SENG1050
Web Technologies

Lecture 9: Web Page and Site Design
Privacy

Lecture Overview

- Web Site Structure
- Web Page Layout
- Search Engine Optimisation
- Privacy

What makes a Good Website?

A successful website meets clearly identified goals and provides compelling content that draws your audience to your site again and again. In addition it is easy to navigate and last is attractively designed to complement the content.

Alan Flum
Celestial Graphics Inc

What makes a Good Website?

1. *A Good Website is Compelling*: It Provides **Value** to Your Audience that draws them to your site again and again.
2. A Good Website Meets Clearly Identified **Goals**
3. A Good Website is **Easy to Navigate**
4. A Good Website features **visual attractiveness**

Planning your Website

1. Identify the **goals** of your website
   - Provide information, sell a product, increase brand recognition, provide help or instructions for use
2. Identify **your audience**
   - Group of users who you would most like to visit your site
3. Create **a list of content** that both achieves your goals and is of interest to your audience
4. Storyboard your website
   1. Divide this list into pages
   2. Draw a chart of links between pages
   3. Create a navigation scheme that links these pages together in a simple consistent way
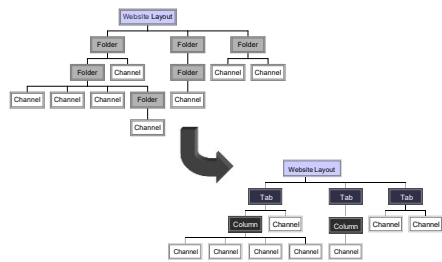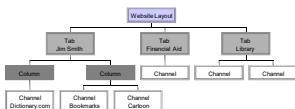

Website Layout

Website Layout
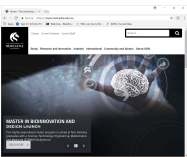
Website Layout

Web Design Principles:

http://nasa.gov
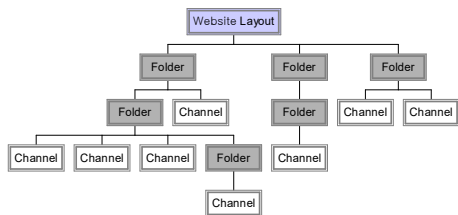
Overall Design Is Related
to the Site Purpose

Consider the target
audience of these sites.
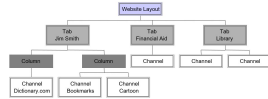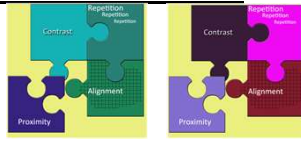
http://Newcastle.edu.au

3

Web Design Principles:

- Repetition
  - Repeat visual elements throughout design
- Contrast
  - Add visual excitement and draw attention
- Proximity
  - Group related items
- Alignment
  - Align elements to create visual unity

Design to Provide for Accessibility

"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect." – Tim Berners-Lee

- Who benefits from increased accessibility?
  - A person with a physical disability
  - A person using a slow Internet connection
  - A person using an old, out-dated computer
  - A person using a mobile phone
- Legal Requirement: Accessible to people with disability:

https://www.w3.org/WAI/intro/people-use-web/stories

Writing for the Web

- Avoid long blocks of text
- Use bullet points
- Use headings and subheadings
- Use short paragraphs

"People don't really read web pages; they scan them" - Jakob Nielsen

Design "Easy to Read" Text

- Use common "browser safe" fonts:
  - Arial, Helvetica, Verdana, Times New Roman
- Use appropriate text size
- Use strong contrast between text & background
- Use columns instead of wide areas of horizontal text
- Carefully choose text in hyperlinks
  - Avoid "click here"
  - Hyperlink key words or phrases, not entire sentences
- Chek yur spellin (Check your spelling)

Desktops

Laptops

Phones

60" Flatty (HDTV)

Source: https://www.imarc.com/blog/best-font-size-for-any-device

---

Use Color Theory

- Color Theory:
  - the study of color and its use in design
- Color Wheel
  - Primary Colors
  - Secondary Colors
  - Tertiary Colors
- Use *colour change* to show *status change*
- Don't use too many colours
  - Avoid colour pairings which clash which clash
- Use colour coding *consistently*
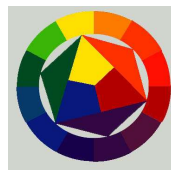
Use Color Theory

- How to Choose a color scheme?
  - Monochromatic
    - http://meyerweb.com/eric/tools/color-blend
  - Choose from a **photograph** or other image
    - http://www.colr.org
  - Begin with a favorite color
    - Use on of the site below to choose other colors
      - **http://colorschemedesigner.com**
      - http://www.colorjack.com
      - http://www.colorsontheweb.com/colorwizard.asp
      - http://meyerweb.com/eric/tools/color-blend
      - http://www.colorsontheweb.com/colorwizard.asp
      - http://kuler.adobe.com
      - http://colrd.com
      - http://hslpicker.com

Verify Sufficient Contrast

- When you choose colors for text and background, sufficient contrast is needed so that the text is easy to read.
- Use one of the following online tools to verify contrast:
  - **http://webaim.org/resources/contrastchecker/**
  - http://snook.ca/technical/colour_contrast/colour.html
  - http://juicystudio.com/services/luminositycontrastratio.php

---

Color & Target Audience

Appealing to Kids & Preteens

Appealing to Everyone

Appealing to Young Adults

Appealing to Older Adults
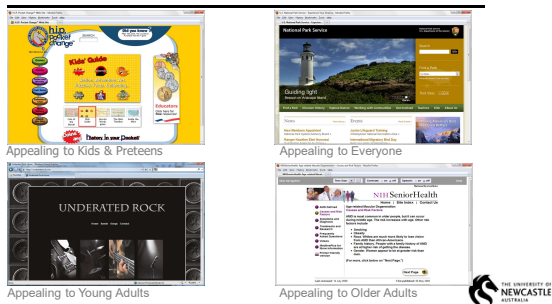
Error Message Guidelines

- *Be specific to the user's task*
  - Notice how Dropbox is very detailed in their error alert for an incorrect email

- Give *constructive advice* for recovering from the error

6
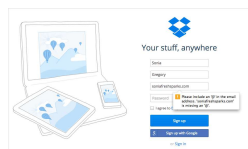
Error Message Guidelines

- *Don't make users work for it*
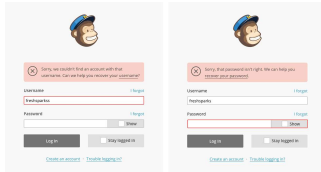
- Indicate *negative consequences* of the error (e.g., possibly corrupted files)
- Give an *audible or visual cue*

Web Page Design Load Time

- Watch the load time of your pages
  - http://gtmetrix.com/
- Try to limit web page document and associated media to under 60KB on the home page
- Reuse images
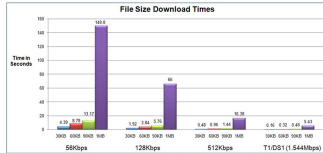
Browsers & Screen Resolution

- Test with multiple browsers
  - Internet Explorer, Google Chrome, Mozilla Firefox, Apple Safari

- Test at various screen resolutions
  - Most widely used: 1366x768, 1024x768, 1280x800, and 1280x1024

- Design to look good at various screen resolutions
  - Centered page content
  - Set to either a fixed or percentage width

Wireframe

- A sketch of blueprint of a web page
- Shows the structure of the basic page elements, including:
  - Logo
  - Navigation
  - Content
  - Footer

Web Page Design Page Layout (1)

- Place the most important information "above the fold"
- Use adequate "white" or blank space
- Use an interesting page layout

This is usable, but a little boring. See the next slide for improvements in page layout.

Web Page Design Page Layout (2)

Better

Columns make the page more interesting and it's easier to read this way.

Best So far

Columns of different widths interspersed with graphics and headings create the most interesting, easy to read page.

Design for the Mobile Web

- Design Considerations:
  - Small screen size
  - Low bandwidth
  - Single-column layout
  - Maximize contrast
  - Optimize images for mobile display
  - Descriptive alternate text for images
  - Avoid display of non-essential content
- Configure your current website for mobile display using **responsive web** design techniques
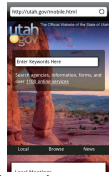
Responsive Web Design

- Progressively enhancing a web page for different viewing contexts (such as smartphones and tablets) through the use of coding techniques, including flexible layouts and media queries.
  - <meta name="viewport" content="width=device-width, initial-scale=1.0">
  - <img src="img_girl.jpg" **style="width:100%;">**

- Examples:
  - **http://www.ca.gov/**
  - http://www.mediaqueri.es

What not to do.

- http://www.webpagesthatsuck.com/
  - Some brilliant examples of rubbish
- http://www.ratz.com/featuresbad.html
  - A "Thou shalt not" list
- http://www.un.org/events/workshop/dpi-unitar/2003/dreamweaver/bad-design.htm
  - Even Dreamweaver knows better
- **http://www.angelfire.com/super/badwebs/**
  - World's Worst Website

Web Design

In summary
•HTML standards
•Get to the point
•Keeping it fresh
•Layout
•Browser neutral
•Total page size

SEO (Search Engine Optimization)

Key internet marketing strategies
- Search engine optimisation (SEO)
  - no cost per click
- Search engine marketing (SEM)
  - cost per click

Search engine optimisation

What is SEO?
  SEO is the act of modifying a website to increase its ranking in *organic (vs paid),* crawler-based listings of search engines

How do organic search listings work?
- A *spider* or *crawler* which is a component of a SE gathers listings by automatically "crawling" the web
- The spider follows links to web pages, makes copies of the pages and stores them in the SE's index
- Based on this data, the SE then *indexes* the pages and *ranks* the websites
- Major SEs that index pages using spiders: Google, Altavista, Msn, Aol, lycos

"Spiders read only text, nothing else"

Search engine optimisation
SEO versus SEM
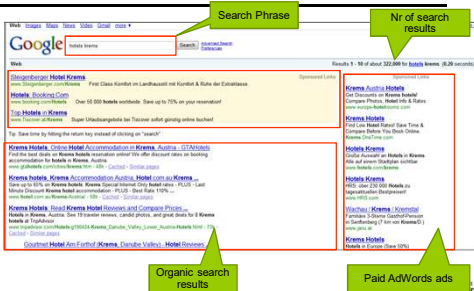
Search engine optimisation

- Domain Name
- TITLE tags
- Meta Description
  - Keywords in Meta tags
  - `<head>`
    `<meta name="description" content="Here is a precise description of my awesome webpage.">`
    `</head>`
- keywords used in texts
  - H1, H2, H3…
- Alt Tags
- Links
  - Anchor text in links
  - Internal and external links
- SEs

Search engine optimisation

Search engine optimisation - Domain Name

- Domain name strategies
  - domain names are traffic magnets
    - Internet Grows to 326.4 Million Domain Names in the First Quarter of 2016
  - choose a domain name that will **increase your search engine ranking**. How?
    - simple, short, no hyphens, no numbers
    - use keywords, common words, advertising terms, product names
    - choose a keyword that is important for your business
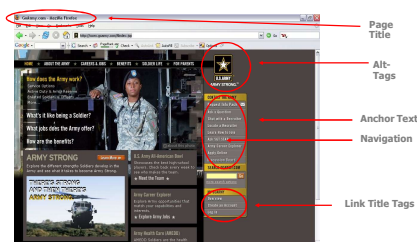

Search engine optimisation - Title tags

- important in optimising rankings
  - the first thing that a search engine displays on a search return
  - must keywords in title to be ranked no. 1
  - should have the exact *keyword* you use for the page
  - every single web page must have its own title tag
  - you can use up to 65 characters

  - eg Ebay
    http://www.ebay.com/ *(title is littered with keywords)*
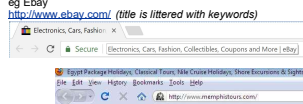
Search engine optimisation - Meta Description

<meta name="Meta-Title" content="Meta-Description">

Meta-title

Meta description tag (or first para of text if no meta des has been added)
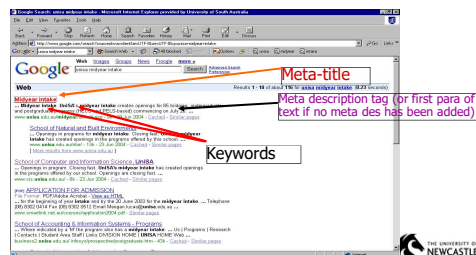
Keywords

Search engine optimisation - Keywords

- important in optimising rankings
  - keywords are words that appear the most in a page
  - the spider chooses the appropriate keywords for each page, then sends them back to its SE
  - your web site will then be indexed based on your keywords
  - do not use common words eg 'the' 'and' 'of': spiders ignore them
  - write keyword-rich text
  - balance keyword-rich and readability
  - always have text in your page: at least 100 words

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Search engine optimisation - Alt Tags
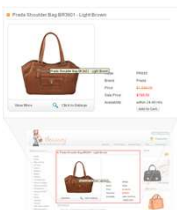
Alt Tag Keywords for images
You can target your important keywords in your images .

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Search engine optimisation - Links

- Linking strategies
  - the more inbound links the higher the SE ranking
  - if the site linking to you is already indexed, spiders will also receive your site
  - quality of inbound links is critical
  - how to increase links: a) good content b) good outbound links c) target a list of sites from which you can request inbound links

"Link relevancy is critical in getting your site indexed by search engines"

"A small number of inbound links from high-quality, relevant sites is more valuable than many links from low-traffic, irrelevant sites."

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Search engine optimisation ▬ **SEs**

- Submit your website to SEs for indexing
- Major SEs to submit to:

- Submit your site to Google maps, Google Places for Business and Google+ Local
- Australia: https://webwise.com.au/free-australian-online-directories-to-list-your-website/

Search engine optimisation

SEO - what is NOT recommended

Flash and shockwave - spiders do not pick up these files
Image only sites - spiders do not pick up images
Image maps - spiders cannot read image maps.
  Do not use them on your home page or critical pages.
Password protected pages – spiders cannot enter password protected pages

PDF files - can be problematic for spiders. Although some search engines can index them, the pages must be interpreted into HTML and can lose much of their content.
  - place PDFs lower down in your site

Dynamic pages - spiders cannot index some content on pages using ASP, CGI or other dynamic languages.
  - Make sure important pages are HTML, no dynamically generated content.

Drop down menus – spiders cannot read them

Search engine optimisation

In summary…

Critical elements
  - domain name, links, keywords, title, meta description, alt tags, submitting your website to SEs

No-nos
  - flash, image-only sites, image maps, password protected pages, PDFS, dynamic pages, drop-down menus

Privacy

The Concept of Privacy

- Privacy: The moral right of individuals to be left alone, free from surveillance or interference from other individuals or organizations

---

Computers and Privacy

- Web sites can collect information
  - IP address of machine, machines O/S, type of browser used, session identifier, requested pages, time of request and links followed

- Cookies
  - When you visit a site, site creates cookie and stores it on your machine. Next visit, cookie is retrieved, updated and restored.
  - Useful for shopping over several visits, or not having to re-register on each visit.
  - They are not executable code
    - EditThisCookie: Chrome cookie manager – you can add, delete, edit, search, protect and block coolies.

Your computer has the goods on you

- Your browser **creates historical records** of what you do online.

- The Location Window and History file, browser folders (Cache, Mail and News) and Outlook Express Identity files (found in Windows/ Application Data) all contain evidence/telltale tracks of your Internet and other PC activities.

- Windows also **creates history files** and lists that anyone can use to decipher where you traveled, what you saw, what you downloaded (mainly text and images from sites visited) and whatever else you do on your PC.

- Folders such as Windows History, Recent, Cookies, Temporary Internet Files, My Download Files and Recycle Bin are filled with such evidence.

The Insecure World of File Deletion and Formatting

- Window's Delete and Format do not erase information beyond recovery

- Delete - the operating system does not destroy the contents or remove them from the disk - it only deletes 'references' on the file from some system tables

- Format - does not remove all data and files from the disk - it only marks the disk as ready to store new data.

- The contents remain intact until another file 'happens' to overwrite it

- Software recovery tools **can restore** the data if it has not been overwritten. Tools may even restore overwritten files

- Your confidential information may be lying unprotected on your hard drive/disks, which makes retrieval easy for anyone, including snoops and hackers

---

Information Collected at Web Sites

- **Personally identifiable information (PII)**: Data that can be used to identify, locate, or contact an individual

- **Anonymous information**: Demographic and behavioral information that does not include any personal identifiers

- Almost all e-commerce companies collect **PII** and use **cookies** to track clickstream behavior

Internet Privacy: how Australia's new laws work

- How your data is being collected and what it's being used for

- Notifications that your data will be sent overseas

- Right to access your personal information from private entities

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Informed Consent

- Consent given with knowledge of all the material facts needed to make a rational decision

- Two models:
  – Opt-in: Agreement that requires computer users to take specific steps to *allow* the collection of personal information
  – Opt-out: Agreement that requires computer users to take specific steps to *prevent* the collection of personal information

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Personal Information

- Collected by sites unknown to user (via coolies, keystroke information)
- Collected by sites known for user (fill in this form please)
- What is it used for?
- How long is it kept?
- Who is it given for?
- Is information pooled across many sites?

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Technological Solutions to Privacy Invasion on the Web

- Many privacy-enhancing technologies being developed emphasize security – P3P, TRUSTe, BBBOnLine
- Platform for Privacy Preferences (P3P):
  - Comprehensive technological privacy protection effort sponsored by **W3C**
  - Working draft May 2000
  - A framework to express privacy practices and preference of
    - The web site
    - The user

Make your web site P3P compliant

- Create a written privacy policy
- Decide what policies apply to what pages on the site
- Select a P3P Policy generator
  - IBM P3P Policy Editor
  - PrivacyBot.com
  - IAjapan's Privacy Policy Wizard (japanese version
  - P3PEdit
  - Customer Paradigm's P3P Privacy Policy Creation
  - An XML format for expressing a privacy policy
- Validate P3P
  - http://www.w3.org/P3P/validator.html
- Add P3P to each page's header
  - add to nginx.conf
  - Add_header P3P 'policyref="/w3c/p3p.xml", CP = " ……

Accessing P3P Site Policy

- Via HTTP Extensions
  - Site inserts P3P extension header into **replies**
  - User agent uses P3P headers in HTTP **responses**
- Via HTML header information
  - Site inserts HTML LINK tags in all pages
  - User agent uses P3P LINK tags in HTML pages

- Both methods give **location** of site's P3P policy
- Agent compares with privacy preferences set by user:
  - Alerts user of mismatch
  - Acts as gatekeeper (stops transfers)
  - Authorizes release of data if policy corresponds with user preference
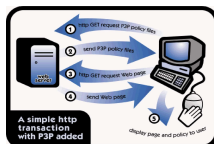
Example Privacy Policy - CatalogExample

Claudia types the URL for CatalogExample into her Web browser.

The homepage is displayed normally.

Claudia clicks on a link to the site's online catalog and it has 'shopping cart'. Since more information is being gathered in this page, the Web server provides a separate P3P policy to cover this page of the site. If this policy matches Claudia's preference, this page is displayed normally without any warnings.

The checkout page requires some additional information: another P3P?

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

Example Privacy Policy - CatalogExample

- The CoolCatalog of 123 Main Street, Bethesda, MD 20814, USA, makes the following statement for the Web page at http://www.TheCoolCatalog.com/catalog/. We have a privacy seal from PrivacySeal.org. **Our privacy policy is posted at http://www.TheCoolCatalog.com/PrivacyPractice.html.** We do not provide access capabilities to information we have about you.

- We use **cookies** and collect your gender, information about your clothing preferences, and (optionally) your home address to customize our entry **catalog pages** and for our own research and product development. We retain this information *indefinitely*.

- We also maintain server logs that include information about visits to the http://www.TheCoolCatalog.com/catalog/ page, and the types of browsers our visitors use. We use this information in order to maintain and improve our web site. We retain this information *indefinitely*.

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

Example Privacy Policy – in XML

```
<POLICY xmlns="http://www.w3.org/2000/P3Pv1" entity="TheCoolCatalog, 123 Main Street, Bethesda, MD 20814, USA">
<DISPUTES-GROUP>
service="http://www.PrivacySeal.org" description="PrivacySeal.org"
image="http://www.PrivacySeal.org/Logo.gif"/>
<DISCLOSURE discuri="http://www.TheCoolCatalog.com/PrivacyPractice.html" access="none"/>
<STATEMENT>
<CONSEQUENCE-GROUP><CONSEQUENCE>a site with clothes you would appreciate</CONSEQUENCE></CONSEQUENCE-GROUP>
<RECIPIENT></RECIPIENT> <PURPOSE><develop/></PURPOSE>
<RETENTION></RETENTION>
<DATA-GROUP>
<DATA name="dynamic.cookies" category="state"/>
<DATA name="dynamic.miscdata" category="preference"/>
<DATA name="user.gender"/>
<DATA name="user.home." optional="yes"/>
</DATA-GROUP>
</STATEMENT>
<STATEMENT>
<RECIPIENT><ours/></RECIPIENT><PURPOSE><admin/><develop/></PURPOSE>
<RETENTION><indefinitely/></RETENTION>
<DATA-GROUP>
<DATA name="dynamic.clickstream.server"/>
<DATA name="dynamic.http.useragent"/>
</DATA-GROUP>
</STATEMENT>
</POLICY>
```

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

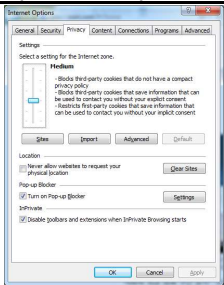## Example - Google Privacy Policy

- https://www.google.com/intl/en/policies/privacy/

Internet Explorer 11.0's Implementation of P3P

References

- **Web Development and Design Foundations with HTML5 (6e)**
  - *By Terry Felke-Morris*
  - •*Chapter 8*

- http://www.w3schools.com/