Foldable Displays
http://www.youtube.com/watch?v=nh5R_6-Y5Kg&feature=player_embedded

Interactive Prototype Assignment
Average: 75.86 out of 85
Stdev 4.62

Due Soon
Team Assessment (Apr 21)
Short individual assignment
Tell us how your team functions

Pilot Usability Study (Apr 21)
Refine your implementation
Evaluate your implementation
Today
Errors and Help
Aesthetics and Visual Flow
Visual Design for the Web

Exercise (2 minutes)
List 4 different errors that can occur in your group project's user interface

How many of these are system errors, as compared to user errors?
System Errors

Write in the user’s language

**Not** “winword.exe” caused a segmentation fault at #F34EA01.

You need to understand your users to do this well

Precisely indicate the problem

Constructively suggest a solution

User Errors

**Slips**
User formulates correct goal, but carries it out incorrectly

**Mistakes**
Failure to formulate the correct goal

**Lapses**
Failure to carry out action (often part of a sequence is skipped)

**Mode errors**
Action would be correct if the interface had been in different mode

Why categorize?

**Slips**
User formulates correct goal, but carries it out incorrectly

**Mistakes**
Failure to formulate the correct goal

**Lapses**
Failure to carry out action (often part of a sequence is skipped)

**Mode errors**
Action would be correct if the interface had been in different mode

Mistakes

There are two common types of mistakes:

**Knowledge-based mistake:** Incorrect decision/action because of a failure to understand the situation

**Rule-based mistake:** Understand the situation, but making a wrong decision
Possible Causes of Errors

- Incorrect mapping of cause to effect
- Inadequate background to understand information
- Unclear understanding of system status
- Misjudging information importance

Helping Users Learn

How do we help users learn our system so they make fewer errors?

Help (doesn’t)

- Extra feature that can confuse users
- Spreading expensive jam onto stale toast isn’t going to make it taste better

In a 1987 study of 52,576 help sessions:
- 23% of all requests found no help
- 36% of people who found help reported the help was useful (28% of total requests)

Helping Help Help

People want answers, and want them quickly

- Descriptive questions: “What is this?”
- Procedural questions: “How do I do this?”
- Guidance questions: “What should I do?”
- Interpretive questions: “Why did that happen?”
- Navigational questions: “Where am I!”; “Where is X?”
Types of Help

- F1 help
- Hover-over help
- Separate window help
- Keyword search
- Google
- Balloon help
- Clippy
- Wizard
- Tutorials – videos, embedded in the program, Video Professor
- Friends
- Manuals

Cost of Help

What is the least expensive form of help?
A computer interface that doesn’t need help

What is the most expensive form of help?
Asking a friend

Experts and Beginners

Who are they?
How do we design for them?

Beginners

User Description
System knowledge:
None
Domain Knowledge:
Unknown
Proficiency:
Low
### How Beginners will Behave

- Few tasks
- Many errors
- Dependence on help (not just heavyweight help)
- Limited use of options or alternatives

### Supporting Beginners

- Few options
- Visible help
- At most one task per screen
- Wizards
- Provide acquisition facilities
  - Highly visible
  - Aesthetically pleasing
- Concentrate on ordinary, standard, typical tasks

### Experts

**User Description**

- **System knowledge:** High
- **Domain Knowledge:** High
- **Proficiency:** High

### How Experts will Behave

- Many tasks
- Few errors
- Little use for Help
- Idiosyncratic style of interaction
- High use of options or alternatives
- Primary concern is efficiency and productivity
Supporting Experts

Efficient Interaction
Fast
Many tasks per screen
Provide production facilities
Conventional techniques to support expert use:
Ctrl+x, ctrl+c, ctrl+v
Uncluttered, customizable workspace
Simple icons on toolbars and dockable toolbars
Features that rely on user’s memory rather than visibility

E.g. Unix-style Command Line

How many people are beginners?
% cp ~/Desktop/myhouse.png ~/Desktop/pictures/myhouse.png

How many people are experts?
% for file in $(find . -name *.png -print ) ; do convert 
  -size 800x600 $file 
  -resize 800x600 $file//.png-small.png 
; done

Most users of software are “perpetual intermediates” or “improving intermediates”

How Intermediates will Behave

Expanding number of tasks
System limitations become frustrating
Intermittent need for help
More extensive experimentation
Evolving and changing patterns of interaction

Interfaces for Intermediates

Allow exploration through interaction
Show alternate mechanisms to perform tasks
Provide transitional facilities
Visible shortcuts
Customizable interface
Designing for Visual Flow

Proximity

• Keep related items together

Alignment

• Nothing should be placed arbitrarily

Repetition

• Repeat visual elements throughout the design (widgets, etc)

Contrast

• Either the same, or Very Different

Aesthetics and Visual Flow

How do we design something that is aesthetically pleasing?

How do we make our design easy to comprehend?

Proximity

Group related items together

Keep unrelated items apart
Proximity

Some principles of proximity
Limit how much you put on one page
Avoid filling all corners
Make whitespace unequal, use it to emphasize elements
Group related things, don’t group unrelated things

Alignment

Visually connect elements to something else in the design

Some principles of Alignment
Find a strong line and use it
Align with something else
Even if it is far away

Avoid combining multiple alignments
Left, centered, right, justified
Use centered alignments sparingly
Alignment: Grids

Repetition
Repeat aspects throughout your design
Layouts, fonts, grids

Look and Feel
Consistent, repeated elements of software or web site
Interaction design, and visual design
Consistency gives a sense of “place”
You know where you are
You know which program you are using
You don’t have to learn new pages from scratch
Increases learnability and thus usability

Contrast
If two items are not the same, you can make them
Really Different
Contrast

Concord – typefaces drawn from the **same** type **family**
Conflict – typefaces drawn from very similar type families
Contrast – typefaces drawn from very different type families

Avoid conflict: choose concord or contrast
No more than two type families per screen (this slide has too many)

Designing for Visual Flow

Color

Use color to reinforce, not as primary code
~10% of males (~1% females) have some color-blindness

Keep in mind that color contrast affects readability

- Black on cream works well
- Blue on cream is pretty safe
- Red text can be painful
- Green on cream can cause eye fatigue
Visual Flow

Programs have a visual flow

This is especially important when designing for the web

How do you determine the flow people draw from your design?
Observe!

If you want to learn more...

Designing Visual Interfaces: Communication Oriented Techniques
Kevin Mullet, Darrell Sano

Visual Design for the Web
### Visual Design for the Web

People read web pages in an “F-Shaped” pattern

![Image of web page heat map]

### Implications of the F Pattern

- People won’t read your text thoroughly
- Word-by-word and exhaustive reading is rare.
- The first two paragraphs must state the most important information
- Start subheadings, paragraphs, and bullet points with information-carrying words

### “Banner Blindness”

Scanning is more common than reading
People ignore things that look like ads

![Image of web page heat map]

### Implications of Banner Blindness

- Avoid putting important information in the header or side bars
- Assume that users will not see most of the fancy details you put at the top and sides
- Corollary: people consider pages that appear to have ads less reliable and authoritative
Representing Numbers

Show numbers as numerals
- Numerals catch the wandering eye
- Numbers represent facts
- Numbers look different than the surrounding text
- 2415 looks different than two thousand fifteen in a block of text

Numbers larger than a million are special
- Represent one million as 1,000,000
- Represent two trillion as 2 trillion, not 2,000,000,000,000
- Generally, explain numbers over a billion
  - “1 trillion (or 1 million millions)”

Formatting

Fancy, non-standard formatting is often counter-productive
- Over-emphasis causes data to be perceived as decoration

Breadcrumbs

“Breadcrumbs” are a way to show system status
- Term comes from Hansel and Gretel
- More than just being able to backtrack, shows where the user is in the hierarchy
- Allow people to get to something else they saw
- Gives people an idea of how they got there