HUMAN-COMPUTER INTERACTION

Scott Klemmer
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Human Computer Interaction
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Design

Implementation

Evaluation
Good Design
Bad Design costs lives, money, & time
Do the calculation.
The Joy of Good Design
Pretty good is pretty easy
I’ll show you how
Design for People

- People’s tasks, goals, and values drive development
- Work with users throughout the process
- Assess decisions from the vantage point of users, their work, and their environment
- Pay attention to people’s abilities and situation
- Talk to the *actual* experts
To learn more...

• HCI Classes
• Don Norman, The Design of Everyday Things
• Annual ACM CHI Conference
THE BIRTH OF HCI

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A scientist of the future records experiments with a tiny camera fitted with universal-focus lens. The small square in the eyeglass at the left sights the object (LIFE 19(11), p. 112).
The Graphical User Interface
The Mouse and Hypertext
Inspires Alan Kay
“The best way to predict the future is to invent it”
The “Long Nose” of Innovation (Buxton)
To learn more about this history...

- Fred Turner, From Counterculture to Cyberculture
- John Markoff, What the Dormouse Said
- Bill Buxton, Sketching User Experiences
- Johnny Lee, Interface Technologies That Have Not Yet Left The Lab
EVALUATING DESIGNS

motivation and menu

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How can we measure success?

How do we know?
Why Evaluate Designs with People?
What are some things you might want to learn about an interface? How would you find them out?
Different Methods Achieve Different Goals

Some Examples...
Usability Studies

informal    formal
Surveys & Focus Groups

San Francisco Street Light Fixtures Survey

Existing Street Light Options

Fixture Alternate A
Lamp Type: High-pressure sodium
Typical Use: Street light
Configuration: Single head or twin head
Sample Location: Dolores Street
Height: 28'

What is your opinion about Fixture Alternate A

- I like the look of this fixture. It would be great for the streets in my neighborhood.
- I like the look of this fixture, but it doesn’t fit in my neighborhood.
- I don’t like the look of this fixture.

http://sfpuc.c.topica.com/maapeWDab5NjaaU3oZpeaeQK6z/
Feedback from Experts
Comparative Experiments

Joel Brandt et al., comparing Community Help and Blueprint
Participant Observation

e.g., Sutton & Hargadon, brainstorming groups
Simulation & Formal Models

courtesy Peter Pirolli

courtesy Shumin Zhai
Issues to Consider

- Reliability/Precision
- Generalizability
- Realism
- Comparison
- Work Involved
What do you want to learn?
THE POWER OF PROTOTYPING

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Prototyping Grounds Communication

Images Courtesy Bjoern Hartmann
Prototyping is a strategy for efficiently dealing with things that are hard to predict.
Focus on Goals
Evolve the Designs
beginning  time  end

inspired by Buxton, *Sketching User Experiences*
SANTA CLARA, California -- People thought Jeff Hawkins was crazy when they saw him taking notes, checking appointments, and synchronizing a small block of wood with his PC, pretending all the while that the block was a handheld computer.

“If I wanted to check the calendar I'd take it out and press the wooden button.”

The rights of a prototype

• Should not be *required to be* complete
• Should be easy to change
• Gets to retire
What Do Prototypes Prototype?

**Feel** What might it look like?

**Implementation** What might it work like?

**Role** What might the experience be like?
LEARNING / COMMUNICATION
“The best way to have a good idea is to have lots of ideas.”

-Linus Pauling

Rapid Prototyping as Simulated Annealing

Quality

Alternative Options
Cost of change over time?

Cost

Time

Physical Products
Shipped Software
Software as a Service
• Prototypes
• Are questions
• Ask lots of them
Further Reading

• Bill Buxton, *Sketching User Experiences*