A USER INTERFACE IS LIKE A JOKE. IF YOU HAVE TO EXPLAIN IT, IT’S NOT THAT GOOD

Introduction to Human Computer Interaction

source: https://twitter.com/iconfinder/status/472014218267742208
Share Out

• Which Teapots did you choose for "Someone who needs to serve tea at dinner party?" Why did you choose those particular teapots?
• Which teapots did you choose for "Someone who likes metallic objects?" Why did you choose those particular teapots?
• Which users were the easiest to find matches for?
• Which users were the hardest to find matches for?
• On page 2, ask which teapot was your favorite? Why?
Problem Solving Process

Define → Prepare → Try → Reflect

Define → Prepare → Empathize → Reflect → Try
Impressions?

• What is interesting about this graphic?
• Other famous logos that have a hidden message
Impressions?

- Hard to distinguish cost vs. # gallons
  - bad labels
  - placed inconsistently
  - displays too similar

From James Landay
Impressions?

BREAKING:
Emergency alert issued to Hawaii phones: "Ballistic Missile threat inbound to Hawaii. Seek immediate shelter. This is not a drill."

Emergency Alert
BALLISTIC MISSILE THREAT INBOUND TO HAWAII. SEEK IMMEDIATE SHELTER. THIS IS NOT A DRILL.
1. State EOC

1. TEST Message
DRILL-PACOM (DEMO) STATE ONLY
Monthly Test (RMT) - STATE ONLY
PACOM (CDW) - STATE ONLY

And there more disasters caused by bad user interfaces

Other examples of bad design

https://www.pinterest.com/pin/459015386994744337/
https://upload.wikimedia.org/wikipedia/commons/8/86/SanDisk_Cruzer_Micro.png
https://www.quora.com/What-are-some-examples-of-bad-design-you-have-seen
Human-Computer Interaction (HCI)

- Human
  - the end-user or users of a program
- Computer
  - the machine, (machines client/server), or devices the program runs on
- Interaction
  - the user tells the computer what they want
  - the computer communicates results
But remember

You Are Not The User.
User Experience (UX)

• From Wikipedia: “the process of enhancing user satisfaction with a product by improving the usability, accessibility, and pleasure provided in the interaction with the product”
• Need to understand all three parts of the “Human-Computer-Task” triangle
User Interfaces (UIs)

That part of application that allows people
• to interact with computer
• to carry out their task

https://www.xerox.com/en-us/insights/user-interface-examples
Why is HCI Important?

• Bad user interfaces cost
  • money
    • 5%↑ satisfaction → up to 85%↑ profits
    • finding problems early makes them easier to fix
  • reputation of organization (e.g., brand loyalty)
  • lives

• User Interfaces hard to get right
  • people are unpredictable
  • intuition of designers often wrong
User Interface Development Process

**Design Discovery**
- Customers: Roles (Who), Tasks (What), Context (Stories)
- Marketing: Business Priorities, Messages
- Technology: Products, Architecture
- Design: Leading/competing technologies

**Design Exploration**

**Evaluate**
- Review & Iterate

**Production**
- Work together to realize the design in detail
- Evaluate with Customers

**Design Definition:**
- Design Problem Statement
- Targeted User Roles (Who)
- Targeted User Tasks (What)
- Design Direction Statements

**Proposal:**
- Demos/Lo Fi Prototypes (How)

**Specification:**
- Hi Fidelity, Refined Design
  - Based on customer feedback
  - Foundation in product reality
  - Refined Design description
HCl is...
HCI is...Iterative

- Define
  - Understanding the user and task and any constraints through Task Analysis, Contextual Inquiry, Ethnographic studies
- Prepare
  - Prototypes, storyboards, use cases
- Try
  - Test the prototypes with Participatory design — early and continuous involvement by end users
- Reflect
  - What went right? What went wrong? What to change?
- Define
- Prepare
- Try
  - Perform Contextual Inquiry, Ethnographic studies on working product
- Reflect
  - Version 2.0...
HCI is...similar to

- Art: painting, photography, visualization
- Theatre: animation, film, stage
- Architecture
- Music
- Writing

HCI can learn from these disciplines that share similar design principles
HCI is... Multidisciplinary

- Psychology
- Graphic design/visual communication
- Written communication
- Industrial design
- Programming

Each discipline brings its own knowledge and has its own priorities!
HCI is...a Computer Science Discipline

The process for building software is a human activity. Backgrounds in physics, engineering, and math are ill-suited for consideration of human factors. Social scientists generally look at how people use computers, not how programs are developed
—John McHugh, in a seminar on software safety.
Contextual Inquiry
Not The Way *You* Think

From the Fall 2010 class, a student tells the story of how his mom calls text messages sent from one phone to another "email." The mom says "Hey did you get the "email" I sent but the student hasn't received any "email" in his inbox on his desktop machine. He's expecting "email" but she's expecting that he checked his phone for the message.

• From the mom's perspective all she is doing is sending an asynchronous bit of text based communication to her son. To her, the mechanism for transport doesn't matter - whether she's typing it into an email client or into her phone. She's typing a recipient, typing in some text and pressing something to actually send the message. Likely she learned to email before she learned how text on a phone and thus anything that is sent in this fashion is just "email."

• To the student, these are clearly different mechanisms for sending and receiving information.

**Moral:** step out of your own assumptions when trying to understand how others use technology.
Contextual Inquiry

• Way of understanding customers’ needs and work practices
• Observe people using a product in naturalistic settings
• Master / Apprentice model allows customer to teach us what they do!
  • master does the work & talks about it while working
  • we interrupt to ask questions as they go
• Goal: To find out where they have problems with the experience.
Useless “Ergonomic” Cup

By Daniel S
Gym Doors

By Alec G
The Decorative Pillow Bed
Low Fidelity Prototyping
Low Fidelity Prototyping

• Published in “Prototyping for Tiny Fingers” in CACM by Rettig, April 1994
• Low fidelity prototypes allows for quick exploration with minimal investment
• Quickly sketched on paper, then evaluated.
• Iterate and change sketches based on lessons learned.
• Improves creativity and resulting design

From http://social.cs.uiuc.edu/class/cs465/lectures/lofidelity.pdf
Benefits of Low-fidelity

• Quick and cheap to build prototype
• Communicates design concept and structure, can demonstrate interactions
• **Facilitates brainstorming and invites discussion**
• Enables early evaluation
• Maximizes number of design refinements before you commit to code
• Enables rapid and extensive exploration of the design space

Prototype Evaluation

- Evaluate how well users can perform tasks with your low-fidelity prototype
  - have a user perform a task with prototype
  - manipulate prototype to make it interactive
  - identify trouble points and solutions
  - revise prototype and perform again

- This only works if your team’s goal is to improve the design, not defend it

Txt Ur Grndkdz

Suzette
Next birthday in: 3 months, 5 days
Age: 13
Grade: 8th

Chat

LOL
Definition:
Laughing Out Loud
Grandkid Use:
"[Laughing Out Loud], you're a good!"

Help
Txt Ur Grndkdz is an app
designed to help you connect
better with the younger
generation.
Add a grandkid, select their face
on the home screen and start
chatting. Whenever your grandkid
uses a slang word it will show up
with a red outline. Click on the
outlined word to learn the
definition and see a translation of
your grandkid's message.

Settings
Grandkid 1 Name:
Grandkid 1 Day:
Grandkid 1 Phone:
Grandkid 2 Name:
Grandkid 2 Day:
Grandkid 2 Phone:
Grandkid 3 Name:
Grandkid 3 Day:
Grandkid Phone:
Grandkid 4 Name:
Grandkid 4 Day:
Grandkid 4 Phone:

Allow Notifications: ✔

Home
“Homework”

• Read about HCI in the CS Field Guide:

• Watch the rest of the video: https://vimeo.com/186668687

• Do some Contextual Inquiry
  • Find an object (not a computer program) that is poorly designed based on problems you see others having with it.
  • Come prepared to share:
    • What the object was...
    • Why it was poorly designed based on your observations?
    • Why do you think it was designed in this way?
    • What could be done to make this easier to use?

• Create a low fidelity prototype for the project you are working on. Test it using the methods you learned here.