Foldable Displays


http://www.youtube.com/watch?v=nhSR_6-YSKg&feature=player_embedded#
Due Soon

Pilot Usability Study (Apr 18) now due Apr 23
  Evaluate your implementation
  Refine your implementation

Today

Errors and Help
Aesthetics and Visual Flow
Visual Design for the Web
Errors and Help

**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

Category indicates method needed to fix the user interface

---

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 (overall, not necessarily for user)
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/manual pages)
- 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
May have 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 800x800 $file -resize 800x800 $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
Aesthetics and Visual Flow

How do we design something that is aesthetically pleasing?

How do we make our design easy to comprehend?
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*

---

**Proximity**

Group related items together
Keep unrelated items apart

Seth Marley
Ph: 555-1234

Interfaces 'R Us
Fx: 555-6543

Seth Marley
Interfaces 'R Us
Office 115
Ph: 555-1234
Fx: 555-6543
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
Alignment

<table>
<thead>
<tr>
<th>Some principles of Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find a <strong>strong line and use it</strong></td>
</tr>
<tr>
<td>Align with something else</td>
</tr>
<tr>
<td>Even if it is far away</td>
</tr>
<tr>
<td>Avoid combining multiple alignments</td>
</tr>
<tr>
<td>Left, centered, right, justified</td>
</tr>
<tr>
<td>Use centered alignments sparingly</td>
</tr>
</tbody>
</table>
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
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
- colors opposite on the color wheel cause problems
- avoid similar colors
Visual Flow

Interfaces have a visual flow
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
People read web pages in an “F-Shaped” pattern
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
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
## Breadcrumbs

**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