T5b – Paper Prototyping

due!

- Recruit 3-5 users who are as close as possible to your target demographic.
- Be sure to record demographic information (age, gender, education, occupation, etc.) for your report.
- **Testing Users** When you run your prototype on a user, you should do the following things:
  - Obtain verbal consent for participation.
  - Brief the user.
  - Present one task.
  - Watch the user do the task. Take notes of your observations.
  - Repeat with the other tasks.
  - Interview users, take any measures you think are important.
P6 – Software Prototyping

- First computer-based implementation of your team project.
- Your computer prototype should be:
  - High fidelity in look.
  - Medium fidelity in feel. It’s OK if your prototype does not support some advanced interactions, such as drag & drop. You can simulate these with animation, or a popup that describes in English what would happen.
  - Medium fidelity in breadth. Your prototype should be able to handle at least the 3 scenarios you described in your task analysis.
  - Low fidelity in depth. Don’t implement any backend. Where system responses are needed, make them canned (i.e., always the same) or random. Write minimal code.

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DUE IN 2 WEEKS (11/18):

IMPORTANT:

- Your system **must actually run** and support your 3+ tasks to some level of fidelity.
- Other students in the class must be able to download your software on any readily available (e.g. lab) computer and walk through the 3 tasks with little or no help from you.
- If you must develop for a unique device (e.g. iPhone) you must be prepared to loan 3-5 other students a device for a day each so they can do heuristic evaluation.
Designing for the Web

- Relative to Designing for GUIs...
  - What’s different?
  - What’s the same?

Today

- Focus on overall website structure..
  - Benyan Chapter
  - Tips from other texts & sources
  - Testing tools & surveys
  - Nielsen’s ‘Top 10 Mistakes’
  - Credibility in Web sites
- NOT website development tools or technologies.
What’s different about web? Hypertext - not just linear

- non-linear structure
  - blocks of text (pages)
  - links between pages create a mesh or network
  - users follow their own path through information
lost in hyperspace

- non-linear structure
  - very powerful ...
  - but potentially confusing
- two aspects of lostness
  - cognition and content
    - fragmentary information – no integration ... confusion
  - navigation and structure
    - hyperlinks move across structure – where am I?
- no easy solutions
  - but good design helps!

making navigation easier

- maps
  - give an overview of the structure
  - show current location – you are here!
- recommended routes
  - guided tour or bus tour metaphor
  - linear path through non-linear structure
- levels of access
  - summary then progressive depth
- segment site per user type or task
history, bookmarks, etc.

- revisiting
  - ‘hub and spoke’ access – click-back-click-back
  - lots of revisiting of pages
  - ‘back’ is 30% of all browser navigation
  - but multi-step back and history used less
  - bookmarks and favourites for longer term revisiting

- deep links
  - bookmarks and external links – into heart of site
  - are pages self explanatory? what site? where in it?
    - e.g. breadcrumbs for context

Other differences

- bandwidth ⇒ think about download time
  - e.g. 100K image: 1 sec – broadband, 18 secs – 56K modem
  - save graphics in appropriate format and size
  - reuse the same graphics
    - in the browser cache after first load

- connection time
  - one big file may be better then several small ones
    - beware of ‘fit on one screen’ rule – scrolling is fast!
    - think before breaking big graphic into bits

- latency ⇒ think about feedback
Jonathan Lazar
Handbook of HCI

• Unique Challenges in Designing for Web?
  – Unreliability of internet (delays, outages)
  – Browser incompatibility & versions
  – Range of displays and devices used
  – Standards (w3) rarely followed exactly
  – Absence of user training

Benyon Case Study
Robert Louis Stevenson web site

• Development of personas (10!) & scenarios
  – Used to design information architecture
• Designed site structure
• Mood board
• Logo, banner, color scheme
• Settled on top-level navigation
• Card sort to organize second-level info
• “three-click” rule
• Online, remote testing by scholars
• Developed “style guide” for written content
To construct a wireframe, designers need to identify the key components of the design for each different type of page, then place them on a layout. It is very important to consider not just the type of object – navigation bar, search box, banner headline, advert, text box and so on – but what content that item can have. It is no use having a very small text box, for example, if there is a lot of text to go in it. It is no good having a drop-down menu if the user has to search through hundreds of items. Figure 16.4 shows a typical wireframe.

Visual design is at the top of Garrett’s five elements. Consistency and appropriateness of the presentation are critical here. An effective way of achieving this consistency is through the use of style sheets. Style sheets describe how Web documents are displayed, the colours that are used and other formatting issues that will make for a clear and logical layout. Just as the wireframe specifies the structure, so the style sheet specifies the visual language used. The World Wide Web Consortium, W3C, has promoted the use of style sheets on the Web since the Consortium was founded in 1994. W3C is responsible for developing the CSS (‘cascading style sheets’) language, a mark-up language for specifying over 100 different style features, including layouts, colours and sounds. Different style sheets can be developed for different platforms (so, for example, the same data can be displayed on a computer or a mobile phone) so that the content looks sensible on the particular platform it is aimed at.

XSL is an alternative language for specifying the look of XML documents.

### First!

- **Purpose**
- **Tasks to be supported**
- **Personas & Scenarios**

- Then determine content required for these
Example: Culinary Delights
Groups! ID 1 task per persona

Second!
Information architecture

- Natural organization of the content
  - Taxonomy or Ontology
- E.g.,
  - Alphabetical
  - Geographical
  - Chronological
  - By Task
  - By Topic
  - By Audience
  - etc
Affinity Diagramming

Example: Culinary Delights
Groups! Affinity diagram content!
Third!
Web Site Structure & Navigation

- Start with Information Structure
- How deep & wide?
  - Wider is better
  - Minimize need for scrolling
- Long vs. short pages?
  - <2 print pages ok
  - But, keep info together important for a task

Sample information structure

```
Level 1
- Arts + Music
- Bestsellers
- Biography
- Business + Finance
- Children’s books

Level 2
- General
- Historical
- Political
- Royalty
- Sports

Level 3
- Prime ministers
- US presidents

Level 4
- Winston Churchill
- Margaret Thatcher
```
Web structure
Broad & shallow minimizes page loads

Home page

- Arts + Music
- Bestsellers
- Biography
- Business + Finance
- Children’s books

Books about Winston Churchill
Books about Margaret Thatcher

Third!
Web Site Structure & Navigation

- Structure of site should support tasks.
  - Generally follows information structure
  - Primary tasks for information sites:
    - Search for something specific
    - Browse
    - 50% of all site visitors are ‘search dominant’
    - 20% ‘link dominant’ and the rest mixed
  - Try to minimize number of clicks per task
People use many strategies to navigate – each requires different information

- **Omniscience**
  - Users have perfect knowledge and make no mistakes
  - Provide short, efficient paths.

- **Optimal rationality:**
  - Users reason perfectly, but only know what they have seen
  - make sure links provide adequate cues to the content they lead to.

- **Satisficing:**
  - Users avoid remembering and planning and make decisions on what is immediately perceptible
  - organize the page to make the most important content and links available immediately.

People use many strategies to navigate – each requires different information

- **Mental maps:**
  - Users actively use the cues available to try to infer the structure of a website
  - organize the site simply so that users can easily conceptualize it. Design the navigation bar and site maps to reinforce this mental map.

- **Rote memorization:**
  - When users find a path that works, they tend to remember and repeat it –
  - make sure the most obvious solution is also efficient. Use distinctive landmarks and orientation cues to help people recognize where they have been before.

- **Information foraging:**
  - Users try to get as much as possible at one location –
  - enable spontaneous discovery by providing context, structure and related topics.

- **Information costs:**
  - Users have limited knowledge and reasoning ability –
  - minimize the mental costs of sense making, decision making, remembering and planning.
Third!

Web Site Structure & Navigation

- Help Users Know Where They Are
  - Orient users who hypertext into the middle of your site.
  - What site am I on?
    - Logo, consistent look & feel
  - What page am I on?
    - Breadcrumbs

Breadcrumbs
Information architecture is concerned with how the content is classified and organized. Techniques such as affinity diagrams (Chapter 12) and card sorts (Chapter 7) are used to understand how people conceptualize content. The difficulty is that different types of site have to serve many different purposes for many different people. Getting an information architecture that is robust enough to serve such multiple interests is difficult and website ‘information architects’ are in great demand. The features of websites will clearly vary widely.

Challenge 16.1

Go to the British Airways flight selection website at http://www.britishairways.com/travel/home/public/en_gb. Try to produce a wireframe for this site. Go to another airline’s site and do the same. Compare them.

In contrast to many of the established views on website design, John Lenker does not like the ideas of architecture and rigid structures. He advocates the development of flowpaths and of intelligent flowpath management systems. He argues that we need to invest in understanding and composing ‘notions’ that effectively communicate our ideas. This more design-centred approach to Web development is laid out in his attractive and engaging book *Train of Thoughts* (Lenker, 2002).

Example: Culinary Delights

Site structure & Navigation

Fourth!

Sketch page layouts

Example Wireframe for one type of page
Designing Home Pages and Interior Pages

- Designing the Home Page
  - Tells the users where they are
  - Tells the users what the site does
  - Logo, tagline, intro, key content, search, etc

- Designing Interior Pages
  - More content, less introductory info
  - User still needs to know where they are
  - Logo, link to homepage

Writing the Content of Web Pages

- Keep Text to a Minimum
  - Less than half the text of print equivalent

- Help Users to Scan – use headings and subheadings, bulleted and numbered lists, highlight

- Divide Long Blocks of Text into Separate Sections
Sketch: 1) home page  2) representative content page for each task

Usability Engineering of Web Sites
Users are still the final authority!

- UIE study of clothes shopping sites – 5 design patterns
  - Departments on left navigation panel
    - Most common, e.g., Macy’s
  - Product Descriptions + Departments
    - Land’s end
  - Testing with N=44 users, shopping for 687 a-priori products
  - Only 22% used search engine
  - Most common design performed worst
  - Number of pages that a user visited before they put something into their cart was inversely proportional to purchasing
Usability testing

- Easier to do remotely, since web site can be accessed over net
  - Many Tools
    - Morae ($1500), Usertesting.com ($39/user), Intuition HQ, Usabilla, Loop11, etc., etc.
  - Crowsourced usability testing
    - Mechanical Turk, FeedbackArmy, FiveSecondTest, etc


Usability testing

Heuristic Evaluation


- Both Used Nielsen’s 10 heuristics & severity scale to evaluate web sites
- Both found it was as applicable as for GUIs
“Automatic” Usability Testing Tools (checklists)

- NIST WEBSAT (static analyzer tool)
  - Very old
  - Example rule,
    - Forms must have Submit and Reset/Clear buttons
- Readability checks (Word, wordscount.info, etc)
- Color contrast (checkmycolours.com)
- Navigation (optimalworkshop.com, writemaps.com, navflow.com)
- Load speed, uptime, etc (pingdom.com)
- UX (feedbackarmy.com, 10 reviews for $20)

Standard Survey Instruments

- QUIS - $750!
  - Questionnaire for User Interaction Satisfaction
- WAMMI – web analysis and measurement inventory – wammi.com
WEBMAC – Website Motivational Analysis Checklist

4 aspects assessed

- **Engaging/Stimulating**
  - offers eye-catching visuals, attractive screen layout, humor, varied activities, novelty, and diverse and well-written content;

- **Meaningful**
  - offers a statement of the purpose and importance of the site, accurate and updated information, meaningful examples and analogies, and quick and easy links to other relevant sites;

- **Organized**
  - offers a site overview, summaries of key points, a help interface, and definitions of terms;

- **Enjoyable for both the extrinsically and intrinsically motivated user**
  - positive feedback on progress, user-controlled external rewards (such as animation), and quick response speed.
WEBMAC
Example “Stimulating” Questions

1. The home page of this Web site is eye-catching and visually interesting.
5. There are incentives at this site that motivate me to explore it
9. The screen layout of this Web site is attractive.

Nielsen: Top 10 Mistakes in Web Design

#1. Bad Search
#2. PDFs
#3. Not indicating visited links.
#4. Non-Scannable Text
#5. Fixed Font Size
Nielsen: Top 10 Mistakes in Web Design

#6. Page Titles With Low Search Engine Visibility

#7. Avoid Anything that looks like an Advertisement

#8. Violating Design Conventions

Jakob’s Law of the Web User Experience: “users spend most of their time on other websites.”

#9. Opening New Browser Windows

#10. Not answering users’ questions

See also…

http://webpagethatsuck.com
Trust in websites

- Fogg, CHI 2001, What Makes Web Sites Credible?

- 1400 people evaluated 51 websites

- When is this important?

Positive influence

<table>
<thead>
<tr>
<th>Items in the REAL-WORLD FEEL scale</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The site provides a quick response to your customer service questions.</td>
<td>2.02</td>
</tr>
<tr>
<td>The site lists the organization’s physical address.</td>
<td>1.86</td>
</tr>
<tr>
<td>The site gives a contact phone number.</td>
<td>1.71</td>
</tr>
<tr>
<td>The site gives a contact email address.</td>
<td>1.53</td>
</tr>
<tr>
<td>The site shows photos of the organization’s members.</td>
<td>0.69</td>
</tr>
</tbody>
</table>
Positive influence

### Table 3: Ease of Use Scale (Cronbach’s alpha = 0.67)

<table>
<thead>
<tr>
<th>Items in the EASE OF USE scale</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The site lets you search past content (i.e. archives).</td>
<td>1.57</td>
</tr>
<tr>
<td>The site looks professionally designed.</td>
<td>1.55</td>
</tr>
<tr>
<td>The site is arranged in a way that makes sense to you.</td>
<td>1.48</td>
</tr>
<tr>
<td>The site takes a long time to download.</td>
<td>-0.94</td>
</tr>
<tr>
<td>The site is difficult to navigate.</td>
<td>-1.30</td>
</tr>
</tbody>
</table>

Positive influence

### Table 4: Expertise Scale (Cronbach’s alpha = 0.63)

<table>
<thead>
<tr>
<th>Items in the EXPERTISE scale</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The site is by a news organization that is well respected outside of the Internet.</td>
<td>1.91</td>
</tr>
<tr>
<td>The site lists authors’ credentials for each article.</td>
<td>1.49</td>
</tr>
<tr>
<td>The site has articles that list citations and references.</td>
<td>1.49</td>
</tr>
<tr>
<td>The site has few news stories but gives detailed information for each.</td>
<td>1.10</td>
</tr>
<tr>
<td>The site says it is the official site for a specific topic</td>
<td>0.85</td>
</tr>
<tr>
<td>The site has ratings or reviews of its content.</td>
<td>0.79</td>
</tr>
<tr>
<td>The site displays an award it has won.</td>
<td>0.45</td>
</tr>
</tbody>
</table>
Positive influence

Table 5: Trustworthiness Scale (Cronbach's alpha = 0.57)

<table>
<thead>
<tr>
<th>Items in the TRUSTWORTHINESS scale</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The site is linked to by a site you think is believable.</td>
<td>1.29</td>
</tr>
<tr>
<td>The site states its policy on content.</td>
<td>1.26</td>
</tr>
<tr>
<td>The site links to outside materials and sources.</td>
<td>1.25</td>
</tr>
<tr>
<td>The site provides links to its competitors sites.</td>
<td>1.11</td>
</tr>
<tr>
<td>The site was recommended to you by a friend.</td>
<td>1.07</td>
</tr>
<tr>
<td>The site represents a nonprofit organization.</td>
<td>0.93</td>
</tr>
<tr>
<td>The site lists well-known corporate customers.</td>
<td>0.62</td>
</tr>
<tr>
<td>The URL for the site ends with &quot;.org&quot;</td>
<td>0.58</td>
</tr>
</tbody>
</table>

Negative influence

Table 7: Commercial Implications (Cronbach's alpha = 0.65)

<table>
<thead>
<tr>
<th>Items in the COMMERCIAL IMPLICATIONS scale</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The site is advertised on the radio or on billboards.</td>
<td>0.57</td>
</tr>
<tr>
<td>The site has ads that match the topic you are reading about.</td>
<td>0.21</td>
</tr>
<tr>
<td>The site is designed for e-commerce transactions.</td>
<td>0.17</td>
</tr>
<tr>
<td>The site has a commercial purpose (as opposed to academic purpose).</td>
<td>-0.63</td>
</tr>
<tr>
<td>The site requires a paid subscription to gain access.</td>
<td>-0.71</td>
</tr>
<tr>
<td>The site has one or more ads on each page.</td>
<td>-0.77</td>
</tr>
<tr>
<td>The site automatically pops up new windows with ads.</td>
<td>-1.56</td>
</tr>
<tr>
<td>The site makes it hard to distinguish ads from content.</td>
<td>-2.08</td>
</tr>
</tbody>
</table>
Negative influence

Table 8: The Amateurism Scale (Cronbach’s alpha = 0.64)

<table>
<thead>
<tr>
<th>Items in the AMATEURISM scale</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The site has been updated since your last visit.</td>
<td>1.55</td>
</tr>
<tr>
<td>The site offers information in more than one language.</td>
<td>1.04</td>
</tr>
<tr>
<td>The site is small (e.g. less than 5 pages).</td>
<td>-0.28</td>
</tr>
<tr>
<td>The site is hosted by a third party (e.g. AOL, Geocities).</td>
<td>-0.44</td>
</tr>
<tr>
<td>The site’s domain name does not match the company’s name.</td>
<td>-1.00</td>
</tr>
<tr>
<td>The site has a typographical error.</td>
<td>-1.28</td>
</tr>
<tr>
<td>The site is sometimes unexpectedly unavailable.</td>
<td>-1.28</td>
</tr>
<tr>
<td>The site has a link that doesn’t work.</td>
<td>-1.45</td>
</tr>
<tr>
<td>The site links to a site you think is not credible.</td>
<td>-1.53</td>
</tr>
<tr>
<td>The site is rarely updated with new content.</td>
<td>-1.67</td>
</tr>
</tbody>
</table>

Trust

How the Factors Impact Web Credibility

Figure 2: The seven scales and their effects on perceived credibility.
Also..

P8 – Finish Project & Do User Testing – due 12/2

- Complete enough of your implementation to support user testing
  - Should be fully functional unless you have a compelling rationale
- Complete user testing
  - Exactly as you did in Paper Prototyping, but with your software prototype
  - 3+ users, 3+ tasks
  - Briefing
  - Can demo system on additional task first
- Redesign
  - Sort severity problems by severity
  - Address as many as possible
- Document everything
- Post
  - Final software prototype
  - Report
To do

- Read
  - Design for Mobile (HCI Encyclopedia chapter).

- Start on P6