Data Gathering and User Research
Monday, February 13, 2012
Instructor: Jon Froehlich
TA: Kotaro Hara
Parts of this lecture are based on lectures by Professor Bjoern Hartmann at the University of California, Berkeley; Professor Scott Klemmer at Stanford University; Professors Julie Kientz and James Fogarty at the University of Washington, Seattle; Professor Leah Findlater at the University of Maryland, College Park
Hall Of Fame/Shame

[From CMSC434 Student Kay Singh]
Hall Of Fame/Shame

The Autoliv Night Vision 2 System with Pedestrian Detection

[http://youtu.be/zij1Fs5yJTY from CMSC434 student Kay Singh]
KNOWING YOUR Food Better, Keeping YOUR BODY Healthier
Team Project Proposal

Due: Sunday, February 19th, 2011 @ 11:59:59PM

Team Assignment Deadline

Team Project Proposal

Due: Sunday, February 19th, 2011 @ 11:59:59PM

Assignment Overview

Your assignment is to expand and refine the existing one-paragraph “elevator pitch” for your project into a longer, more comprehensive three- to four-page project proposal. Imagined figures, tables, and images are free and do not contribute to the page count. The appendix (optional) does not contribute to the page count either. You will work on the assignment in your four-person team.

Project Proposal Sections

A successful project proposal will have, at the very least, the following seven labeled sections. Please email me or send to Piazza if there are questions or concerns about these sections.

Section 1. Title and Abstract

The title can be an updated form of the title from the “elevator pitch” and the abstract will simply be a refined version of your “elevator pitch.” Note, however, that the abstract must be no longer than six sentences. Roughly, your abstract should contain a motivating sentence about the problem and why it’s important, a sentence on past solutions along with their limitations, a sentence on your proposed solution, and a sentence on how you plan to evaluate the effectiveness of your proposed solution, and a sentence on who this will benefit and why. Your abstract must address each of the aforementioned points.

Section 2. Introduction

The introduction should clearly articulate the problem and why it is important. It should also include specific high-level goals for the project (i.e., remember from class what does a “win” look like for this project, and what metrics are you going to use to know that you got there). You should be sure to describe how your proposed solution is novel in at least three of the above mentioned points. The introduction should be two to three paragraphs.
Your assignment is to extend and refine the existing one paragraph “elevator pitch” for your project into a longer, more comprehensive three to four page project proposal.

Note: images, figures, and tables are free and do not contribute to the page count.

The appendix (required) does not contribute to the page count.

You will work on this assignment in your four-person team.
A successful project proposal will have, at the very least, these seven sections:

1. Title and Abstract
2. Introduction
3. Background and Review of Past Work
4. Target Users
5. Scenario Walkthrough
6. References
7. Appendix
Proposal Grading

Worth 5% of your overall grade in the class

You will be graded on how well you execute the aforementioned seven sections

You will be additionally graded on creativity and writing quality

I will also factor in peer review to help assess the quality of the work and the output from each team member
Proposal Submission

Do not email this submission!

Instead, post it directly on CMSC434 Wiki

Each team must make a wiki for their project
[Buxton, Sketching User Experiences]
[Buxton, Sketching User Experiences]
Digital Notebooks

Microsoft OneNote

Evernote
http://www.cs.umd.edu/class/spring2012/cmsc434/protected/PicturesFromInClassBrainstorming.zip
Upcoming
In-Class Proposal Presentations
Wednesday, February 22nd
So, where are we?

We’ve defined high level problems but...

- What specific problems exist to be solved here?
- How do we know that these problems exist?
- How do we know when we’ve solved the problem?

This is what we’re addressing today.
Todays Main Points

Do not just trust your instincts to make design decisions.

Observe target users in context to inform your design.

Instincts are still important!
Instincts!

“The intellect has little to do on the road to discovery. There comes a leap in consciousness, call it intuition or what you will and the solution just comes to you and you don’t know where and why.”

Albert Einstein
Patent Clerk / Nobel Prize Winner
Give you the tools to combine...

- observations and other data
- inspirations
- your intellect
- your intuition
No one sets out to make a bad design
Existing copiers judged “as too complicated” by customers, but why?

Lucy Suchman, UC Berkeley PhD in Anthropology, suggests videotaping interactions
Task: Make two-sided copies of 100 page original

 Perhaps Jane is dumb:

 Two "average" users making two-sided copies of a 100 page original

[Suchman, CHI 1983]
Observation showed that difficulties were not due to lack of sophistication of users, but due to problems “reading” (making sense of) an unfamiliar artifact.
Xerox Commercial

[Suchman, CHI 1983]
What the customer really needed:
“Getting the design right and the right design”

Bill Buxton
Designer / Researcher / Writer / Thinker

[Buxton, Sketching User Experiences]
User Research
finding out about people, problems, and needs

We’ve defined high level problems but...

- What specific problems exist to be solved here?
- How do we know that these problems exist?
- How do we know when we’ve solved the problem?

This is what we’re addressing today
Formative methods help us understand the problem and our users to inform our design.

Evaluative methods can also help us detect mistakes and refine our design.

Evaluative methods help us understand how well our design works.
User Research Methods

Formative → Build → Evaluative

Formative:
- Ethnography
- Interviews
- Surveys
- Cultural Probes
- Focus Groups
- Diary Studies
- Experience Sampling Studies
- Studying Similar Products
- Interaction Logging of Past Product / Early Prototype
- Studying Past Product Documentation

Evaluative:
- Ethnography
- Interviews
- Surveys
- Focus Groups
- Diary Studies
- Experience Sampling Studies
- Interaction Logging
- Studying Past Product Documentation
Surveys

Focus Groups

Video Ethnography

Observational Techniques

Statistical
Macro techniques (many people)

Saying

Doing

Explicit opportunities and needs

Latent opportunities and needs

Micro techniques (few people)

Interpretive

[Drawing: Designing Interactions by Bill Moggridge, 2007]
Key Point: Triangulation

All user research techniques have their own limitations

Use multiple techniques to fully understand a design scenario

- Choose techniques that account for the weaknesses of each other
- Choose techniques to cover both depth and breadth of the user experience
Why can’t we just ask users what they want?
Users’ Words are Unreliable

People are notoriously bad at predicting what they would use or would prefer when it is only hypothetical.

They can much better respond to actual, concrete things, or make comparisons.

This highlights the importance of observation and of prototypes!
Plus, the risk is that you might be simply refining an unoptimal solution
Plus x2...
“It’s not the consumers’ job to know what they want.”

- **Steve Jobs**
  - Designer / Inventor / Creative Genius
“If I had asked my customers what they wanted, they would have said a faster horse.”

Henry Ford
Inventor / Car Salesman
So, often it’s better to watch what people do than to only design solely for what they say.

When: what people say !≠ what people do

This disconnect is interesting!
“You can observe a lot by just watching”

Yogi Berra
MLB Player / Quote Machine
Observing People

What do we “see”?
- Opportunities for new designs
- Breakdowns
- Workarounds
- Mismatches between what users say and do
What’s **wrong** with the measuring cup?
Show us how you measure.

[http://vimeo.com/3200945]
“Nobody mentioned that this is a problem because this is an **accepted part of the process of measuring**. We are happy when we see this problem, this **clear inefficiency that nobody articulates**.”

**Alex Lee**  
OXO International, President
Users can however...

- Tell you what they are doing right now
- Tell you how they are feeling right now
- Tell you what their goal is right now
Design a process that would **lead to new kinds of systems** rather than iterating existing systems.

Prototyping and usability testing could iterate existing systems but could not suggest wholly new directions. CI Meets this challenge by **putting designers and engineers directly in the customers’ work context**, thereby giving them the richest possible data to invent from.

*Contextual Design*

Hugh Beyer and Karen Holtzblatt
Malcolm Gladwell on Journalism

from the introduction to What the Dog Saw

[As seen in S. Klemmer, Stanford, CS147]
Applying Anthropological Methods
Ethnography

History

[http://youtu.be/f22VsAlOwbc]
Why Ethnography?

Traditional science attempts to understand a group or individual objectively

– Understand the subject of study from the outside in a way that can be explained to “anyone”

Ethnography attempts to understand a group or individual phenomenologically

– Understand the subject of study as the subject of study understands itself
Wait!
What does this have to do with design?
Remember IDEO?
Four Ethnographic Principles

- Natural settings
- Holism
- Descriptive
- Subjects' point-of-view

Natural Setting

- Conducted in the setting of the participant
- Focus on naturally occurring, everyday talk and action
- Cannot use laboratory or experimental settings to gather this type of data

Behavior can only be understood in its larger social context; that is, holistically.
Descriptive

- Study how people actually behave, not how they ought to behave
- Defer judgment
- Data is usually qualitative, not quantitative

Members’ Point Of View

- See through participants’ eyes in order to grasp how they interpret and act in their world.

DesignEthnography

• Quicker than traditional ethnography
  o Usually days, weeks, or months, not years.

• Sometimes called “concurrent ethnography”
  o The ethnography is being done at the same time that design is under way.

• Goal is to generate insights for informing inspiring design

• Translating from raw field data to design ideas can be difficult
Documenting Fieldwork

- Notebook
- Camera
- Audio recorder

Collect, collect, collect!
Ultimately, this is the data that you use to inform and justify your design!
Homework

1. Piazza response to Blomberg and Burrel *An Ethnographic Approach to Design* due Wednesday February 15th by 10AM

2. Team project proposals are due Sunday, February 19th at 11:59:59PM
Discuss and work on team project proposals!