These guidelines are attached to the UNSW Website Policy, and should be read in conjunction with that document.
# Table of Contents

## 1 INTRODUCTION ........................................................................................................5

1.1 BACKGROUND ........................................................................................................ 5  
1.2 ACKNOWLEDGEMENTS ......................................................................................... 5  
1.3 DOCUMENT PURPOSE .......................................................................................... 6  
1.4 PRINCIPLES ........................................................................................................... 6  
1.5 SCOPE AND AUDIENCE ....................................................................................... 7  
1.6 OWNERSHIP & MAINTENANCE ........................................................................... 7  

## 2 COMPLIANCE ...........................................................................................................8

2.1 INTRODUCTION ................................................................................................... 8  
2.2 ACCESSIBILITY .................................................................................................... 8  
2.3 LEGAL .................................................................................................................... 8  
2.4 METADATA ............................................................................................................ 9  

## 3 CONTENT ...............................................................................................................9

3.1 INTRODUCTION ................................................................................................... 9  
3.2 WRITING FOR THE WEB ..................................................................................... 9  
3.3 MAINTENANCE & CURRENCY ............................................................................. 10  
3.4 USE OF IMAGES / FILES / INCLUDES ON WEB PAGES .................................... 10  
3.5 USE OF RICH MEDIA CONTENT: EG FLASH, AUDIO-VISUAL FILES, APPLETS ....10  
3.6 DUPLICATION OF CONTENT AND USE OF LINKED FILES .............................11  
3.7 USE OF LINKED FILES .........................................................................................11  

## 4 VISUAL DESIGN ..................................................................................................13

4.1 LAYOUTS .............................................................................................................. 14  
4.2 WEB DESIGN TIPS .............................................................................................. 17  
4.3 FONTS ................................................................................................................... 18  
4.4 COLOURS ON THE WEB .................................................................................... 20  
4.5 USE OF IMAGES .................................................................................................. 21  
4.6 FILE SIZES .......................................................................................................... 21  
4.7 IMAGE DIMENSIONS ........................................................................................... 21  
4.8 ALWAYS INCLUDE ALTERNATIVES TO IMAGES ............................................24  
4.9 FILE FORMATS FOR PHOTOS AND GRAPHICS – GIF VERSUS JPEG ..........24  
4.10 USE OF CUTTING EDGE TECHNOLOGY .........................................................26  
4.11 USE OF LOGOS & COMMERCIAL BRANDS ...............................................26  
4.12 MINIMUM WINDOW SIZE ...............................................................................27  
4.13 USING PROFESSIONAL DESIGNERS ..............................................................27  

## 5 NAVIGATION DESIGN .........................................................................................29

5.1 GENERAL PRINCIPLES .......................................................................................29  
5.2 NAVIGATION ISSUES ..........................................................................................29  
5.3 NAVIGATION OPTIONS ......................................................................................30  
5.4 DEVELOPMENT CHECKLIST ..............................................................................30  
5.5 INTERNET REFERENCES .....................................................................................31  
5.6 NAVIGATION GUIDELINES – USING A MENU SYSTEM ..................................33  
5.7 BRANDING AND IDENTITY STANDARDS .......................................................40  
5.8 NON-STANDARD NAVIGATION – SEE APPENDIX C .......................................40  

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NAVIGATION AND CONTENT:  
VISUAL DESIGN GUIDELINES 2 of 71
1 Introduction

1.1 Background

In response to user needs, UNSW’s web presence has grown rapidly over the last five years primarily through websites developed by Faculties and Units across the University. However, this decentralised and largely uncoordinated development of websites has resulted in inconsistent UNSW Branding and visual design practices being adopted.

With the ever-increasing use of the Web within UNSW to communicate information and provide services to both internal and external users, it is imperative that the University’s web presence reflects principles of good visual design and usability; and that all future developments are guided by a cohesive view of the UNSW web presence. This has recently resulted in the development of an overall Website Policy for UNSW (which can be accessed at http://www.its.unsw.edu.au/policies/pol_web.html) as well as an accompanying set of Standards and Guidelines, of which this document is one.

Many people, with a wide range of needs and using different methods, access UNSW information and services via the web. A website’s design can influence the following aspects of a user’s experience of UNSW:

- Overall usability of the site;
- Visual appeal;
- Ease of use particularly through navigation structures;
- Brand recognition and the effectiveness of communication;
- Competitive positioning;
- Professionalism of the institution / unit;
- Improved accessibility.

1.2 Acknowledgements

This document was developed by a team of professional IT (Web specialist) staff from across UNSW. Sincere thanks to:
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The document was compiled and edited by Jenny Beatson, ITS.
1.3 Document Purpose

The purpose of the UNSW Design Guidelines is to provide a clear set of principles and guidelines to be used by website developers across UNSW in order to build better websites, produce a more cohesive view of the University and in so doing deliver the following benefits:

- Improved experience and usability for site visitors;
- A more consistent and professional UNSW image on the web;
- Stronger local and international brand recognition;
- Maintenance of a consistent cross-faculty framework.

Note: The Guidelines are purposely designed to allow flexibility and differentiation in how the principles are applied across websites.

Note: The document has been designed as a resource readers can dip into for information on particular topics as needed, rather than a “cover-to-cover” read. This is why apparent duplication of subjects may occur under different topic headings.

1.4 Principles

These guidelines are informed by the visual design principles contained within the UNSW Website Policy (http://www.its.unsw.edu.au/policies/pol_web.html). These are:

- Website navigation and content visual design should be cohesive and consistent across UNSW.
- Website navigation and content visual design should enhance usability.
- Website navigation and content visual design should promote accessibility for all users.
- Website navigation and content visual design should be flexible enough to ensure that websites remain interesting and engaging.

Cohesion & Consistency

A cohesive view of UNSW should be manifest in UNSW’s websites. Through consistent user interfaces and visual design (including branding, as well as editorial and information design), across all its websites and services, the University will project the view of a dynamic, diverse but cohesive organisation; while still allowing Faculties, Schools and Service Units to differentiate themselves.

Usability

Usability is determined by organisation of content, navigation, page layout, fonts, graphic design, speed of page-loading and other factors which make visiting your site a pain or a pleasure.

Accessibility

As far as is practicable, websites should be accessible by everyone regardless of any disability they may have, or the type of browser or assistive technology they may be using. The goal is to provide, as far as possible, the same experience to everyone. Except where specific exemptions have been sought and granted, the standard for web pages is that at the very least, they comply with all W3C Priority One standards (see section 2.2).

Flexibility
Websites must be interesting and engaging, projecting the University in ways that are attractive to future and current members of the University community.

1.5 Scope and Audience

The UNSW Website Design Guidelines can be applied to all websites hosted by UNSW. Initially the process to create these guidelines focused only on the major University websites such as the Corporate Website, Faculty and Major Unit sites. However, it is intended that the principles and guidelines in this document can be applied to all UNSW web pages (even those accessed through a password).

Given the diverse range of websites across UNSW, their target audiences and purpose it is not possible or desirable to create a single set of enforceable standards for visual design that will apply equally to all sites. Instead, these guidelines are intended to present web developers and site owners across UNSW with a clearly articulated set of principles regarding navigation design as well as providing standards and examples of how the principles can be achieved.

It is acknowledged that there may be differing levels of applicability depending on the type of site. For example, the guidelines on the use of standard navigation terminology & design would have a high level of applicability on major sites with the same target audiences where the impact on usability is greatest. Typically, the Faculty and Corporate sites would use a consistent navigation design and standard terminology; whereas Schools would use standard terminology but may chose to vary the visual design of the navigation.

1.6 Ownership & maintenance

The Office of Chief IT Architect within Information Technology Services is responsible for maintenance of these guidelines.
2 Compliance

2.1 Introduction

While this document contains recommendations rather than mandatory imperatives, it is important to keep in mind some of the legislative requirements and cultural expectations which may impact the visual design and content of a website. It is expected that all providers of internet content and design on UNSW-hosted sites will do so in a legal, ethical and responsible manner and in accordance with the “UNSW Website Acceptable Content Standard”

http://www.its.unsw.edu.au/policies/docs/Acceptable_Content_Standard.doc

Sites may be monitored from time to time to ensure compliance with the Code.

While the University upholds the principles of academic freedom, it will not condone deliberate breach of its policies (and external legislative requirements) and will cooperate fully with the authorities in any investigations resulting from a breach. This may include the removal of a page or site, or in the case of serious and deliberate breach, may result in civil or criminal proceedings.

For example, litigation has arisen in Australia and elsewhere where site content was shown to be outdated (courses offered on website which were in fact no longer available) and; where people with disabilities have been unable to use certain website features (eg online ticket booking for the Paralympics in 2000).

2.2 Accessibility

As far as is practicable, websites should be accessible by everyone regardless of any disability they may have, or the type of browser or assistive technology they may be using. The goal is to provide, as far as possible, the same experience to everyone. An Accessibility Standard has been developed for UNSW by EDTeC, which provides a simple and clear summary of the requirements of the W3C accessibility standards. Except where specific exemptions have been sought and granted, the standard for web pages is that at the very least, they comply with all W3C Priority One standards. This document may be accessed at:


If it is intended to use the most popular form of text presentation – the .pdf file – it is important to prepare them in a way that makes them accessible to people using screen readers, by using structured markup and providing text alternatives to embedded images. Rich text format (.rtf) is also an option, although these files tend to require a very recent version of MS Word and also are usually much larger than the same file in .pdf format.

2.3 Legal

As stated in the introduction, there is a considerable amount of legislation which may impact the visual design and/or content of a website. As well as the Accessibility Standard referred to above,
an Acceptable Content Standard has been developed to provide guidance on most of these issues, and may be accessed at:


2.4 Metadata

Metadata is the principal type of information used for organizing and identifying content found on websites. It enables search engines to effectively index web pages and improves website accessibility for those using assistive technologies. Metadata on websites takes the form of standard meta tags, which allow content authors to accurately describe information contained in a document rather than force a search engine to deduce the description from the main text of the page.

Further detail on the use of metadata is contained in Section 6.6 of this document

3 Content

3.1 Introduction

According to the UNSW Website Policy: “websites should be built and populated with content that properly reflects the use and audience groups they are intended for.” Furthermore, they should be: “properly managed and maintained to ensure they reflect the values and professionalism of the University.” As the web is often the first point of contact with UNSW for many clients and visitors it is important that all content presented on those sites represent the organisation in the best possible manner. The following guidelines are intended to provide advice on how to optimise the presentation of your web content.

3.2 Writing for the Web

Writing for the web is different to writing for print media. Usability studies indicate that the way people engage with visual information on a screen is entirely different to the way they engage with printed text. When writing for the web, usability of information should be uppermost in content author’s minds. According to usability research conducted by Sun Microsystems:

- 79% of users scan the page instead of reading word-for-word;
- Reading from computer screens is 25% slower than from paper;
- Web content should have 50% of the word count of its paper equivalent.

Key criteria to consider when writing web content are:

- Content is informative;
- Concise;
- Scannable;
• Relevant and appropriate to user’s needs (ie purpose of site and target audience have been identified and reflected in both writing style and visual design);
• Up to date;
• Links are provided to further information;
• Acronyms are avoided; or if they must be used, at first appearance on each page, the name is explained in full with the acronym in brackets after it, eg Royal Prince Alfred Hospital (RPAH). Thereafter, the acronym RPAH may be used.

For more detailed information on writing and presenting web content:
W3C guidelines: http://www.w3.org/TR/WAI-WEBCONTENT-TECHS/
Web Reference tutorial: http://www.webreference.com/content/writing/

3.3 Maintenance & Currency

(See also Section 2 of this document)
It is important that site owners review their web pages regularly and make revisions to ensure relevancy and accuracy of material. Inaccurate or out of date content not only reflects poorly on the organisation, it may expose the site owner to the risk of litigation if a reader receives or acts on incorrect advice from the site.

Key criteria to consider when maintaining web content are:

• Check for dead/changed links
• Verify accuracy of facts
• Ensure information is up to date
• Check spelling and grammar

3.4 Use of images / files / includes on web pages

Web graphics must serve a purpose. If their only reason for appearing on a page is visual embellishment, the page designer is unnecessarily increasing download time for the end user.
Rule of thumb - total page size should be 60-80 kB. In circumstances where a very large image is necessary, users should be given an annotated smaller thumbnail option if possible linked to the larger image.

For more detailed information on use of images:
http://www.grantasticdesigns.com/graphics.html
W3C guidelines: http://www.w3.org/TR/WCAG10-HTML-TECHS/#images

See also Sections 4.5 – 4.9 of this document.

3.5 Use of rich media content: eg Flash, audio-visual files, applets

Whilst rich media content can enhance the quality of content and enrich the user’s interactive experience, it also introduces a layer of potential accessibility difficulties that must be resolved. For
example, a short video may provide high value content to sighted users but will be inaccessible to the vision-impaired. To comply with accessibility Standards, all content displayed via rich media must also be provided in an alternate plain text format. Where this is not feasible (such as video content) a copy of the transcript or a description must be provided.

Other considerations include:

- File size/download time
- Browser/platform compatibility issues
- Use of proprietary software that users may not possess

A final consideration - is the rich media option being used because it is the best possible content deployment solution or is it a gratuitous use of technology? A simple guideline to remember is that the presentation of your content should never impede or overshadow the effective delivery of the content itself.

For more detailed information on use of rich media:
http://www.w3.org/TR/WCAG10-HTML-TECHS/#objects
http://www.w3.org/TR/WCAG10-HTML-TECHS/#audio-and-video

See also Section 4.10 of this document.

### 3.6 Duplication of Content and Use of linked files

In general, duplication of content should be avoided where possible as it leads to the possibility of inconsistencies and errors. In situations where content is appropriate for publication in multiple sites, such as the Online Handbook information, a single (authoritative) source should be used as far as is practicable. This can be achieved via several options:

- A link to the source document
- A programmatic excision of relevant data from the source document for publication on another site.

In both instances, however, the onus is on the site administrator of the ‘borrowing’ site to ensure all links to content or borrowings remain up to date and accurate.

### 3.7 Use of linked files

Linked files such as Server Side Includes (SSI) are a convenient way to store and serve content that is shared across multiple pages. Common examples include branding banners, navigation and footers. SSI’s can be a significant time saver by enabling you to edit one shared file and have the effect of that edit carried over to every page using that file. SSI’s require certain configuration settings on your web server. These settings are particular to the platform you are running and involve choices that have an impact on your server’s security settings. Therefore configuring the server to allow SSI’s should only be done with a full understanding of the issues involved.

For more detailed information on use of linked files:
Apache tutorial:
http://httpd.apache.org/docs/howto/ssi.html

Microsoft tutorial:

Comprehensive reference:
http://wdvl.com/Authoring/SSI/
4 Visual Design

The Visual Design of a website strongly impacts the user experience. An effective visual design that is consistent, clean and clear can greatly enhance both the communication and ease of use; while a cluttered, unprofessional visual design can negatively impact the user experience. Visual design and branding are key factors in building credibility in the minds of the users. Good design signals high quality and trust; while messy, uncoordinated visual designs reduce credibility and trust. There are 3 main things the visual design should deliver:

- Consistency (as users move between different pages they feel they are still on the same website);
- Context (e.g. UNSW > Faculty > School); and
- Simplicity.

In good web design information can be found easily and quickly, and is presented in a manner responsive to the user's needs. User's needs and the need to professionally represent the University should be the focus of the design.

It is important to maintain stylistic coherency between all the pages in your site. Once you have taken the trouble to create an overall look for a site, stick with it unless you intend to do a complete redesign of the whole site. Keep all navigational buttons and icons consistent. It confuses people to have to think constantly about how they are going to move from one section to another. Care needs to be taken to understand how people interact with computers. Make use of models that are obvious to all levels of user expertise, or that incorporate standard types of interface.

This section discusses various components of visual design, including:

- Layouts
- Web Design Tips
- Fonts
- Colours
- Use of Images
- Use of Cutting Edge Technology
- Using Professional Designers
- Use of Logos & Commercial Brands
- Minimum Window Size
4.1 Layouts

Documents that are to be delivered by the web require a different style of layout to ensure optimal readability. The reason for this is that they will be read and displayed on a screen, which is both wider than the printed page and exposes less of the document in one glance than the printed page. The width of the text in a page is in direct relation to our ability to read and understand that information in an efficient manner. Newspapers, magazines and larger format books all have a multicolumn layout to facilitate the reader being able to quickly understand and comprehend the information. With websites, the width of the screen upon which documents are to be viewed on the web is variable and in most cases wider than most printed material, therefore the layout of web based documents should have a narrower width than the default screen width to ensure that the user does not have to excessively move the eyes from one side of the screen to the other. Additionally, the two or more column approach that the printed media use to combat this approach will not work well with web documents as the screen height will generally require the user to scroll down the document to read the first column only to return to the top of the screen to read subsequent columns.

4.1.1 Develop a mock-up of the site

To best visualise and communicate the scope and size of the final Website a mock-up version should be produced on paper or another appropriate format. This mock-up will be helpful to ascertain that the different parties agree on the logical structure of the Website and that the scope and terms of the project are agreed. A hierarchical tree structure can be drawn to indicate the relationships of the different sections of the site and indicate whether the site will link to other resources.

4.1.2 Page Structures

There are three main page structures: (1) Home Pages; (2) Sub-Home Pages; and (3) Content Pages. Home and Content Pages should have consistent layouts, Sub-Home pages optional. These three page layouts are illustrated below. They include content elements that are flexible. The layouts shown on the following pages should be used as a guide for your web pages:
## 4.2 Web Design Tips

- Conventions make users feel comfortable - don’t reinvent the wheel, simple is often best.
- Navigation should be functional and consistent, not decorative or changing.
- Make your site a pleasure to visit - don’t make people ‘work’ to use it.
- Compelling content will have users returning, not ‘funky’ designs.
- Consider every kind of content that may appear on a dynamic web page. What will the design look like if there is no content at all?
- Design pages for scanning, not reading. Users scan and guess what to click.
- Clearly label pages and sections, breadcrumbs are often effective - Breadcrumbs should not double as a page title.
- Home page should be distinct from sublevel pages, however navigation should be consistent.
- All pages except home should have a ‘home’ button/link - almost no one clicks on the logo to get home.
- Early useability testing on paper or screen can reveal serious design flaws before they become too costly to correct.
- Focus on the message, not the medium.
- Create a clear visual hierarchy, it helps users find information faster.
- Make content and copy concise, people usually visit websites to save time – don’t expect users to spend any length of time wading through long chunks of text.
4.3 Fonts

General Typography

As the primary purpose of a website is to deliver information that will mostly be read on computer monitors, which are not nearly as crisp and refined as the printed page, it is important that the typography of the website is well chosen to ensure that the documents are legible.

Legibility

It is important when designing websites to understand that the person using the site will need to be able to read the information contained within the site. As not all computers display text in the same way, (e.g. Macintosh and Windows computers have different font sizes) and computers vary considerably in the number and quality of colours that can be displayed, it is important to aim for larger fonts with good contrast between the background and foreground. Further consideration should also be given to visitors with special needs such as visual impairment, colour blindness, etc.

Some issues that should be considered are:

- Visitors will read this information on the screen.
- They will usually have to scroll the page to read it so 2 column text is not suitable for websites.
- Type should be legible on the screen; some type faces that have been developed for the printed page are not legible on the computer screen.
- White space should always be used effectively; excessive clutter reduces legibility on the screen.

Use Sans Serif fonts

Sans Serif fonts are letter shapes without curls e.g. Verdana, Arial, Helvetica and Tahoma are all sans serif (serif fonts have curls, e.g. Times New Roman is serif)

Serif Font ‘Times New Roman’ 11em: The quick brown fox
Sans Serif Font ‘Verdana” 11em: The quick brown fox

Verdana is the recommended font for all content text (e.g. body text, headings, captions etc.) and navigation (top, left and breadcrumbs), however Tahoma can also be used for navigation. Verdana is designed to be read at small font sizes on a computer screen and makes an excellent choice for readability.

Size Matters

It is important that text is large enough to read. Body text should size at 11 or 12em. As a guide, for accessibility, text should display no smaller than 11em and should be able to be scaled by the reader’s browser. The styles overleaf are examples of sizes and fonts for top navigation, left navigation, breadcrumbs, page titles, body text, headings, captions and footer text. These examples are from a cascading style sheet (CSS).
CSS font family should always include ‘sans serif’ for compatibility with clients who do not have any of the named fonts installed (eg all Linux users!), eg:

Font-family: verdana, arial, helvetica, sans-serif.
4.4 Colours on the Web

An important thing to consider when selecting colour is the possibility that some of your readers may be colour-blind. 8% of people have some form of colour blindness and by selecting wrong colours you can make your page virtually invisible for them. For instance reds and greens are the worst to use; blues and yellows are better. Make sure there is a strong contrast between text and the background. There is more information on colour-blindness and websites at: www.webaim.org/techniques/visual/colorblind

It’s also necessary to consider whether the colours you have selected may have any cultural significance amongst your target audience, eg the colours of a flag or religious symbol.

Colour names are not generally supported by browsers. What this can mean is that when you assign a colour to a background or font using a colour name, there is no guarantee it will appear the same on all computers, if the colour appears at all.

How many colours should be used?
The best rule is to use three colours:-

- **Primary colour:** This colour will be the main colour for the website; it will occupy most of the area and tone for the design as whole.
- **Secondary Colour:** This colour is usually there for “backing up” the primary colour.
- **Highlight Colour:** This colour is used to emphasize some parts of the website, for instance important headings.

For example the website below:-

![Example Website](http://example.com)

---

**Highlight Colour** - orange

**Primary Colour** - black

**Secondary Colour** - purple

NAVIGATION AND CONTENT:
VISUAL DESIGN GUIDELINES

20 of 71
4.5 Use of Images

Images greatly enhance a website; they can communicate emotion, trust, professionalism and meaning. They can provide extra information, be used to contextualise information or simply to improve the overall visual style of a website. One disadvantage to using images is that not everyone has either the ability or the desire to see them.

Only use images if they are:
- Relevant to the ‘message’ being communicated
- Informative
- Meaningful
- Have alt Tags

4.6 File Sizes

“File size” refers to the number of kilobytes (which influences the download time).

It is important that images for web pages are small in size to ensure fast downloads for the end user. Each image takes time to download, and for every image added to a page, the time taken to download this page increases. The longer a page takes to load, the more likely you are to lose your visitor. Images must be designed to fit within the minimum browser size (e.g. 600 x 800 pixels). There are four main images styles that can be used in content areas, see below.

File Sizes should be kept as small as possible, the total size of a web page, including HTML code and other code should be between 60k and 80k. Small images such as buttons should be below 5k in size, larger images e.g. photos should be between 10k to 20k maximum in size.

For more information on file sizes visit:
http://webmonkey.wired.com/webmonkey/99/15/index0a.html?tw=design

4.7 Image Dimensions

Images on the web are measured in Pixels. “Image dimensions” refers to the number of pixels wide, by the number of pixels high.

Always specify the height and width of an image. Browsers should not be used as a sizing tool – all images should be prepared and compressed using an editing tool such as Photoshop or Fireworks. While the browser will work out the image size directly from the image, specifying its dimensions enables the browser to display other sections of the document while the images are downloading. The reason is that to correctly display all the elements of a page, a browser needs to know what area to allocate for each element. It will wait without drawing any of the information it has already downloaded while it obtains the sizes of images etc. Specifying the size of each image means that the browser can allocate that amount of room as it downloads the text giving the user feedback on the text section of the page more promptly. This gives the impression of a speedier download time and allows the user to make the choice as to whether that document is of interest without excessive waiting.
Where possible repeat the use of images throughout the website to avoid excessive demands on downloading the images. The browser will store previously downloaded files in a memory or file cache that it refers to before attempting to download the image. If the image is the same URL it will not be downloaded again and the site will appear to respond faster.

Image Dimension Examples

**Landscape Photos -**
Approximate size: 380px wide by 120px high.

**Right Column Photos -**
Approximate size 150px wide by 200px high

**Content Photos/Images -**
Landscape: Approximate size: 150 wide by 100 pixels high.
Portrait: Approximate size: 150 wide by 210 pixels high.

**Full Page Photos -**
Maximum of 545 pixels wide by 330 pixels high.
Landscape Photos - Approximate size: 380 pixels wide by 120 pixels high.

**Right Column Photos** - Size: 138 pixels wide by variable pixels high (this example is 165 pixels high).

**Content Photos/Images** -

Landscape Approximate size: 150 pixels wide by 100 pixels high.

This example is right aligned.

Photos should be saved as JPEG files (.jpg)

Portait Approximate size: 150 pixels wide by 210 pixels high.

This example is left aligned.

Logos should be saved as GIF files (.gif)

**NOTE:** This is an example of an APPROVED logo (See 4.9) re use of commercial logos.
4.8 Always include alternatives to images

Always use an alternative (alt) text representation for each image. The HTML standard has the option to use two forms of alternative representation of an image, text and low-resolution graphic. The focus should be primarily on the text alternative, as it enables users who are not using a graphics-based browser to see what it is that the graphic represents in the context of that Web page. The image tag is written: `<img src="image.gif" alt="what the image represents">`

Use of this tag also permits other groups in need of this sort of information, such as the visually impaired, to understand the purpose and contents of your Web page easily and in the best way possible. Additionally, if your image is acting as a button or a link to another part of the site, without this alternative tag this function will not operate when the image is not present. One other bonus is that search engines often index this tag as extra text information about the document. As a result, this can be optimised to facilitate appropriate index, which will in turn assist in ease of finding the document on the WWW.

Using a `""` as the alt tag will stop the text-based browser referring to an image at all. `<img src="image.gif"="">`. This is desirable if graphics are used for no other reason other than to add a visual flavour to the Website and only get in the way of the person understanding the site in this context.

4.9 File Formats for Photos and Graphics - GIF versus JPEG

Photos and graphics must be saved in the right format before they are inserted into a web page. There are 2 acceptable file types: JPEG and GIF.

JPEG file format should be used for photos or images with gradients, while GIF file format should be used for images that are made up of solid colour - e.g. logos. Below are examples. For further
**JPEG - for Photos**

JPEG file format should be used for photographic images, or any images with gradients. The file extension in the saved name is ‘jpg’ – i.e. ImageName.jpg

![Example JPEG Image](image)

**GIF - For Logos**

GIF file format should be used for images that are made up of solid colour – e.g. logos. The file extension in the saved name is ‘gif’ – i.e. ImageName.gif

Note that the colour palette is limited to a maximum of 256 colours.

![Example GIF Image](image)

**NB:** It is not permitted to advertise on behalf of a commercial donor or sponsor on UNSW websites, and in particular to display company logos without permission from the University’s Marketing division. The appropriate way to acknowledge a commercial entity’s sponsorship or other support is documented in the UNSW Website Policy (section 6.5)
4.10 Use of Cutting Edge technology

(See also Section 6.9 (Multimedia Content and Browser plugins).

Don’t try to attract users to your website by use of latest web technologies. In particular, if their system crashes (or they have to download and install a plugin) while visiting your site, then many users will never come back.

There are many new and exciting features in DHTML, Flash, JavaScript menu, special effects, WAP and other “bleeding edge” technologies. As well, things like java applets can take up system memory for your readers and can cause their browser to crash if there are too many applications going on. Other bleeding-edge problems include scrolling text and automatic window pop-ups.

If your audience can not access the site, then the whole exercise is meaningless. Therefore consideration of the technology utilised by your target groups must be given within the design process to ensure that all of these potential visitors have the ability to access the material on their terms, not those of the website designers. The message: "Sorry but your browser does not support X feature, please download X" says to a viewer that the site is not audience-focused and cares little for the visitor. This is not a good start to marketing to these people.

Using new technologies might scare away potential users, as many of them might not have browsers that support this technology. This is because most ordinary internet users don’t upgrade their browsers at the same frequency as do content providers or other IT professionals. Users have less motivation to understand advanced features. The reasons include:

- Lack of technical knowledge
- Mistrust of new technologies
- Lack of interest in new technologies

Users often avoid anything that’s overly hyped or which looks like advertisement. Users only care about their own purpose in visiting a site and finding a straightforward task flow that will provide them with what they need.

The more familiar the website feels and the more you present it as a solution to users’ problems, the more clicks you are likely to get.

4.11 Use of Logos & Commercial Brands

The UNSW Website Policy does not permit the use of logos and commercial brands on UNSW websites without approval from the University’s Marketing Manager. Once approval has been obtained, logos and commercial brands should be presented in accordance with the style guidelines of the organisation being presented. Make sure the logo is not cluttered, and has enough white space around it; also be sure that the imagery and content surrounding the logo is appropriate. Never include logos or commercial brands on web pages without the approval of both UNSW and the external group who own the logo. There is more information about acknowledging sponsorship by commercial entities in the “UNSW Websites: Acceptable Content” Standard.

http://www.its.unsw.edu.au/policies/docs/Acceptable_Content_Standard.doc
4.12 Minimum window size

You should ensure that your website is visible in the minimum window size i.e. 800x600.

- Design pages that can adapt to any width i.e. while specifying width use percentages instead of pixels. If you use fixed width the users with wide browsers will have large empty space on the screen and the users with narrow browsers will have to scroll horizontally.
- The most important information (whether content or navigation) should be able to appear in an 800x600 area at the top left-hand side of the page.

4.13 Using Professional Designers

The costs of using professional designers to create a design to your brief are comparatively small when compared to the risks involved in creating a poorly designed Website. While you may be lucky enough to find a professionally trained designer amongst your staff members, more often than not the design ability amongst your staff will appear amateurish in comparison with that of a professionally trained designer. The results of this will be a site that may look unprofessional and does not portray either the University or your department effectively.

A design brief to match the users' needs, abilities and level of technology should be developed, but should also reflect the strategic plan of the site. As a University, the design MUST not jeopardise or hinder access to our information and this needs to be reflected in any brief.

This brief will form the basis from which the site design should be developed. For instance a marketing oriented site will differ in nature and presentation to a site which distributes technical information and different again from a site for delivering training.

Professional web designers have the technical expertise, design skills, experience and resources to produce high quality design.

Websites need special skills to design because:
- Websites are different to web pages.
- Websites need interfaces that enable people to locate and understand information.
- Typography, page layout, special graphics etc all require specialist skills to implement.

How to Find Designers:

Search for Vendors

- UNSW EdTec offers web design services

- Recommendations from web colleagues
- Look for partners of well-known brand products e.g. Macromedia partners can be found by entering your search criteria at:
  - http://spectra15.macromedia.com/search/search.cfm

- Online Searches or Yellow Pages
- Phone Vendors, talk to them about your requirements
Contact 2-3 Vendors:
- Meet with them, ideally at their offices, review their number of staff, quality of work environment etc.

Brief vendors and get quotations
- Look for warranties on both service work and products
- Check for ongoing service and support after purchase

Choose a Vendor
- Cheapest isn’t always best
- Ask to talk to existing clients if possible for references
- The way the vendor has interacted and communicated in delivering the quote is usually indicative of how they will behave in the future
5 Navigation Design

5.1 General Principles

Website navigation refers broadly to the options available to site users that help them to move through a site and to locate the information they may need. Website navigation encompasses a set of discreet custom tools that enable this process. As such, they are the access keys to the information on a website.

The decision you make about the type of navigation tools to use on a website should stem from prior decisions you will have made during the planning phase. Questions centering on the type of audience(s) you are planning for; the goal and objectives of the site; and, the type of content you want to provide, all need to be addressed before you can consider navigation solutions.

As a general rule, the navigation tools you provide should support two types of information gathering behaviour: explorative browsing and directed browsing.

For explorative browsing users will commonly rely on menu, site tour, contextualised in-text and quick links to traverse the site contents. Rather than close off pathways, the navigation options should open up possibilities to the browser and stimulate further exploration. Options to move in various directions (up, down, across information hierarchies) should always be available.

For directed browsing users have a specific purpose (a file, a person, a timetable) when visiting a site, so navigation tools should facilitate easy and direct access to information. For this type of browsing, a search tool is an obvious first choice. However, direct access to specific information can be facilitated with tools such as a complete and up-to-date site map and a clearly delineated menu system. Utility links (Site Map, Contact Us, Search) should always be visible.

Both types of users, however, will always want to know where they are in a site and where they can go. Navigation tools should provide such orientation.

In the design phase, a crucial step is defining the information architecture of the site. This activity involves a process that first identifies the type of content the site will provide, how it will be arranged into individual pages, and finally, how the page elements will be structured into a hierarchy. It is the hierarchy that will form the basis of a menu structure, if you have chosen to use one. Once you have the hierarchy it is then possible to identify cross-linking relationships that suit explorative browsing.

As a general rule, the greater the number of pages a site will contain, the greater the need for navigation options. More specifically, if you are using a menu system, you will need to decide how broad and how deep your site will be. The navigation guideline puts no controls on this, however, the recommended menu system stops at a depth of five levels. The recommended menu system does not limit the number of items at the top level either. While the number seven may not be as “magical” as it once seemed, it is worth considering the user’s ability to cope with extensive menu options and lists.

5.2 Navigation Issues

Websites are not static: navigation tools should support, rather than hinder, on-going content development. Just as it should be easy to create new or archive old pages, so it should be easy to
ensure that the navigation tools are in step with the dynamic nature of content development. Avoid falling into the trap of creating a menu system that cannot easily be extended or reduced. The result of an inflexible menu system can be “orphaned” pages (that are unconnected to other pages) or pages that are forced into an inapposite menu association.

With the growth in content management systems that facilitate easy page creation for multiple users and with the advent of portal technology and dynamic content delivery, the notion of what defines a single site can become problematic. Leaving aside the issue of possible duplication of information (the policing of which is the role of the site administrator), the notion of “a website” can become blurred. This is especially the case in large organisations, like UNSW, that leverage the benefits of CMS and portal technology for content delivery. A single organisation may offer various services or products, but which are provided by individual unit or department websites within that organisation. Is the Yahoo! website one site or an amalgam of several, for instance? The navigation guideline recommends that “UNSW” (and Faculty in the case of schools and so on) should be part of the navigation, but not constitute a level in the hierarchy of the site.

A question, then, for information designers, is whether a site should be defined by the organisation or by the products and services it offers.

Another problem that can occur, particularly with smaller units or departments within organisations, is to create a site that is basically an “org chart”, but that has very little else to offer. The site may accurately reflect how the organisation is structured and administered, but it may offer little in terms of useful information or resources to the end user. Navigation should be geared to how you want end users to access information on your site.

5.3 Navigation Options
Website navigation consists of many elements, some of which at UNSW are required by, or a part of, sections of the Identity Standard*

- Menu Navigation (Top and Left)
- Breadcrumbs
- Header* / Footer utility links – Search | Contact (Us) | Site Map, etc.
- Search (in header)
- Header graphics – features that are hotlinked (symbol / logo and banner)*
- Site map or site tour (a site map with content overview)

5.4 Development Checklist

A website should:

- **Provide stable and consistent navigation**
  Guiding Questions / Considerations
  Decide which navigation elements you will use on your website, and stick with them throughout, and for every new page you create.

- **Provide site orientation and contextualisation**
  Guiding Questions / Considerations
  Because users may enter your site at any point, consider the navigation elements that will
aid user orientation. If you are using a fully expandable menu, will breadcrumbs be necessary (or redundant), for instance? Avoid “bridging” pages that merely replicate what is contained within the menu structure. Strike a balance for the number of in-text and quick links per page; hotlinking multiple words per sentence, for instance, will merely overwhelm the user.

- **Match navigation options to the site's overall goal and objectives**
  Guiding Questions / Considerations
  What type of site are you developing? Does it fall under any of the site categories that are listed in the Website Policy? Will user browsing behaviour be more goal-driven (directed), rather than explorative, for instance?

- **Match navigation options to the site's size or scale**
  Guiding Questions / Considerations
  How big will the site be? How many pages? When creating any site, you will need to “map” the information architecture of the site in order to ascertain this. Knowing how big a site will be may help you to decide the types of navigation options you should use.

- **Match navigation options to the type audience(s) it is aimed at**
  Guiding Questions / Considerations
  Who is the site for? Will the audience be familiar/unfamiliar with the content you will be providing? Is the audience focus internal to UNSW, external, or both?

- **Make room for growth**
  Guiding Questions / Considerations
  Is your site likely to grow or undergo modifications? Strike a balance between site breadth and site depth that may accommodate such future development. Should your site be “deep” or should it be “shallow”? Some say information should be no more than three clicks away. Consider contextualised “quick” or “jump” links as a further option for key information further down the “tree”.

- **Use plain English**
  Guiding Questions / Considerations
  Use descriptive or straightforward language, not jargon or localised terminology. Be brief and consistent with UNSW naming standards and conventions. See the MyUNSW Glossary of Terms to start with:
  [https://my.unsw.edu.au/help/COM/glossary_a_to_c.html](https://my.unsw.edu.au/help/COM/glossary_a_to_c.html).

### 5.5 Internet References

**W3C - “Core Techniques for Web Content Accessibility Guidelines 1.0” (W3C)**

[http://www.w3.org/TR/WCAG10-CORE-TECHS/](http://www.w3.org/TR/WCAG10-CORE-TECHS/)

**Checkpoints from Section 4 (Navigation):**

14.3 Create a style of presentation that is consistent across pages. [Priority 3]
13.4 Use navigation mechanisms in a consistent manner. [Priority 2]
13.5 Provide navigation bars to highlight and give access to the navigation mechanism. [Priority 3]
13.3 Provide information about the general layout of a site (e.g., a site map or table of contents). [Priority 2]
13.7 If search functions are provided, enable different types of searches for different skill levels and preferences. [Priority 3]
13.2 Provide metadata to add semantic information to pages and sites. [Priority 2]

Boxes and Arrows

http://www.boxesandarrows.com/
-- Useful resource for articles and discussion around issues to do with website development, information architecture and user interface design.

Asilomar Institute

http://aifia.org/
-- Provides useful downloadable resources (under “Tools”) in various formats (including Visio) for website design, including wireframe templates, usability toolkits, IA presentations and content development worksheets.

"The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information." By George A. Miller.

http://www.well.com/user/smalin/miller.html
-- Seminal paper published in 1956 that presents research on why humans tend to memorise and filter information in lots of 7 (plus or minus two). It has had an enormous influence on interface design, but is now frequently challenged and debunked (to varying effect). See two following URLs for commentary -

- UI Design Update Newsletter http://www.humanfactors.com/downloads/sept00.asp
5.6 Navigation Guidelines - Using a Menu System

5.6.1 Summary of Top and Left Navigation:

<table>
<thead>
<tr>
<th>Page area</th>
<th>Description</th>
</tr>
</thead>
</table>
| Top Navigation| ▪ Recommended option - All 1st level navigation menus for websites should be positioned in the Top Navigation area (see Blueprint 1).  
▪ Alternative option - For websites where use of the 1st level navigation menu does not suit a Top Navigation design, site designers can place 1st level navigation in the Left navigation.  
▪ Note: To achieve commonality of website navigation, centre or right hand navigation structures are not recommended.  
▪ Site owners have control over the visual design of the Top Navigation area.  
▪ This area is required to be a single row (i.e. no wrapping or 2nd level menus in this area) and for accessibility reasons Javascript-enabled dropdown menus are not recommended. |
| Left Navigation| ▪ All 2nd level and below navigation menus should be positioned in the Secondary Navigation area (see Blueprint 2).  
▪ 1st level Nav menus should be located in the Left Navigation menu if a Top Navigation design is not appropriate for a website.  
▪ Site owners have control over the visual design of the Secondary Navigation area.  
▪ The operation of the Secondary Navigation should be based on a fully expanding menu structure and standard useability features. Guidelines are available (below) that describe suggested secondary navigation behaviour.  
▪ Note: Guidelines have been developed for sections of a web site that require non-standard navigation structures. |
5.6.2 Design Blueprints

The design blueprints are guides detailing how page and site navigation should be laid out. Owing to the multiple possibilities with regard to coding methodology (CSS, and so on), it is acknowledged that exact pixel dimensions may be difficult to reproduce and so are offered as a guide.

Blueprint 1 - Header and Top Navigation

The following blueprint presents the visual design for all website headers and top navigation menus. Implementers should also read the additional notes following this Blueprint layout.
- **Search** - Site search is optional but highly recommended for large sites. If used the design should comply with the following:
  - The search button should be labelled “Search” and the operation should default to search the current site only.
  - Site implementers can choose any search engine to implement.
  - The design of the search results page is at the discretion of the implementer. As a guideline it is recommended that an option to extend the search to All UNSW should appear at the top of the search results page.

- **Contacts** - a link to a page with contact information relevant to the site should appear in the top right of the header or as the last item on the right of the Top navigation menu. The label should be either ‘Contacts’ or ‘Contact Us’.

- **Site Map** - A site map link can be positioned in the header next to the contacts link at the discretion of the implementer.

- **Navigation menu terminology** - For Faculty websites the 1st level menu items should use the following terminology:
  - Future Students, Current Students, Research, Alumni, News & Events
  - Site implementer can add other navigation items as desired to suit their information structure.

- **Rollover navigation** – For reasons of accessibility, rollover drop down menus should not be used.
Received from the selected navigation link. Here is a list of steps:
1. **Site orientation** - Site orientation allows users new to UNSW websites to orient themselves with the context of UNSW and the sites home page.
   - The site orientation items for UNSW and the Faculty or Unit should link to the relevant site pages.
2. **Page title** - A page title should be displayed at the top of content pages below the breadcrumbs (if used). For consistency it is recommended that the page title mirror the related navigation menu item.
5.6.3 Blueprint 3 - Navigation Drill Down Behaviour

The following options illustrate the navigation drill down design for sites using the Top and Left navigation for 1st level menus.

Note: Left navigation menus that are more than 4 levels deep may become too long and unwieldy if they have many items at each level. In this situation implementers may wish to use an alternative navigation structure; guidelines are provided in Section 5.8.2 (below).

Top and Secondary Navigation

Implementers should read the additional notes following this layout.

5.6.3.1 UNSW

One One One One One One One One

Content

5.6.3.2 UNSW

One One One One One One One One

ONE
Two
Two
Two
Two
Two
Two

Content
- The left navigation menu provides the mechanism to navigate to sub-site pages, i.e. it covers all level 2, 3, 4 and 5 menu items.

- The two key usability needs that have driven this design are:
  - The majority of site pages should be able to be accessed from an item in the Left menu i.e. a one to one relationship should exist between menu items and pages.
  - To orient a user within the site and to allow them to easily click between pages all levels of the navigation should be accessible as a user drills down through the menu.

- For the current menu item selected the navigation should display all the menu items at the next level below (obviously this cannot apply if the item is at the lowest in the menu).

- As users drill down through the navigation all previous levels to the one selected should continue to be displayed. This allows users to navigate to a higher level in a single click.

- Each level in the navigation menu should be indented and symbols (optional style) are to be displayed against each menu item for users to distinguish long labels that have wrapped and to identify if there are any sub-pages.

- The current page being displayed should be highlighted in the navigation menu in a different colour to the rest of the menu.

### 5.7 Branding and Identity Standards

After consultation with Faculties, the Division of Institutional Advancement has set mandatory standards and guidelines to be followed for UNSW Website Branding and Identity to ensure consistency and cohesiveness to University websites.

This document can be accessed at:


### 5.8 Non-Standard Navigation - see Appendix C
6 Technology

6.1 Introduction
The aim of this section is to establish the technical principles to which UNSW web authors must adhere in web delivered documents. These technical standards are framed to make the viewing of material originated from UNSW available to the widest possible audience using a variety of browsers (User agents) on the greatest range of software platforms (Operating systems). To this end only technical and language specifications considered to be standards by such bodies as the World Wide Web Consortium (W3C) should be used at UNSW. Proprietary extensions to existing language standards should NOT be used.

In light of the deployment of WebCT Vista as the University's Electronic Learning Management System it is possible to set some reasonable limits to the browser environments to be supported by UNSW web sites. These limits are NOT determined on the basis of browser manufacturer but on the coding standards they support and are platform independent. Most currently available browsers conform to these standards. Unfortunately users of Microsoft Internet Explorer will need to independently download and install the Java 2 Runtime Environment (J2 JRE) from Sun Microsystems. For a list browsers certified to work with WebCT Vista please visit http://support.vista.elearning.unsw.edu.au/system/browser_software.cfm?ss=1

It is the responsibility of page authors particularly using visual page editing tools such as Microsoft Front Page or Macromedia Dreamweaver to ensure that the underlying code adheres to the principles stated above.

6.2 Coding Standards
Coding standards encompass two issues. The first issue is the actual version of the web page mark-up language that would be deemed as acceptable for web pages generated at UNSW and the second is how the text of that web page is turned into binary data, this is called encoding.

MARKUP
The process of creating a web page has at its heart the notion that the document author embeds display instructions into text documents. These instructions are called HTML tags and HTML stands for (HyperText Mark-up Language). The HTML language is built around standards produced by the World Wide Web Consortium or W3C. As the language evolves certain tags become obsolete or redundant. These tags are said to be deprecated. HTML is a language which describes how page content should be displayed by the web browser to the end user. HTML mark-up has no capacity for describing the semantics of web page content; it can show nothing about the relationships of one block of text to another. This is the job of a mark-up language called XML (eXtensible Mark-up Language). Currently the W3C recommends a page mark-up standard of XHTML which has the page display characteristics of HTML but with syntax requirements of XML. For UNSW all web sites should be written in XHTML however a minimum standard of HTML 4.01 (transitional) should be acceptable for pages generated by portals, search engines and content management systems.

1 This refers to browser specific extensions to HTML language standards created by Microsoft and Netscape during the 1990’s
In order for a browser to know which version or type of mark-up it needs to interpret all web pages generated at UNSW must have a `<!DOCTYPE>` declaration as it's first line of the web page file. A doctype declaration is also required by assistive technologies for the disabled and as such is a requirement under the Web Accessibility Initiative (WAI) of the W3C. A doctype declaration states the mark-up language, its version and its level of conformance to the published “grammar” for that language. It should be noted that certain browsers will render a page with the same HTML code differently if the doctype declaration is missing.

Deprecated tags should not be used. The role of certain tags in HTML has been handed onto newer technologies such as Cascading Style Sheets (CSS). All sites at UNSW should use CSS to control their formatting behaviour in the browser.

All UNSW sites should have layout and display control conforming to and using CSS. As the W3C standards are ahead of browser software's abilities it is worthwhile to design sites such that future CSS capabilities may be utilized in future updates of browser software. Keeping style information in a separate .CSS type files and importing them into content documents is an easy way of achieving this.

[http://www.w3.org/Style/CSS/](http://www.w3.org/Style/CSS/)

**DOCUMENT ENCODING.**

When we view a document on a screen we see letters, numbers and ‘characters’ such as punctuation displayed on the screen. However when this document is stored on a hard drive or disc these characters need to be translated into a collection of 1’s and 0’s (binary data). This process is called encoding. How this is done is again covered by standards based character sets. Most web editing tools will save the content that you type using a default character set which contains an array of characters best suited for displaying the English language only (this character set is sometimes referred to as ISO-8859-1 or Windows-1252). It is preferable to have a web page encoded in a character set that can handle any language. This means that a web surfer with a computer set up to display characters in a different language will still display your English page correctly. The preferred character encoding is UTF-8. When commencing a project either using a web development tool such as Macromedia Dreamweaver or a simple text editing tool ensure that files are saved as UTF-8. It is also advisable that your HTML documents contains Meta information specifying character encoding and language being used. (Please refer to the section 6.6 METADATA) It is also advisable that if changing languages within a document that the change be indicated within the HTML.

IMPORTANT: Web authors creating content to be delivered within WebCT Vista MUST use UTF-8 encoding

[http://www.iana.org/assignments/character-sets](http://www.iana.org/assignments/character-sets)  
[http://www.w3.org/International/resource-index.html](http://www.w3.org/International/resource-index.html)

6.3 **Client Side Scripting (JavaScript)**

It is possible to write program code that automates tasks in a user's browser. The sort of tasks that this is used for range from operating drop down menus, fancy link highlighting upon mouse roll over to validating data as it is entered into a web or opening popup windows. This type of
programming is referred to as scripting. There are a number of languages that can be used to script in a web page the most common being ‘JavaScript’ however.

1. The chosen scripting language should be available on the majority of available browsers.
2. The chosen scripting language should conform to accepted standards (such as the ECMA standard for JavaScript) and NOT use versions of a scripting language that contain a single browser manufacturers proprietary extensions (Microsoft Jscript).
3. Web pages should still be functional if the end user has disabled scripting in their browser preferences.

SCRIPTING AND ACCESSIBILITY

It is tempting with many of the more sophisticated web page editing software packages, as well as graphics manipulation packages, to use the functions that generate glossy web user interfaces with links that change colour and menus that slide up and down. In reality these displays are made from scripts which quite often manipulate and move images around on the users screen. As such; these interfaces are commonly invisible or unusable by those web users who need assistive technologies (such as screen readers) to navigate and read web pages.

The use of scripting should not in anyway inhibit the users access to information or the users ability to navigate the web site. It should not create barriers to the use of web forms nor should it cause the current page to reload periodically (This can trap a disabled user with assistive technologies on a given page). Please read the UNSW guidelines on webpage accessibility before commencing the use of client side scripting.

http://www.its.unsw.edu.au/policies/docs/Accessibility_Guidelines.doc

6.4 Browser/Platform Compatibility

Engineering a web page to “best viewed with” is not an acceptable practice at UNSW. Pages must be visible and fully functional regardless of the brand of browser. To this end any embedded software/media must be available in a range of browsers. This means that embedded objects must be placed with \texttt{EMBED} and \texttt{OBJECT} tagging, that java applets should be written in standard java (http://java.sun.com) (not a proprietary form which requires supporting libraries found on a single browser platform – please refer to your authoring tools specifications and manuals).

Software packages that can deliver content through web viewers must make those viewers available in alternative forms to Microsoft Active X controls. Content that is viewable only through an Active X plug-in is not acceptable.

6.5 Dynamic Web Pages

Dynamic web pages are pages generated on the web server usually from information (data) kept in a data base. These sorts of pages can vary in their content between visits. Software that generates web pages (such as Active Server pages, Perl/PHP scripts, Web Portals, ColdFusion and Content Management Systems) must generate code that is:

1. W3C Standards compliant.
2. Accessible to those with disabilities.
3. Viewable across multiple platforms and browsers.
6.6 Metadata and Search Engines

6.6.1 Introduction

This section provides some generic information on the benefits of using correct metadata and content identification and the appropriate standards to use for the use to obtain optimum results in search engines.

All guidelines are based on the W3C standards, extended by the Dublin Core Standard and the EdNA Metadata standard. As well, they have been reviewed and endorsed by metadata experts within the UNSW Library.

The University of New South Wales has a huge number of websites containing an enormous amount of content. These sites vary widely in their design, terminology, and format, with content identification practices ranging widely across the enterprise.

Many people, with a wide range of needs and using different methods to connect to the internet, need to access UNSW content.

In order to ensure page content is delivered in the right way, a high level of information about that content is needed.

While site administrators can control the content and appearance of your pages, they cannot control the browser type or assistive technology people may use to view them.

Metadata in a web page is used in many places in a document’s journey from web server to users browser. Most people believe that the sole purpose of metadata is to make a document available to search services such as Google and others. Whilst there is a set of metadata tags which indeed assist search engines to catalogue a web page there are many other metadata tags which have other purposes.

Web pages at UNSW should contain meta tags describing the character encoding used to generate the page and the language that the text was written in (this is a requirement to support those with disabilities using assistive technologies). Web pages at UNSW should contain information about the owner and/or creator of the document as well as the appropriate faculty and school/department that the document creator or owner belongs to. UNSW web pages should contain copyright metadata if appropriate. Remember the content of web pages can become inaccurate or completely incorrect with the passage of time. Content owners and authors change jobs or leave the university. Metadata about page ownership and its intended audience helps track down those who have taken over responsibility from others for web page content. There are legal implications for web site owners at UNSW over the veracity of content upon their web sites.

There are other meta tags which are directives to web servers, caches and client browsers and even a tag which instructs that a page should NOT be catalogued by search engines. Finally there are metadata tag sets which are discipline specific, such as the IMS metadata scheme for education content. Such discipline specific metadata can help colleagues within a discipline find your pages using discipline specific search engines.

As more and more methods are developed to allow people faster or easier access to content, it is increasingly important that that content be sufficiently identified to be quickly and correctly located and delivered.
META REFRESHING and REDIRECTION.
The use of meta tags to periodically refresh page content or to redirect the user to a different page is to be avoided at all costs. Meta redirection and refresh is not permitted under accessibility guidelines (REFER to UNSW Website Accessibility Guidelines):
http://www.its.unsw.edu.au/policies/docs/Accessibility_Guidelines.doc

6.6.2 Why use proper content identification (metadata)?
By following the correct metadata standards the content on a website is more likely to be picked up by a search engine and is hence more accessible to the target audience.
There are clear business benefits for correctly identifying the content on a website including:
- Making it easy for people to find your pages.
- Getting the best possible result in search engines.
- Making it easy for people to understand your content.
- Ensuring your content is correctly identified.
- Helping visitors understand where this content fits in.

With the growth of content management technology and internet technologies it is not always possible to predict all the uses that content may serve. An important consideration in properly identifying content is for future use of that content, or content re-purposing.

6.6.3 How search engines work
To understand how best to ensure that your content reaches its target it is necessary to understand how people using the internet will find your content, how search engines work.
Internet search engines are special sites on the Web that are designed to help people find information stored on other sites. There are differences in the ways various search engines work, but they all perform three basic tasks:
- They search the Internet -- or select pieces of the Internet -- based on important words.
- They keep an index of the words they find, and where they find them.
- They allow users to look for words or combinations of words found in that index.
The important thing to note is that you’re not actually searching the web, you’re searching through an index of content found when the search engine last updated.
There are 3 main types of search engines operating today, crawler based, directory based, and mixed results.

Crawler-Based Search Engines
Crawler-based search engines use an automatic program called an indexer (or spider) to automatically find pages based on links they find in other pages. The most widely known version of this is Google™.
Using the results of their last indexing as a starting point, they will visit every page in their list building an index of their contents, then follow the links they found to other pages, adding their contents in the index, then follow more links to more pages and so on.
Site owners can also submit their index page to these sites and they will eventually visit your page and include it and all it links to, in the index of key words and phrases.
If a web page changes, crawler-based search engines eventually find these changes, and update the index. Page location, title, meta tags, headings, body copy and other elements all play a role.
Directory based search engines
A directory-based search engine (like Open Directory) depends on humans for its listings. You submit a short description of your entire site to the directory, or editors write one for sites they review. A search looks for matches only in the descriptions submitted. Changing your web pages has no effect on your listing. The only exception is that a good site, with good content, might be more likely to get reviewed than a poor site.

Mixed results search engines
Early search engine either presented crawler-based results or human-powered listings. Today, it is common for both types of results to be presented, such as in the Yahoo Search Engine. Usually, a hybrid search engine will favour one type of listings over another. For example, MSN Search is more likely to present human-powered listings from LookSmart. However, it will also present crawler-based results, depending on the query.

6.6.4 Standards and Guidelines
A number of national and international organisations have published standards on metadata and content identification. The three that are appropriate and should be followed for all UNSW websites are:

- W3C HTML standards (http://www.w3.org/TR/html401/),
- The Dublin Core metadata initiative (http://dublincore.org/

6.6.5 Correctly identifying your content
Content can be identified through a number of document properties and attributes.

- Document type, (for full details of mime types, their definitions and values, see ftp://ftp.isi.edu/in-notes/iana/assignments/media-types/media-types,
- Date created, modified, accessed
- File size
- Document Attributes
- Document location & name
- Meta Tags
- Identification tags within the document itself
- Relationships with other documents
- Content within the document itself

In all cases, the value of the above document property is used by presentation, search, and categorisation tools to determine whether that document is to be displayed at all, as well as what prominence that document should receive.

6.6.6 Document Attributes
Whilst the most basic attributes are automatically set, (date, size, &c.) it is a good idea to edit the document properties to ensure all relevant attributes are correctly set.
6.6.7 Document location and name

Ensure directory and document names reflect the nature of their content. Avoid the use of special characters in directory and/or file names.

Example:
A document for or about ‘visitors’ will more easily identified if the document is located at:

http://www.unsw.edu.au/visitors/pad/visitors.html

than if it is located at:


6.6.8 Meta tags

The following table summarises META tags and their content.

<table>
<thead>
<tr>
<th>META tag</th>
<th>Example content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content-Type</td>
<td>text/html; charset=UTF-8</td>
</tr>
<tr>
<td>DC.Date</td>
<td>2003-1-14</td>
</tr>
<tr>
<td>DC.Publisher</td>
<td>University of New South Wales</td>
</tr>
<tr>
<td>DC.Creator</td>
<td>PAD auth</td>
</tr>
<tr>
<td>DC.Subject</td>
<td>University, Information, Education, Tertiary, Sydney, Australia, Research, Study, undergraduate, postgraduate, ...</td>
</tr>
<tr>
<td>DC.Format</td>
<td>text/html</td>
</tr>
<tr>
<td>DC.Source</td>
<td>PAD auth</td>
</tr>
<tr>
<td>DC.Rights</td>
<td><a href="http://www.unsw.edu.au/gen/pad/copyright.html">http://www.unsw.edu.au/gen/pad/copyright.html</a></td>
</tr>
<tr>
<td>DC.Title</td>
<td>UNSW Home Page</td>
</tr>
<tr>
<td>DC.Type</td>
<td>UNSW Home Section</td>
</tr>
<tr>
<td>DC.Identifier</td>
<td><a href="http://www.unsw.edu.au/alumni/pad/alumni.html">www.unsw.edu.au/alumni/pad/alumni.html</a></td>
</tr>
<tr>
<td>DC.Language</td>
<td>en</td>
</tr>
<tr>
<td>DC.Description</td>
<td>The University of New South Wales, located in Sydney Australia, is one of Australia’s largest and leading universities. ...</td>
</tr>
<tr>
<td>EDNA.Approver</td>
<td>PADappr</td>
</tr>
<tr>
<td>EDNA.Version</td>
<td>Version 1.1</td>
</tr>
<tr>
<td>EDNA.Audience</td>
<td>Students, staff, alumni</td>
</tr>
<tr>
<td>keywords</td>
<td>University, Information, Education, Tertiary, Sydney, Australia, Research, Study, undergraduate, postgraduate, ...</td>
</tr>
</tbody>
</table>

For more details on META tags and their usage see the standards:

- W3C http://www.w3.org/TR/html401/struct/global.html#edef-META
- Dublin Core http://dublincore.org/
# 6.6.9 Identification Tags

There are several identification items relating to content within the document itself. The following table presents a list based on content item and a suggested standard:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>Correct document structure, all required elements exist, all required closing tags exist, etc.</td>
<td>All code complies with the W3C standard to the point that document structure is correct and complete, all required closing tags exist, no forbidden closing tags exist, all required attributes exist, all content items identified, full accessibility compliance, etc.</td>
</tr>
<tr>
<td>Doctype</td>
<td>Specifies which mark-up language and version this document was created with.</td>
<td>Must exist, must be correct for this document type.</td>
</tr>
<tr>
<td>HTML tag</td>
<td>Specifies this is an HTML document. Denotes start and end of the content.</td>
<td>Must specify language</td>
</tr>
<tr>
<td>HEAD tag</td>
<td>Denotes start and end of the document header.</td>
<td>MUST exist.</td>
</tr>
<tr>
<td>TITLE tag</td>
<td>Provides the title for this document, (presented in the title bar of the browser and read by screen readers.)</td>
<td>MUST exist.</td>
</tr>
<tr>
<td>META tags</td>
<td>Provides information about the content</td>
<td>Start tag REQUIRED</td>
</tr>
<tr>
<td>Script tags</td>
<td>Denotes start and end of an embedded script or location of script to embed</td>
<td>Start tag REQUIRED</td>
</tr>
</tbody>
</table>

**NAVIGATION AND CONTENT:**
**VISUAL DESIGN GUIDELINES**  48 of 71
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link tags (see Relationship s with other documents.)</td>
<td>Provides the location of a related document</td>
<td>Start tag REQUIRED&lt;br&gt;End tag FORBIDDEN&lt;br&gt;MUST have type attribute.&lt;br&gt;MUST have rel or rev attribute where appropriate</td>
</tr>
<tr>
<td>BODY tag</td>
<td>Denotes start and end of the document body. (The content that is displayed on the page.)</td>
<td>MUST exist.&lt;br&gt;Start tag REQUIRED&lt;br&gt;End tag REQUIRED</td>
</tr>
<tr>
<td>Heading tags</td>
<td>Content headings</td>
<td>Must have appropriate opening and closing heading tags.&lt;br&gt;May use div, span, or p tags. MUST have appropriate opening and closing tags</td>
</tr>
<tr>
<td>Subheading tags</td>
<td>Other document headings</td>
<td>Must have appropriate opening and closing heading level tags.&lt;br&gt;May use div, span, or p tags. MUST have appropriate opening and closing tags</td>
</tr>
<tr>
<td>Normal text</td>
<td>Normal body content</td>
<td>Must have appropriate tags.&lt;br&gt;May use alternative tags</td>
</tr>
<tr>
<td>Images</td>
<td>Page graphics</td>
<td>W3C standards compliant usage only.&lt;br&gt;Must have src, alt, width, and height attributes.&lt;br&gt;May have other attributes&lt;br&gt;W3C standards compliant usage only.&lt;br&gt;Must have src and alt attributes.&lt;br&gt;May have other attributes&lt;br&gt;Must have src and alt attributes.&lt;br&gt;May have other attributes</td>
</tr>
<tr>
<td>Table tags</td>
<td>Denotes start and end of a table as well as table attributes.</td>
<td>Start tag REQUIRED&lt;br&gt;End tag REQUIRED&lt;br&gt;MUST have cellpadding, cellspacing, and border attributes.&lt;br&gt;May have other attributes</td>
</tr>
<tr>
<td>Table heads</td>
<td>Denotes start and end of a table head.</td>
<td>Optional.&lt;br&gt;If used:&lt;br&gt;Start tag REQUIRED&lt;br&gt;End tag REQUIRED&lt;br&gt;May have other attributes</td>
</tr>
<tr>
<td>Table body</td>
<td>Denotes start and end of a table body.</td>
<td>Optional.&lt;br&gt;If used:&lt;br&gt;Start tag REQUIRED&lt;br&gt;End tag REQUIRED&lt;br&gt;May have other attributes</td>
</tr>
</tbody>
</table>
### Item Description Standard

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table foot</td>
<td>Denotes start and end of a table footer.</td>
<td>Optional. If used... Start tag REQUIRED End tag REQUIRED May have other attributes</td>
</tr>
<tr>
<td>Table rows</td>
<td>Denotes start and end of a table row.</td>
<td>Start tag REQUIRED End tag REQUIRED MAY NOT have other attributes</td>
</tr>
<tr>
<td>Table cells</td>
<td>Denotes start and end of a table cell.</td>
<td>Start tag REQUIRED End tag REQUIRED MAY have other attributes</td>
</tr>
<tr>
<td>Horizontal rule</td>
<td>Presents a horizontal line</td>
<td>Start tag REQUIRED End tag FORBIDDEN MAY have other attributes</td>
</tr>
<tr>
<td>Paragraph tags</td>
<td>Denotes start and end of a paragraph.</td>
<td>Start tag REQUIRED End tag REQUIRED MAY have other attributes</td>
</tr>
<tr>
<td>Lists</td>
<td>Denotes start and end of a list and list style.</td>
<td>Start tag REQUIRED End tag REQUIRED MAY have other attributes</td>
</tr>
</tbody>
</table>

### 6.6.10 Relationships with other documents

Related documents should be related through the use of LINK tags, to comply with W3C, each LINK tag must have the ‘href’ attribute and must have either the ‘rel’ or ‘rev’ attribute. The LINK tag resides in the head of a document. It creates the required relationships through the use of the ‘rel’ and ‘rev’ attributes whose acceptable attributes can be one of the following only:

#### Stylesheet
Refers to an external document that provides style and layout controls for this document

#### Start
Refers to the first in a series of documents

#### Next
Refers to the next in a series of documents

#### Prev
Refers to the previous in a series of documents

#### Chapter
Refers to a document that serves as a chapter in a series of documents.

#### Section
Refers to a document that serves as a section in a series of documents.

#### Subsection
Refers to a document that serves as a subsection in a series of documents.

#### Contents
Refers to a document that serves as a table of contents to the current document or series of documents

#### Index
Refers to a document providing an index to the current document or series of documents

#### Glossary
Refers to a document providing a glossary to the current document or series of documents

#### Appendix
Refers to a document providing an appendix to the current document or series of documents

#### Alternate
Determines alternative documents for either different languages or media.

#### Copyright
Refers to a copyright statement document
6.6.11 Content

How content is written plays an important part in how content is searched and found. As most searches are conducted using search engines that use indexes based on the content the words in the document will have a large impact on how the content is found. For example using the term UNSW in a document instead of University of New South Wales will mean that a search on “University New South Wales” would not find that content.

Consistent use of correct terminology, avoid acronyms without using the full version on each page they appear and being mindful of the audience you are writing for and how they may be likely to look for the content will all effect how successful the content is in reaching its target.

6.6.12 Check and Edit Code

With the proliferation of editing tools and applications like Microsoft™ FrontPage®, Macromedia™ DreamWeaver®, or Claris™ HomePage® it is now easier than ever to publish internet documents with all the code necessary to look good already built-in. These programmes are known as WYSIWYG (What You See Is What You Get) programmes, in that they display material on your screen as it will appear on the website. In some cases, you may not even need a knowledge of HTML to create a website.

Unfortunately these products don’t always write all the code necessary to effectively identify the content for other applications, and what’s more they often write code that is not standards-compliant.

It is essential that the content in your document be effectively defined, and the only way to ensure this is to edit the code and check that all content identification is there.

6.6.13 Choosing the level of content identification for your site

In a perfect world, all content on the internet would be scrupulously identified, classified and tagged. Given that correctly identifying content has a significant cost in resources inevitably there is a trade-off.

Website owners and site administrators must strike a balance between the cost of correctly identifying and the business benefit.

For example: A news item that appears on a school’s site might not need or benefit from exhaustive use of all the EdNA meta tags, whereas a piece of educational content may.

In making this decision about what level of detail to use the following should be considered.

- Accessibility - ensuring that your content is accessible to the widest possible audience through whatever means of technology.
- Intended target audience and use of the content
- Future target audiences and uses of the content

There is extensive information on the web along with the standards and how and when to use them.
The Australian Government Information Management Office recommends that metadata be created for:

- Home Pages (major entry point);
- Topics/Services in high demand by the target community;
- Information required by a reader to complete their reason for viewing the page (eg admission requirements, fee structures);
- Pages providing an actual online service (eg payment, application forms etc);
- Pages required to meet a prescribed obligation (eg copyright disclaimer, privacy statement);
- Entry points to specific online services and indexes (eg entry point to library database);
- Major formal publications (eg annual reports, corporate strategic plans);
- Media releases;
- Major entry points or indexes and menus to a range of closely related topics, programs or policies;
- Substantial descriptive or marketing information about the organisation.

### 6.6.14 Content exceptions to W3C Standards

This section details an overview of additional content considerations and exceptions to the W3C standards. Exceptions that relate to content identification are allowed under the following circumstances:

For example: You may use Scaleable Vector Graphics in a document provided there is a mechanism to provide an alternative document for people who don’t have a compatible browser.

**Widely applied element or attribute**

The only exception allowed under the W3C standard is where a particular attribute is forbidden by the standard but has been implemented by **all** leading browsers.

For example the topmargin, leftrimargin, marginheight, and marginwidth attributes of the `<BODY>` element, are forbidden under the W3C standard, but all leading browsers have implemented one or more of these attributes and indeed they are required by some browsers to display the header properly as defined in the UNSW visual branding standard.

**Large file size**

Documents that total more than 150Kb are allowed if mention is made of the file size where the link to this document is displayed and a smaller version is provided for those with low bandwidth.

For example: In the link to a document that has a large total file size, mention is made of the download size of the document and an alternative is provided for low bandwidth viewers.

You might present it like this:

“click here for full version of document – (250Kb)”

“click here for the text only version – (23Kb)”

### 6.6.15 Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>The content of an HTML document between the <code>&lt;BODY&gt;</code> and <code>&lt;/BODY&gt;</code> tags.</td>
</tr>
<tr>
<td>Collection</td>
<td>The storage facility that holds the information gathered about the content of pages and other internet readable content.</td>
</tr>
<tr>
<td>DCassist</td>
<td>A tool produced by the Dublin Core group to help with understanding the Dublin Core META tags and their use.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DTD</td>
<td>Document Type Definition</td>
</tr>
<tr>
<td>Dublin Core</td>
<td>An extension to the W3C META tag standard recommended by the W3C and adopted by UNSW</td>
</tr>
<tr>
<td>EdNA</td>
<td>Educational Network of Australia, a working group of educational experts that defines the EdNA metadata standard</td>
</tr>
<tr>
<td>Head</td>
<td>The content of an HTML document between the &lt;HEAD&gt; and &lt;/HEAD&gt; tags</td>
</tr>
<tr>
<td>META tag</td>
<td>An HTML tag that provides information about the document but is not displayed in the document.</td>
</tr>
<tr>
<td>Ranking</td>
<td>The order in which the results of a search are displayed</td>
</tr>
<tr>
<td>Result</td>
<td>The data generated by a search.</td>
</tr>
<tr>
<td>Robot, (AKA spider)</td>
<td>A software tool that gathers details about the content of pages and other internet content.</td>
</tr>
<tr>
<td>Search Application</td>
<td>A JAVA application that takes the results from the Search Engine and presents them to the visitor.</td>
</tr>
<tr>
<td>Search Engine</td>
<td>The background software that performs the search and returns the result to the search application</td>
</tr>
<tr>
<td>Search term(s)</td>
<td>The word(s) entered by the visitor wishing to perform a search.</td>
</tr>
<tr>
<td>Verity®</td>
<td>The search engine implemented by UNSW to provide collection building and searches.</td>
</tr>
<tr>
<td>W3C</td>
<td>The World Wide Web Consortium, a working group of international internet experts that defines the W3C standards relating to many aspects of the internet.</td>
</tr>
<tr>
<td>Webmaster</td>
<td>The person who manages a web site.</td>
</tr>
<tr>
<td>WYSIWYG</td>
<td>What You See Is What You Get</td>
</tr>
</tbody>
</table>

### 6.6.16 Types of Content

Content can be in many formats and mime types, such as:

- HTML documents
- Images, (.jpg, .gif, .png, &c.)
- PDF documents
- Word documents
- Excel spreadsheets
- PowerPoint presentations
- Text documents
- RTF documents
- Database content
- Macromedia® Flash™ animations
- Audio content
- Video content
6.7 Logs and Statistics

When a web page developer develops a site, the site ultimately needs to reside on a computer that is connected to the world via a high speed data connection and which runs software design to serve web pages via this connection. Unsurprisingly such computers are referred to as web servers. The majority of web server software packages keep logs of the activity of the server.

Logs include information on:

1. The pages that have been requested from the web server.
2. The dates and times the requests were made.
3. The originating address (IP) of the web page request.
4. The type of user agent (browser) and the underlying operating system that made the request.
5. The site that the user agent was visiting before requesting the page from this server (the referrer).

Web log analysis software is available on the internet. As most web logs are kept in simple text files it is quite easy for an analysis tool to handle logs from a variety of web server software platforms. Web log analysis software should be able to provide you good statistical analysis (often generating graphs) of the traffic to your site and can in many cases work out the country and the organisations that the page requests originated from. Please check with the person or organisation hosting your web site to confirm if they can supply you with either or the actual server log or can generate a web log analysis report for your particular web site.

6.8 Authoring Tools and Process

There are many ways to create web pages and sites and a variety of tools available to assist the web page author. There are tools available which totally separate the author from the underlying HTML code down to text editors which rely on the user having a complete understanding of the page mark-up language chosen.

Considerations in choosing a tool

1. The number of pages that are anticipated in the site.
2. Will the site be developed and maintained by a single author or a team.
3. Will different persons be responsible for the content contained in different parts of the site.
4. What is the technical skills base of the different content contributors.
5. Security and access control for site contributors.
6. Enforcement of visual, navigational and technical standards across web site.
7. Availability of staff dedicated for web development.

Classes of authoring / editing tools

1. Text editors (Microsoft Notepad, Apple text edit)
2. Authoring suites (Microsoft Frontpage, Macromedia Dreamweaver)
3. Content Management Systems (UNSW MyCMS /interwoven, Macromedia Contribute, FarCry, Zope)
It is up to the developer to decide which tool is best suited to their needs, skills and the scope of the web project. Certain tools are simple and intuitive to use offering an interface as familiar as common word processing software. These tools display the users work as it would be viewed in a web browser.

Web authoring suites usually require the user to undertake some form of software training or reading in order to use them efficiently. In addition they usually offer tools for managing the files that the author creates and a process for placing these files onto a web server (publishing).

Content Management Systems (CMS) are best suited for large sites with multiple content authors, these are tools for organisations rather than individuals. CMS systems usually reside on the web server and provide a browser based interfaces. Users of CMS will require a level of software training (as opposed to technical or computer language training) commensurate with their allocated role in the website project.

6.9 Multimedia Content and Browser Plug-ins

There are many formats and encodings for delivering media to web users. Very few of these are supported natively in the end user’s browser. If it is desirable or imperative that content must be delivered in this fashion then there are some simple guidelines to its use.

1. Provide alternative representations of media on your site such as text transcripts of video/audio content (Refer UNSW Accessibility guidelines).
2. Be consistent, use one format and encoding standard for all content of the same type (such as video) across an entire site.
3. Ensure that the technology creators (such as Microsoft, Apple) provide viewers for different client operating systems and browsers.
4. Be aware of your audience. If you are providing content for users who are not likely to have access broadband connection or slow dialup connection they are unlikely to be able to use your content.
5. Do not force users to download the latest version of a viewer if there is no compelling reason to use its features. Many users have media players installed on their computers. If you are not using the latest features of a media type do not encode your content for the latest version.
6. Choose media players that can be operated by means other than the mouse (REFER UNSW Accessibility guidelines)
7. Do not use media formats for which the players come bundled with advertising or ‘Spyware’
8. Ensure that copyright clearance or licences have been obtained for any third party content delivered via web media before the content is published
7 Usability

7.1 Introduction

Visitors to your website are ‘users’ of your website in the same way that you are a user of the software on your computer. It is the quality of a user’s experience with your website which defines the site’s usability. Just as you rightly expect the software on your computer to ‘work’ easily and logically, visitors to your website will expect a similar standard of usability from your site.

More precisely, usability is defined by how effectively users can complete the task they set out to do when coming to your site. This is largely determined by the interface your website provides and thus depends on the organization of content, page layout, navigation devices, fonts, and graphic design. Even the inclusion of appropriate META tags can influence the usability of your site in the context of search engine listings.

7.2 Measuring Usability

Usability (or lack of it) is an outcome of people interacting with your website. To measure usability you need to observe people while they are using your site, but this does not mean you should put off usability testing until your site is complete. What if you test the usability of your finished site and this reveals that it is hopelessly unusable? Start early - ideally before you write your first HTML tag. Expect to have several iterations of testing and designing - usability experts refer to this as the ‘usability cycle.’

For each pass through the usability cycle you need users, you need tasks, and you need a method of capturing user feedback.

The users should come from as diverse backgrounds as possible. Try to anticipate as broadly as possible the range of users who will visit your site. You don’t need a lot of users to test your site - there is a law of diminishing returns as you increase the number of users you are testing with. Neilsen recommends a maximum of five users for each cycle of usability testing. Colleagues, friends, and students are all potential users for your usability testing.

Devise tasks these users are likely to perform. If your site is a typical School or Unit site your users and their tasks might include:

- a current undergraduate student trying to find contact details for their lecturer
- a current undergraduate student trying to find syllabus or administrative details for a course
- a prospective undergraduate student (or the student’s parent) seeing what courses your school has on offer
- a prospective postgraduate student looking for information about postgraduate coursework degrees
- an academic looking for possible collaborators in a particular research area
- a media person wanting to talk to an expert about some topical issue.

You can get feedback by observing and noting how efficiently the users complete their assigned task. Make notes as you watch their actions - do they click on the wrong links, are they confused by the words or graphics, do they end up in a dead-end and have to back-track. Watching a person try to find their way through your website can be a revealing experience and is one of the most effective tools for improving your site.
Alternatively you can ask your user to think aloud, to vocalise their thoughts as they work through the task – speak aloud what they expect to find when they click on a link and how they react to what they do find. A tape recorder can be very useful (but ask them first if they mind being recorded).

A third technique is to interview the user after they have completed the task – were they sure where to start, was there any overlap between the top-level divisions in your site, did they feel confident using the site, and so on.

Ideally you should have your first pass through the usability cycle using paper mock-ups of your site. Draw on paper (or mock up with a drawing program) your first concept of your site. Try to find variations so that you have at least 3 mock-ups for your users to test. Even if your design is limited by institutional restrictions try to find those aspects which you can change, in particular the distribution of content across the site.

Refine or revise your design based on user feedback. If several cycles of formal useability testing are beyond your resources, at least get friends and colleagues to look over your site, preferably with some stated goal in mind. The worst person to test the usability of a site is the site author.

Even after your site is in production you can still get useful feedback from users – this is why the contact address on each page is a genuinely important item. Always bear in mind that your website should not have to explain itself to your users – it won't come with an instruction manual for the visitor. The design should be intuitive and usability testing is the way to make it so.

7.3 Usability resources on the web

- The 'Resources' section of [www.webcredible.co.uk](http://www.webcredible.co.uk) has a useful guide to enhancing usability.
- UsableWeb [http://usableweb.com/](http://usableweb.com/) has many links to web usability resources.
- Usability.gov has an overview of usability testing [http://usability.gov/methods/usability_testing.html](http://usability.gov/methods/usability_testing.html).
- The well-known webmonkey site has advice on usability testing [http://webmonkey.wired.com/webmonkey/98/14/index3a.html](http://webmonkey.wired.com/webmonkey/98/14/index3a.html).
- An interesting article about a commercial site where the 'shopping cart' was a wheelbarrow: [http://www.smartisans.com/usability_testing.htm](http://www.smartisans.com/usability_testing.htm).
8 Security

8.1 Introduction
A totally secure web (or any other type of) server would have no connections to the outside world. Realistically, a basic website must be viewable by at least some users, and most commonly, by anyone with Internet access.

High level security for your website is the province of the systems administrator and network engineers. These hardworking souls devote their time to making systems run as reliably and as securely as possible by identifying and fixing security holes, maintaining systems and providing for disaster recovery.

If you administer your own web server, your duties should include monitoring mailing lists and web sites for security issues and updates for your server software. A server administrator must implement backup and disaster recovery procedures.

Even if you are simply the owner or maintainer of a website hosted on someone else's server you must follow basic security precautions - some of which are outlined here.

Rule 1: Do not upload any information or files of any kind to your website which you do not want the casual browser to read or have access to.

Security for a website is a balance between the need to provide access to content to your target audience (via the Internet) and the capability for causing mischief, to you and others, which those levels of access may provide.

Consider the consequences of a failure of authentication or an incorrect configuration file so that restrictions on access to protected directories on your website were removed. If you have files, which should never been seen by anyone other than a few individuals, then the web is probably not the appropriate way to distribute them.

8.2 Access Privileges
Access to a website is based on levels of privilege. The most common of these are read, write and execute - or combinations of these (e.g. read and write, read only, write but not read, etc.)

A user with no privileges (the absence of read and write privileges) is granted no access to the content on your website.

The most common privilege level is read-only access. This level allows the user to view content or download files from your website - including html files and other media such as images, flash files, sound files etc.

Some content areas of a website may also be restricted to a specific group of users. Read-only access to a particular part of a website may be only granted by the entry of a correct username and password. An example may be a staff intranet site or class lecture materials put on the web. On a password-secured site, a user who has not been authenticated by the system also has no privileges to access your website.
A site may also have an area that is restricted to write privileges only. This area of the site may be used only to upload content and is usually used as a so-called drop folder for the uploading of completed assignments for instance. Since there are no read privileges a user cannot view the content of the folder.

The owner of a site, or the site maintainer, has the highest level of privileges - both read and write access. This level of privileges allows for content to be added, updated and deleted.

Only the system administrator has a higher level of privileges.

There is also another level privilege called the execute privilege. This privilege (combined with read and write privileges) allows a user to upload scripts (not a JavaScript) and other programs to your website that are executable on the server. The execution of a malicious or insecure script may have untold consequences. This privilege is usually only available to or granted by the systems administrator. Discussion of this privilege is beyond the scope of this document.

Scripts and applets written in languages such as Perl, PHP or Python and Java may not be as innocent as they seem. Consult your system administrator before uploading these to the server. See also 8.6 (Other Security issues Accessibility) of this document.

8.3 Username & Password

Basic security on your website is governed by the use of a username and password combination that you will have been issued by your system administrator. Your password and your username are the key to site security and your allocated level of privileges described earlier.

Rule 2: Never disclose your username or password details to anyone.

Firstly, you will almost certainly be held responsible for any actions carried out under your login details.

Secondly, any person with access to your website and files may inadvertently damage the site (overwriting existing files, deleting files, etc).

The defacement of websites seems to be a hobby with a particular attraction to certain Internet users. Never assume your site is immune to these people. A known or easily guessed password is just what these people are looking for.

As well, many programs and browsers offer to store username and password details when you configure them for uploading content to the server for the first time. For instance, Macromedia Dreamweaver may retain your password when you enter these details into Site Preferences – Remote Info panel. While this is convenient, it may also give direct access to the online content of your website to everyone else who uses your computer.

Other programs you use such as FTP clients may also provide the same password retaining features.

Who knows your username and password?

Do you use an outside designer? Though it may be simple to provide them with direct access to your website, this will also provide a possible security hole.
Does another member of staff or a student help maintain your website? Do you also provide them with direct access to your website, allowing them to make updates without you having the opportunity to review the content?

Who knows your username & password? Do they need to know them to perform work?

**Rule 3: Consider providing individual login details to every person who may access and update material on your site.**

Having individual logins for authors facilitates maintaining an audit trail of site modifications and may assist in tracking down the origin of website defacements.

**Use Strong Passwords**

Weak passwords are another reason for lack of web security. Sophisticated password cracking tools are freely available on the Internet, which can test thousands of password combinations in seconds.

Your system may allow you to set your own password. If this is the case, make sure that you establish a strong password. Your partner's name, your child's name(s), your date of birth, “fred” (easily visible key combination on the Qwerty keyboard) are not considered secure.

Never use as a password any word, which can be looked up in a dictionary. Password cracking attempts based on dictionary searches are very common.

The following may help in setting a password:

- Not less than 8 characters in length
- Mixture of upper & lower case alphabetic characters, numbers and even punctuation.
- Mnemonics are useful as a memory aid.
  - For instance: “The big red chimney at the end of the corridor” - password = tbrcateotc is good but mixing the case and adding numbers or punctuation characters makes the password stronger.
  - e.g. t$BrCa^&teO@tC9 yields a better password.

**Rule 4: Change your password regularly.**

**Rule 5: Never use the same password twice.**

See also

- UNSW IT Security Standards & Guidelines - Appendix A for more information on effective choice of password.
- UNIPASS - the university's universal password system under 8.4 Authentication.

**8.4 Authentication**

UniPass, the university's Universal Password for online services at UNSW, with a username of either the staff or student identification number is the recommended authentication process for accessing restricted website resources. The benefits of using UniPass include minimising the number of passwords which UNSW staff and students are required to remember and the central management of passwords. Password management is simplified for individual UNSW units, as they do not have to be concerned with the process of users changing or resetting passwords and the secure storage of passwords.

UniPass system is a service maintained by UNSW Information Technology Services (ITS).
Content authors should consult with their local system administrator to determine if UniPass authentication is available on the server they are using or whether implementation of the service is possible.

8.5 Encryption

The UNSW Website Policy states all UNSW websites must comply with federal and state legislation which includes the Privacy Act 1988 (Commonwealth) and the Privacy and Personal Information Protection Act 1998 (NSW). Under the Privacy and Personal Information Protection Act 1998 (NSW) reasonable security safeguards should be taken to protect personal information against unauthorised access or disclosure.

Websites are commonly being used to transmit confidential information over the Internet as work practices change to incorporate more web-based access. Typical applications are web-based email access and student enrolments and applications. Confidential information to be protected can include usernames and passwords, personal student and staff details and credit card numbers. In order to satisfy the requirement for taking reasonable protection for this information it is recommended that confidential information transmitted over the Internet be encrypted using the Secure Sockets Layer (SSL) protocol.

Encrypted transmissions require a secure web server certificate, which are issued by a Certification Authority (CA). The certificate's function is to confirm your identity to the person accessing your website and contains your public key to allow the encryption of information sent to and from your web server. While the level of encryption for secure transmissions is dependent on the client's browser capability, the certificate used should support an encryption level of 128 bits.

Consult your server administrator to determine if your server is SSL-capable and how to install your content so that it is correctly downloaded via SSL.

8.6 Other Security issues

Consider the type of documents that you are using on your website. Use of document types other than HTML documents, image types such as JPEG or GIF, or Acrobat files for example may pose a security risk.

A Microsoft Word (a proprietary software standard) document for instance, may be considered a suitable type of file for large documents or for documents that require user input when downloaded from a website. Microsoft Word is perhaps the most widely available word-processing application on both Macintosh and Windows platforms. However, a Word document may also contain macro viruses and other viruses and scripts. An infected Word document may also compromise the system of the person who downloads the document from your site. The viruses or scripts may be executed when the document is opened thereby compromising the computer of an innocent user of your website. (You must not assume that your user has the most up to date antivirus protection installed).

A visitor who downloads an infected document and wastes their time repairing their computer, or who experiences loss of work as result, will have a very bad impression of your website. This could ultimately reduce traffic to your site and could leave a lingering reputation for hosting compromised files.
Documents written, edited and saved in Microsoft Word format may contain hidden text that the author(s) of a document may not wish shared with third parties. This may include simple edits that allow previous versions of a document to be reviewed (the altering of a quoted price from one company to another scenario). Sensitive information also contained in the document may include:

- Information about the computer used to write/edit the document.
- File path and locations of document(s) on computers or servers.
- Information about peripherals in an organisation including printers.
- Information about other files including linked text.
- Email header information.
- Text from other unrelated documents, which may be included in the Word document due to bugs in early versions of Word. These versions of Word loaded and saved whole disk sectors, including data beyond the nominal end of file. Hence these Word documents could include completely unrelated and undesirable information from your hard disk.

For the reasons outlined, do not use Microsoft Word for documents that you wish to make available for download. Consider using RTF (Rich Text Format) for such documents rather than Word files.

Adobe Acrobat format (PDF) is also a commonly used format for such documents. However, the preparation and use of PDF documents on your website must also be performed in such a manner as to maximise accessibility by visually impaired users. See also Section 2.2 (Accessibility) of this document.

Do you know the source of a file that you propose to use on your site? Did you download it from the Internet? Is that animated GIF, Flash file or Java applet that has a nice effect that would compliment your site really as innocent as it seems? Such files may contain malicious code that might make your website, and indeed the whole server, vulnerable.

There have also been reports of security flaws in certain types of images. Make sure that you know the source of an image – even if it is only for copyright reasons.

If you are in any doubt about a particular file type talk to your system administrator. Your faculty web coordinator will also be able to provide advice.

8.7 Content Management Systems
Your website may run on a content management system such as UNSW’s “MyCMS”.

Security of content and content publication on these systems is based around a system of content authors and content approvers with different privileges. Though a content author (or provider) can also be a content approver – a content author cannot approve his or her own content.

Website security basics outlined above also apply in this environment.

8.8 UNSW IT Security Policies
For more detailed information refer to UNSW IT Policy webpage: http://www.its.unsw.edu.au/policies/pol_security.html
Specific Policies are:

- UNSW IT Security Policy (PDF)
- UNSW IT Security Standards & Guidelines (PDF)

9 Resources on the Web

Book Publishers
http://web.oreilly.com/
http://www.sitepoint.com/books/
http://shop.osborne.com/cgi-bin/osborne/programming.html
http://www.peachpit.com/
http://www.samspublishing.com/
http://www.quepublishing.com/
http://www.sybex.com/

Websites
http://www.w3.org/
http://builder.com.com/
http://webdesign.about.com
http://www.techweb.com/ (IT News & Commentary)
http://www.webreview.com Web Reference (DrDobbs Journal)
http://www.apache.org/ (Apache web servers)
http://www.cmswatch.com/ (Articles related to Content Management Systems)
http://www.webmasterworld.com/glossary/ (Glossary of web terminology)
http://www.intranetjournal.com/ (Articles related to Intranets)
http://www.searchengineworld.com/ (Articles related to Search Engines)

Coding
http://www.w3schools.com/
http://www.htmlgoodies.com/
http://cgi.resourceindex.com/ (CGI resources)
http://www.codestyle.org/
http://codewalkers.com/
http://javascript.internet.com/

Legals
http://www.comslaw.org.au/ (Communications Law Centre)
http://www.oznetlaw.net.au/ (OzNetLaw internet legal practice of the Communications Law Centre)
http://www.bakercyberlawcentre.org/ (Baker Cyber Law Centre)
Online Utilities
http://jigsaw.w3.org/css-validator/ (CSS validator - syntax checker)
http://validator.w3.org/ (HTML validator - syntax checker)
http://www.gemal.dk/browserspy/ (What info your browser is displaying about you)

Usability
http://www.usability.gov/
http://www.useit.com/ (Jakob Nielsen)

Forums
http://www.webdevforums.com/
http://forums.webdeveloper.com/
http://www.sitepoint.com/forums/
http://www.blueworld.com/lists/dreamweaver.html

UNSW services
http://www.its.unsw.edu.au/
http://www.its.unsw.edu.au/policies/policies_home.html
http://www.acsu.unsw.edu.au/
http://www.edtec.unsw.edu.au/
http://www.disconnect.unsw.edu.au/
10 Appendix A - Website Production Checklist

Planning
Audience
Goals/Objectives
Content
Register UNSW URL

Design
Navigation Structure
Technology

Production
Building
- Resources, templates etc.
- Authoring Tools e.g. CMS

Maintenance
Spell, grammar checks
Update timeframes for all pages
Updated dates

Quality Assurance
Proof reading content
Checking links
Check buttons and scripts
Graphics files loading
Layout of page across browsers
ID owner and email
To build UNSW web pages please refer to various documents and resources as indicated:

UNSW Web Policy and its accompanying Documents:
- Domain Naming Standard
- Web Branding/Identity Standard
- Website – Acceptable Content Standard
- Accessibility Standard
- Navigation and Content Visual Design Guidelines


Other Resources:
Appendix C - Non-Standard Navigation

The standards for site navigation cannot cater for all possible site needs; variations to the standard will need to be adopted from time to time for specific situations. Two examples of navigation designs that need to vary from the standard are:

- Guidelines for site navigation requiring a long list
- Guidelines for site navigation over 4 levels deep

Other guidelines may be added from time to time.

12.1.1 Guidelines for site navigation requiring a long list

For long navigation lists that cannot effectively be accommodated in the left hand navigation menu (i.e. where the list is more than say 15 items) site implementers should put the navigation list in the page body.

The following illustrations show how the navigation menus could operate under these circumstances. Notice that the final content page displayed is structured as a “leaf” item (i.e. static page of content that does not link to deeper items) and is not reflected in the left hand navigation menu.

Note: Where the items in long lists have additional levels of content associated with them, such as a list of departments or research areas, each having a number of related sub pages, it would be better to represent these as separate sub-sites with their own navigation.
12.1.2 Guidelines for site navigation over 4 levels deep

For navigation that extends more than 4 levels in the Left hand menu site implementers can consider collapsing the left hand menu structure to prevent the expanded menu structure becoming too unwieldy.

The recommended best practice is to collapse the navigation levels above the level currently selected. The following illustrations show how this collapsing of sections could be effected.

Note: Site implementers should adopt the fully expanded structure where possible on a site and only use the collapsed menu structure for the areas of navigation that have a deep drill down.
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