you

Borrow design activities from class

- About users: Interviews, current scenario, persona, cultural probe, technology probe
- Create ideas: Brainstorming, video brainstorming, web links
- Prototype: Future scenario, storyboard, video prototype, design concept, design diagram
- Evaluate: Design walkthrough, field studies, experiments
- Redesign: Generative walkthroughs, structured observation

Homework

- For Tuesday, 11 February
  - Each group should have:
    - Concept
    - Initial storyboard
    - Feedback on Collaborative Video Clipper
    - Design Method Poster
**Wednesday: Design a participatory design workshop**

- Decide on: participants, setting, schedule, activities
  - Ratio of team members to users?

- Preparation:
  - Materials? Pre-workshop activities?

- Workshop activities:
  - Which activities from class are appropriate?
  - Can you think of any others?

- Follow-up activities:
  - What do participants get as a result of participating
    (Need not be money or gifts … but they should benefit)