IT350 Web and Internet Programming

SlideSet #6: Human Computer Interaction

HCI Defined

- "Human Computer Interaction is a discipline concerned with the **design**, **evaluation** and **implementation** of interactive computing systems for human use and with the study of the major phenomena surrounding them."
  - As defined by the Special Interest Group on Human-Computer Interaction (SIGCHI) of the Association for Computing Machinery (ACM)

Design for ____?

- Design needs to align with people's:
  - Cognitive abilities
  - Context
  - Memory

Why do we care?

- Because when people try to understand something, they use a combination of
  - What their senses are telling them
  - The past experience they bring to the situation
  - Their expectations

Senses

- Senses (sight, hearing, smell, taste, touch) provide data about what is happening around us
- We are visual beings (“See what I mean?”)
- Designing good Web materials requires knowledge about how people perceive

Senses and Details

- **Live Experiment**: www.amazon.com
- Find the Amazon Prime link.

Senses and Context

- **Live Experiment**: Yale's Art school
- Give me your first impression of their page.
  - art.yale.edu

Context

- Context plays a major role in what people see on a webpage.
- Context has a profound effect on the usability of a web site.

Context: What do you see?

Another example of context: are these letters the same?

c c

Yes, but now in context:

top ace

Live Experiment

- www.hboemtb.com

- Open the “Urban Design” page
- Click on an urban project
- Show us some pictures

Memory: A golden rule?

- Humans have limited memory.
- **Miller, 1956**: The Magical Number ….
- Lesson: If you don't exceed this number…
  - Content more likely to be remembered
  - Faster recall
- Corollary: Don't expect users to remember many shortcuts etc.

Exception #1

- How many do you know?
  - Phone numbers?
  - Names?
  - Passwords?
- What's the key difference?

Exception #2

- Do I have to remember everything?
  - People can scan lists of bullets, tabs, menu items till they see the one they want
  - They don't have to recall them from memory having only briefly heard or seen them
- Lesson:
  - Make pages easy to scan
  - Group similar things together visually
  - Make wise use of screen real estate

Affordances

- Affordance: "The functions or services that an interface provides"
  - Go back to www.hboemtb.com
  - Now look at www.zincbistroaz.com

Perceived affordance

- We want affordance to be visible and obvious to the user
  - A door affords entry to a room
  - A radio button affords a 1-of-many choice
  - On a door, a handle affords pulling; a crash bar affords pushing
  - On a car, turning the steering wheel to the left makes the car go left

Web Affordances

- Text that looks like a link: ***it better be a link!***
- Graphical arrow: ***affords backward navigation***

- Rounded images: ***affords clicking***

Feedback

- Newton's Third Law of Motion
  - "For every action there is an equal and opposite reaction"
- What is most frustrating about trying to perform some action?

- Lesson:
- Obvious principle – but doesn't always happen?

Providing Feedback

- Design in feedback from the beginning

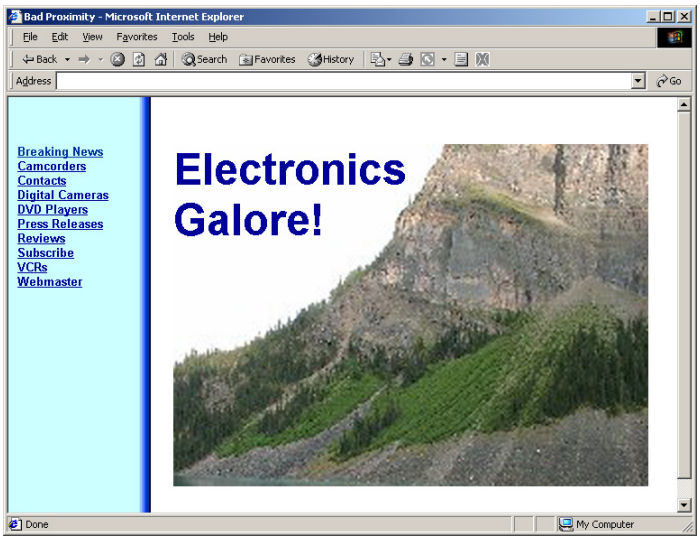
- Change color / shape / size
- Popup Dialog boxes
- Add sound
- Plan for user mistakes…warn them
- Allow users to see results, confirm action was taken

Other things users need

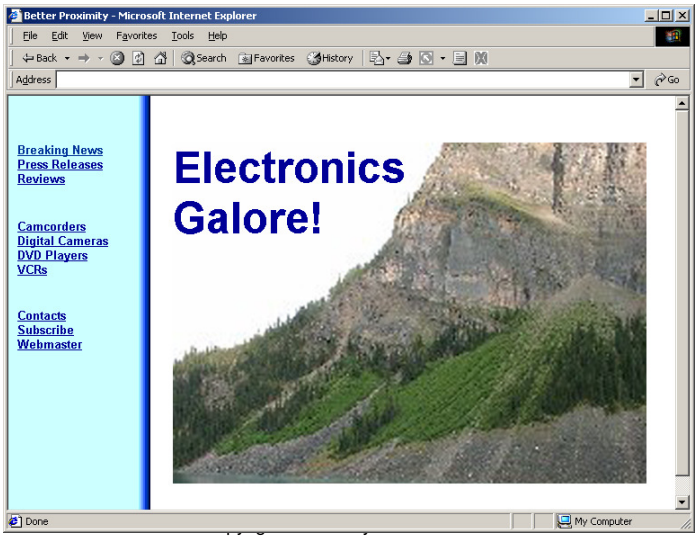
- Consistency
- Navigation

- How to provide without HTML duplication?
  - Frames
  - SSI

Senses and Organization



Use proximity to group



Grouping Information

- How do we group and organize links/images?
  - Match the UI to an expected paradigm

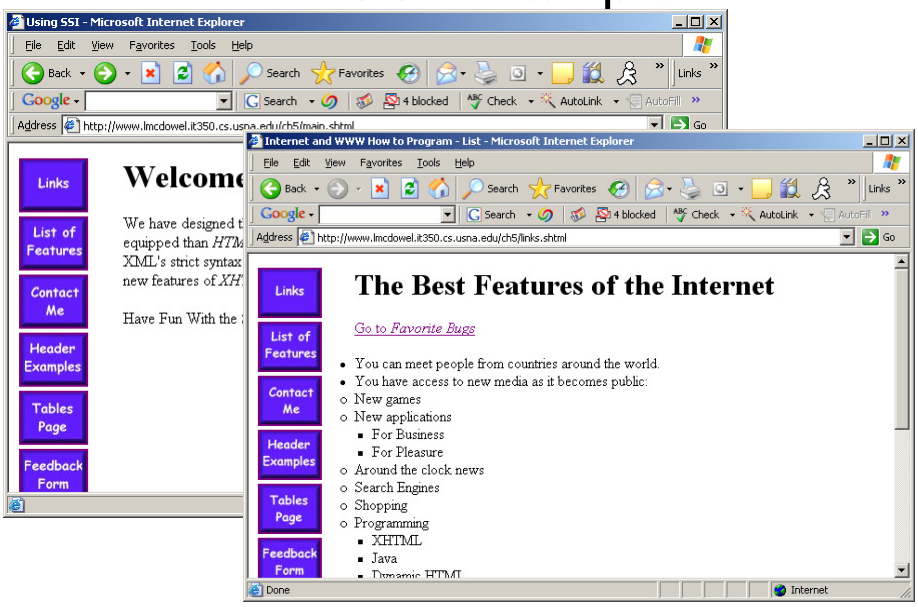
How People Act (part 1)

- Alternative strategies:
  - Goal Based
  - First Available
  - First Reasonable
  - First Attention

How People Act (part 2)

- Attention Focuses
  - Color
  - Sound
  - Boundaries
  - Moving/Flashing items
- Learned Procedures

SSI Example



navssi.html

SSI Example Part 1

```
<div style="float:left; margin-right: 2em; margin-bottom: 99in">

     <p>
        <a href = "link.shtml" >
           <img src = "buttons/links.jpg" width = "65"
              height = "50" alt = "Links Page" />
        </a><br />

        <a href = "list.shtml" >
           <img src = "buttons/list.jpg" width = "65"
              height = "50" alt = "List Example Page" />
        </a><br />

        <a href = "contact.shtml" >
           <img src = "buttons/contact.jpg" width = "65"
              height = "50" alt = "Contact Page" />
        </a><br />

  …
     </p>
</div>
```

main.shtml

SSI Example Part 2

```
<?xml version = "1.0" encoding="utf-8" ?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
  "http://www.w3.org/TR/xhtml11//DTD/xhtml11.dtd">

<html xmlns = "http://www.w3.org/1999/xhtml">
   <head>
      <title>Internet and WWW How to Program - Main</title>
   </head>

   <body>

     <!--#include file="navssi.html" -->

      <h1>Welcome to Our Web Site!</h1>

      <p>We have designed this site to teach about the wonders
      of <strong><em>XHTML</em></strong>.  <em>XHTML</em> is
      better equipped than <em>HTML</em> to represent complex
      data on the Internet.  <em>XHTML</em> takes advantage of
      XML's strict syntax to ensure well-formedness.  Soon you
      will know about many of the great new features of
      <em>XHTML.</em></p>

     </body>

</html>
```