

User Centered Design

and other topics

Professor Sylvan

IS4300

Today's agenda

Lecture on UCD

Discuss the reading responses

Brief overview of the homework and first team project

Lecture on UCD

But how do we do it?

WE WANT TO DESIGN WELL

OFFICIAL BALLOT, GENERAL ELECTION
PALM BEACH COUNTY, FLORIDA
NOVEMBER 7, 2000

A

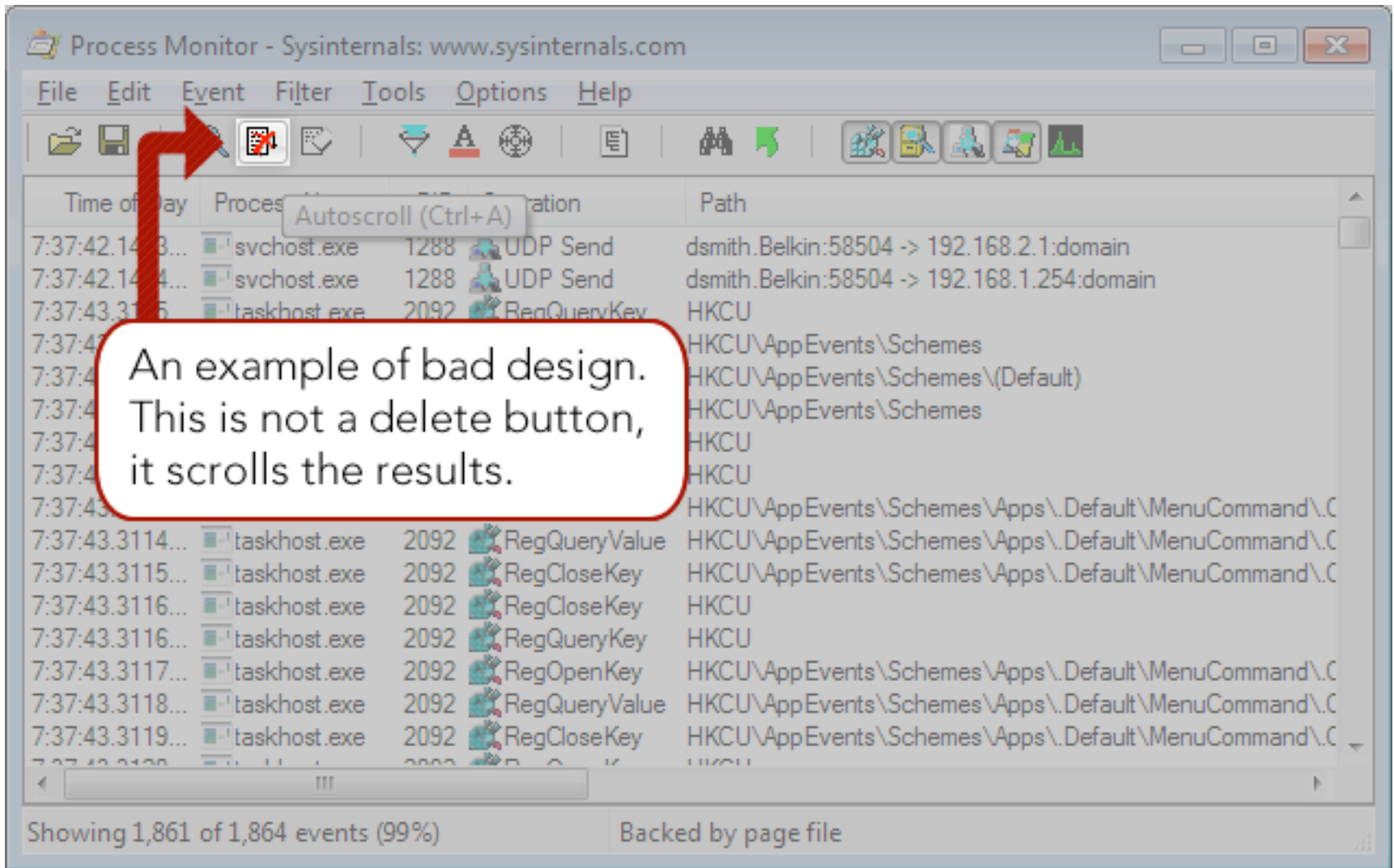
| | | |
|--|---|-----|
| <p>ELECTORS FOR PRESIDENT AND VICE PRESIDENT</p> <p>(A vote for the candidates will actually be a vote for their electors.)</p> <p>(Vote for Group)</p> | (REPUBLICAN) | 3 → |
| | <p>GEORGE W. BUSH - PRESIDENT</p> <p>DICK CHENEY - VICE PRESIDENT</p> | |
| | (DEMOCRATIC) | 5 → |
| | <p>AL GORE - PRESIDENT</p> <p>JOE LIEBERMAN - VICE PRESIDENT</p> | |
| | (LIBERTARIAN) | 7 → |
| | <p>HARRY BROWNE - PRESIDENT</p> <p>ART OLIVIER - VICE PRESIDENT</p> | |
| | (GREEN) | 9 → |
| <p>RALPH NADER - PRESIDENT</p> <p>WINONA LaDUKE - VICE PRESIDENT</p> | | |
| (SOCIALIST WORKERS) | 11 → | |
| <p>JAMES HARRIS - PRESIDENT</p> <p>MARGARET TROWE - VICE PRESIDENT</p> | | |
| (NATURAL LAW) | 13 → | |
| <p>JOHN HAGELIN - PRESIDENT</p> <p>NAT GOLDHABER - VICE PRESIDENT</p> | | |

OFFICIAL BALLOT, GENERAL ELECTION
PALM BEACH COUNTY, FLORIDA
NOVEMBER 7, 2000

| | | |
|------|---|--|
| ← 4 | (REFORM) | |
| | <p>PAT BUCHANAN - PRESIDENT</p> <p>EZOLA FOSTER - VICE PRESIDENT</p> | |
| ← 6 | (SOCIALIST) | |
| | <p>DAVID McREYNOLDS - PRESIDENT</p> <p>MARY CAL HOLLIS - VICE PRESIDENT</p> | |
| ← 8 | (CONSTITUTION) | |
| | <p>HOWARD PHILLIPS - PRESIDENT</p> <p>J. CURTIS FRAZIER - VICE PRESIDENT</p> | |
| ← 10 | (WORKERS WORLD) | |
| | <p>MONICA MODREHEAD - PRESIDENT</p> <p>GLORIA La RIVA - VICE PRESIDENT</p> | |
| | <p>WRITE-IN CANDIDATE</p> <p>To vote for a write-in candidate, follow the directions on the long stub of your ballot card.</p> | |

TURN PAGE TO CONTINUE VOTING →







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HOME



1974 - 2009
35
years



music stop / play

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Our company



Our Galleries



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click on icons to visit contents
(opens in a new window)



Our gifts for the new year to all industrial plant's engineers

click on icons to visit contents
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**Our windows visit
Technical Manuals**

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distributorship
available



Ukraine



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[Yahoo! Shopping](#) - Thousands of stores. Millions of products.

Departments

- [Apparel](#)
- [Bath/Beauty](#)
- [Computers](#)
- [Electronics](#)
- [Flowers](#)
- [Food/Drink](#)
- [Music](#)
- [Video/DVD](#)

Stores

- [Sports Authority](#)
- [Gap](#)
- [Eddie Bauer](#)
- [Macy's](#)

Products

- [Digital cameras](#)
- [Pokemon](#)
- [MP3 players](#)
- [DVD players](#)

[Arts & Humanities](#)

[Literature](#), [Photography](#)...

[News & Media](#)

[Full Coverage](#), [Newspapers](#), [TV](#)...

[Business & Economy](#)

[Companies](#), [Finance](#), [Jobs](#)...

[Recreation & Sports](#)

[Sports](#), [Travel](#), [Autos](#), [Outdoors](#)...

[Computers & Internet](#)

[Internet](#), [WWW](#), [Software](#), [Games](#)...

[Reference](#)

[Libraries](#), [Dictionaries](#), [Quotations](#)...

[Education](#)

[College and University](#), [K-12](#)...

[Regional](#)

[Countries](#), [Regions](#), [US States](#)...

[Entertainment](#)

[Cool Links](#), [Movies](#), [Humor](#), [Music](#)...

[Science](#)

[Animals](#), [Astronomy](#), [Engineering](#)...

In the News

- [Scores killed in Nigerian riots](#)
- [Austria's Haider resigns as party leader](#)
- [Floods trap thousands in Mozambique](#)

[more...](#)

Marketplace

- [Y! Auctions](#) - [Peanuts](#), [Pokemon](#), [computers](#)
- [Free 56K Internet Access](#)
- [Yahoo! Bill Pay](#) - free 3-month trial

[more...](#)

Inside Yahoo!

- [Yahoo! GeoCities](#) - build your free home page
- Play free [Fantasy Soccer](#)
- [Yahoo! Clubs](#) - create your

AT&T 3G

9:42 AM



MONDAY, MARCH 15, 2010

search term



3:30 PM, Fri. March 19, 2010
9:30 AM, Tue. March 23, 2010



5 Emails

Bob Hansen: Update on MRP Mtg
Shelly Cho: RFP content needs major...
+ 3 more messages



2 Linked In Messages

Lisa Chavez: Invitation to Connect
Espen Thomasson: Group Discussion



3 SMS Messages

James Parker: Yo Dude!
Sally Brighamton: Can you make the 3...
Lisa Smith: Where's that report?!?



4 New Docs on SharePoint

You have 26 new items to review...



23 | 41 | 605

Start 22 | 4 | 545
End 22 | 4 | 545
Length 0 | 0 | 000

Cursor 26 | 2 | 598 | +21.5 db

Grid 0 | 0 | 240
Nudge 2 | 0 | 000

Pre-roll 16 | 2 | 559
Post-roll 0 | 0 | 000

Start 22 | 4 | 545
End 22 | 4 | 545
Length 0 | 0 | 000

TRACKS

- Click
- vDrms(D)
- vPrc(Prc)
- vBas(Bs)
- vGtrs(Gt)
- vKys(Ky)
- vLdV(LV)
- BGV(BG)
- vFX(FX)
- KickD112
- Kick Fet
- Sn SM7
- Sn M100
- Sn Bot
- sK-SCrsh
- Hat
- Hi Tom
- Lo Tom
- Tom OD1
- Tom OD2
- Ride
- Overheac
- sOH
- sOHCmp
- sOHCmb
- RoomFar
- Rooms
- sDrmRm
- Crush
- Shakers1
- Shakers2

Shakers 1

Shakers 2

Claps

Bass DI

BsAmpB-15

BsAmpSVT

Mike Gtr 1

Mike Gtr 2

System Usage

| Activity | Usage |
|-----------------|-------|
| CPU (Native) | 25% |
| CPU (Clip) | 0% |
| Disk | 1% |
| Disk Cache | 4% |
| Timeline Cached | 100% |

Mix: Audrye Sessions - Turn Me Off

TRACKS

- Click
- vDrums (Drums)
- vPerc (Perc)
- vBass (Bass)
- vGtrs (Gtrs)
- vKeys (Keys)
- vLd Vox (Ld Vox)
- vBGV (BGV)
- vFX (FX)
- Kick D112
- Kick Fet

GROUPS

- <ALL>
- a Drums (vDrums)
- b Perc (vPerc)
- c Bass (vBass)
- d Keys (vKeys)
- e Gtrs (vGtrs)
- f Ld Vox (vLd Vox)
- g BGV (vBGV)

MOD DELAY III

MONO 265.0ms

FBK 48%

LPF 2190Hz

METER 4 / 4

TEMPO 133.48 bpm

SYNC

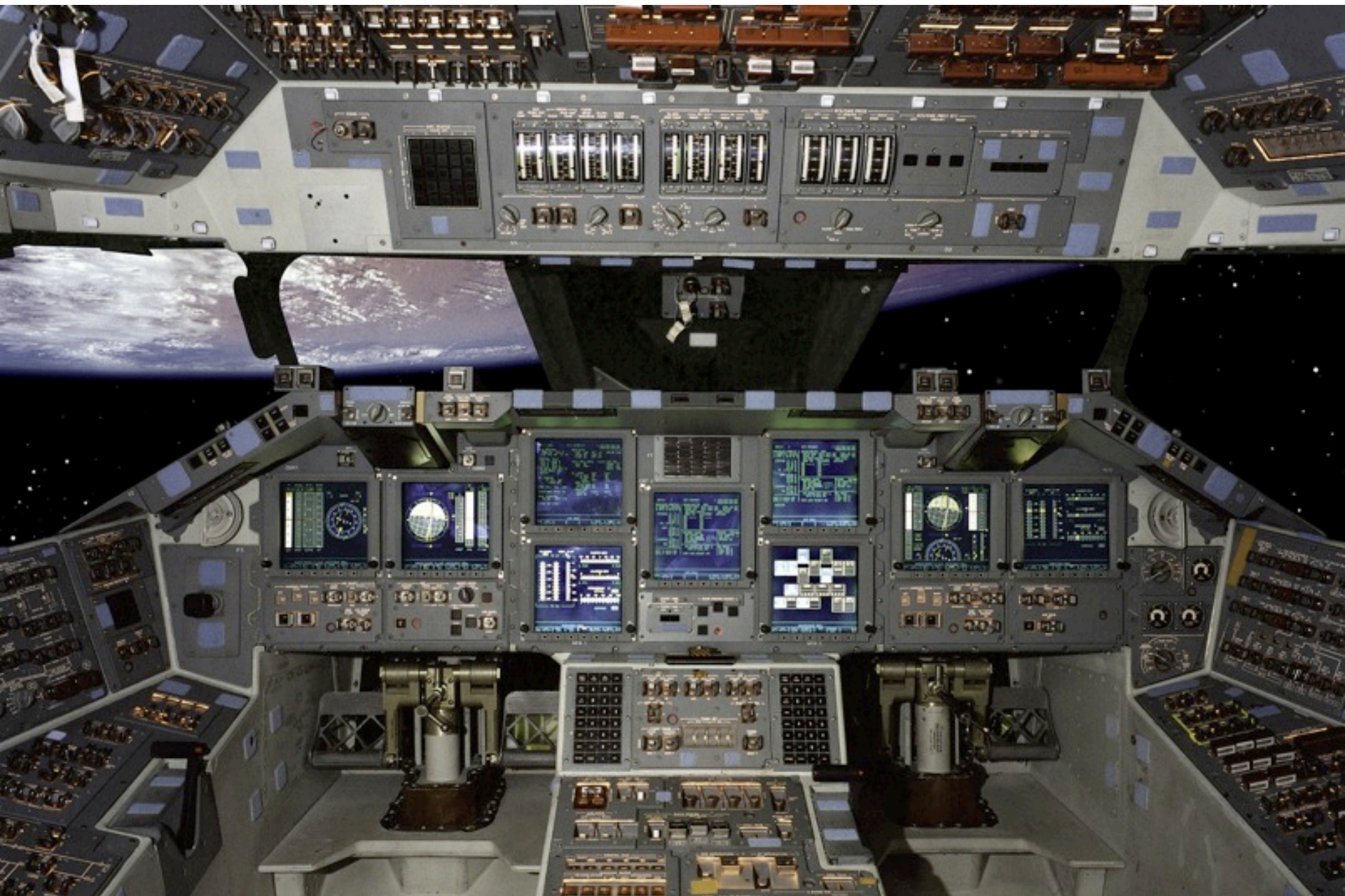
MODULATION RATE 0.00Hz

DEPTH 0%

OUTPUT GAIN 0.0 dB

MIX DRY 100% WET

Gain: 5.2, -2.0, -5.8, -5.5, -5.9, -5.4, -4.7, -4.7, -3.1, -4.0, -3.4, -4.7, 0.0, 0.0, +0.5, -5.2, -3.4, -0.5, -6.4, -2.0, -12.9, -14.5, -2.0, -2.0



What makes for good software

- Functionality
- Speed & efficiency
- Reliability, security, data integrity
- Standardization, consistency
- Usability

Good HCI

- Systems are built for humans; must be designed for the user
- Recognize individual differences; appreciate design implications of these human factors
- Recognize the design of things, procedures, etc., influences human behavior and well-being
- Emphasize empirical data & evaluation
- Rely on the scientific method
- Things, procedures, environments, and people do not exist in isolation

- NOT just applying checklists and guidelines
- NOT using oneself as the model user
- NOT just common sense

One way to get good design

USER CENTERED DESIGN

Benefits of UCD

- A way to force yourself to identify and consider the relevant human factors in your design
- Helps reduce the number of decisions made out of the blue, and helps focus design activities
- Helps document and defend decisions that may be reviewed later

DESIGN



IMPLEMENT

**USE &
EVALUATE**

9 steps of UCD

(AKA our team project process)

1. Define the Context
2. Describe the User
3. Needs Analysis and Task Analysis
4. Function Allocation
5. System Layout / Basic Design
6. Mockups & Prototypes
7. Usability Testing
8. Iterative Test & Redesign
9. Updates & Maintenance

Step 1: Define the context

- Context: the “type” of uses, applications
 - Life critical systems, applications
 - Industrial, commercial, military, scientific, consumer
 - Office, home, entertainment
 - Exploratory, creative, cooperative
- Market
- Customer (not the same as the User)

→ **Design Impacts**

Step 2: Describe the User

- Physical attributes
(age, gender, size, reach, visual angles, etc...)
- Perceptual abilities
(hearing, vision, heat sensitivity...)
- Cognitive abilities
(memory span, reading level, musical training, math...)
- Physical work places
(table height, sound levels, lighting, software version...)
- Personality and social traits
(likes, dislikes, preferences, patience...)
- Cultural and international diversity
(languages, dialog box flow, symbols...)
- Special populations, (dis)abilities

Step 3: Needs and Task Analysis

- Interviews, surveys, wants&needs study, field studies...
- Talk to and observe users doing what they do
- List each and every TASK
- Break tasks down into STEPS
- ABSTRACT into standard tasks
(monitor, diagnose, predict, control, inspect, transmit, receive, decide, calculate, store, choose, operate, etc.)

Step 3: Function allocation

- Consider the whole system
- Decide who or what is best suited to perform each task
- Base this on the knowledge of technical and human system
- Work within constraints: Effectiveness; Cognitive/affective; Cost

Step 5: Basic Design

(Verification and Validation in the language of software engineering)

- Summary of the components and their basic design
- Cross-check with any Requirements
- Documents; Human Factors refs; Hardware specs; Budgets; Laws (ADA); etc.
- Ensure that the system will support the design and comply with constraints

Step 6: Mockups and Prototypes

- “Informed Brainstorming”
- RAPIDLY mock up the user interfaces for testing with real people
- Pen and paper or whiteboard to start
- Increasingly functional
- List audio & visual details at same levels of detail in the prototypes
- Iterate, iterate, iterate!

Step 7: Usability Test

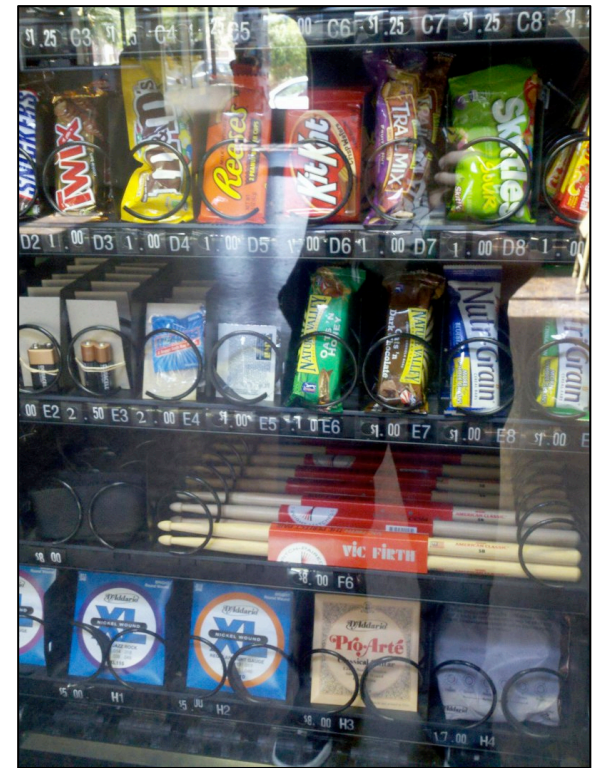
- Get real (or representative) users to use the prototypes
- Subjective and objective feedback.
- Sometimes users “want” features that actually yield poor performance
- Video tape, take notes
- Be rigorous wherever possible
- Feedback into the iterative evaluation & redesign of the system
- “Discount” usability testing can be very effective, using fewer subjects, more rapid results

Step 8: Iterative test and design

- Repeat cycles of testing and reworking the system, subject to cost/time constraints
- Focus on functionality more than look-and-feel
- Plan for several versions during development

Step 9: Updates and Maintenance

- Design so it can be fixed or updated
- In-the-field feedback, user data, logs, surveys, etc.
- Analyze and make iterative redesign/test recommendations
- Updates and maintenance plan as part of the design!



So focus on understanding your user

BUT THAT'S SO MUCH TO DO!

Your responses to the readings

Feedback on reading responses

- Good job, Great questions
- Answer all questions
- In your own words
- Share good links

VCRs?!?!

“The article talks about Super Mario Brothers and MacPaint, both very dated.” (Matthew)

“To be honest, I found the structure of the article to be very dense and time consuming to get through. While I definitely got a lot out of reading it, I feel a more simple and shorter article would have been better to introduce myself to the field of HCI.”

VCRs?!?!

“The article talks about Super Mario Brothers and MacPaint, both very dated.” (Matthew)

“It was not quite retro enough to be charming with its references to VCRs and its “Dude, what if you could like, *draw* on your computer?” speculations.” (Reed)

I found it highly interesting to think about how Computers could change. at the end of section 2.2 there was a line of "Of course, personal computers in some form will continue to exist (although many might take the form of electronic notebooks) and there will still be the problem of designing interfaces so that users can operate them." we have to remember that what we know today may be radically different in the future. we went from computers taking up entire rooms to using more powerful tablets in just several decades.

-Richard VB

Given the copyright of 1996 on the text, the 'Likely Future Developments' section is understandably a bit dated; mentions of technology like VCRs is a little bit jarring, but it's also interesting to consider which of the predicted characteristics have been realized in the past decade-and-a-half (which is most of them), and which are still finding their footing (embedded computation, though being seen more and more, for the most part hasn't become as widespread and interconnected as they seem to have expected).

HCI vs UCD

“HCI is a broad scientific discipline considering human interaction with computers. UCD is a set of practically applicable engineering principles meant to facilitate good design.”

-William J.

Uses of Kinect

- Surgery
- Physical therapy
- Big dog:
<http://www.youtube.com/watch?v=cNZPRsrwumQ>
- Minecraft
- Touch-free displays in public areas reduces transfer of germs.
- 3D camera to produce 3D models of real objects and people. Use to create digital avatars for people online or in games and could also be used to study objects that might not be available long enough in the real world to get sufficient data from.

Homework

Homework

- Create a personal course web site and put it online.
- Email list with: your name, preferred email address, and URL of your site.
- Sketch three project ideas and put on your site.

Team Project/looking ahead

- Team projects will be based on homework 1
- Before the next class, review your classmates project ideas on their websites