

# CSP2103-4102: Markup Languages

## Lecture 8: Website Accessibility

# Objectives

- Understand the international standard guidelines
- Demonstrate the need to conform to guidelines
- Who recognizes these guidelines, and what version
- Understand the current Australian standards
- Understand the website accessibility issues
- Understand how to assess a website for accessibility

# Introduction

- Why is website accessibility such an issue?
- Is it only the disabled who benefit?
- Do we really have to use the guidelines?
- What are the consequences of non-compliance?
- How can you know if your website meets these guidelines?
- What are the barriers to implementation?
- Is implementation feasible in all situations?

# Definitions

- Website accessibility: refers to the “application of technical solutions to the design of a website in order to render it more accessible to users” (Craven, 2008).
- Visually impaired : refers to anyone with a vision-related disability, handicap or impairment, including blindness, macular degeneration
- Print disabled: can refer to visual impairment, but also includes language difficulties, inability to handle physical reading materials (e.g. turning pages of a book), functional literacy, dyslexia, insufficient motor control
- Disability: refers to general impairments or disabilities not covered by the above.

# 2000 Sydney Olympic Games

- Australia holds the distinction of being the first country to successfully bring a case to court for a violation of human rights based on web inaccessibility
- A visually-impaired individual successfully sued the Sydney Olympic Games Committee for failing to make a website accessible – he was unable to view a list of events and received \$20,000 compensation

# Importance of Website Accessibility

- “The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect” (Tim Berners-Lee, founder of the Web in (Henry&McGee, 2010))
- In Australia, any individual or organisation hosting a website on any Australian server must make every effort to comply with website accessibility standards, or they may face having a complaint lodged with the Australian Human Rights Commission under the Disability Discrimination Act (1992)

# Importance of Website Accessibility cont...

- Accessible websites:
  - Promote social inclusion for disabled people by improving access to information, communication and services
  - Bring financial benefit, both by increasing potential customer base and providing savings in maintenance of the site
  - Can result in technical benefits, such as enhanced visibility to search engines and increased usability in general
  - Meet legal obligations to ensure that accessibility barriers do not lead to discrimination against disabled people when accessing online services. (Sloan, 2008)

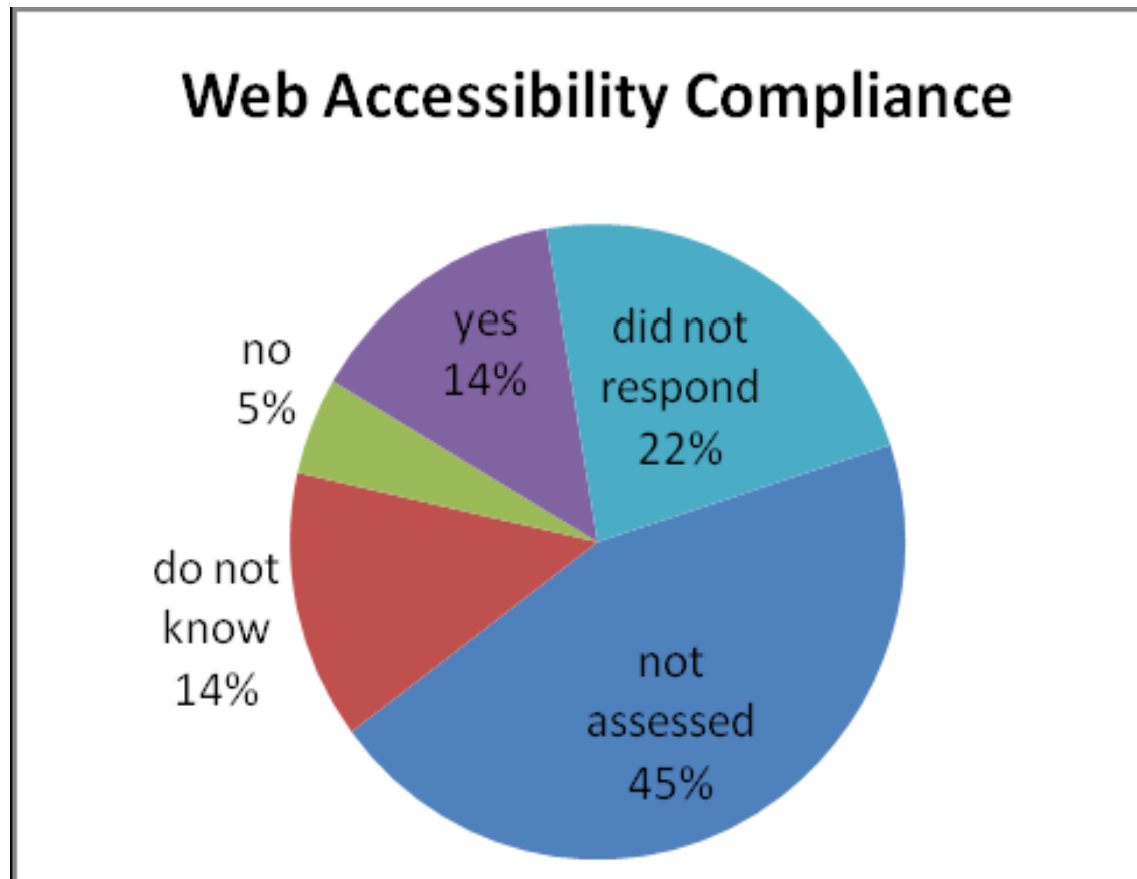
# Australian Context

- February 2010 - New government press release – adoption of WCAG 2.0 by 2015 for all government and associated sites
- These guidelines are recognized by Federal, State and Local Government departments
- Few sites are fully compliant with WCAG 1.0 yet
- The good news is that most websites that are compliant with Version 1.0 will have only a few changes made to meet Version 2.0
- Outside of the Federal and some levels of State Government, little auditing has been done to demonstrate compliance



# Western Australia

- 2008/09 Website Report (p.12) - Level of Compliance with WCAG 1.0 W.A. State Government



# HTML 5

- W3C have recognized the need to continually introduce new accessibility measures into websites in their latest release of HTML5 Standards and Guidelines.
- Currently in draft form
- Introduces a new perspective of viewing accessibility features intrinsically, rather than using 'add-ons' to meet the needs of disabled users.
- Check out the link at Section 1.4 of HTML5 Differences from HTML4: W3C Working Draft 04 March 2010.  
<http://www.w3.org/TR/html5-diff/>
- “The focus on accessibility as a built-in concept for new features (such as the hidden attribute, the progress element, et cetera) instead of an add-on (like the alt attribute). “(W3C)

# HTML 5 Example

<u>&lt;figcaption&gt;</u>	New	Defines the caption of a figure element
<u>&lt;figure&gt;</u>	New	Defines a group of media content, and their caption
<u>&lt;font&gt;</u>		Not supported in HTML 5.
<u>&lt;footer&gt;</u>	New	Defines a footer for a section or page
<u>&lt;form&gt;</u>		Defines a form
<u>&lt;frame&gt;</u>		Not supported in HTML 5.
<u>&lt;frameset&gt;</u>		Not supported in HTML 5.
<u>&lt;h1&gt; to &lt;h6&gt;</u>		Defines header 1 to header 6
<u>&lt;head&gt;</u>		Defines information about the document
<u>&lt;header&gt;</u>	New	Defines a header for a section or page
<u>&lt;hgroup&gt;</u>	New	Defines information about a section in a document
<u>&lt;hr&gt;</u>		Defines a horizontal rule
<u>&lt;html&gt;</u>		Defines an html document
<u>&lt;i&gt;</u>		Defines italic text
<u>&lt;iframe&gt;</u>		Defines an inline sub window (frame)
<u>&lt;img&gt;</u>		Defines an image
<u>&lt;input&gt;</u>		Defines an input field
<u>&lt;ins&gt;</u>		Defines inserted text
<u>&lt;keygen&gt;</u>	New	Defines a generated key in a form
<u>&lt;kbd&gt;</u>		Defines keyboard text
<u>&lt;label&gt;</u>		Defines a label for a form control
<u>&lt;legend&gt;</u>		Defines a title in a fieldset
<u>&lt;li&gt;</u>		Defines a list item
<u>&lt;link&gt;</u>		Defines a resource reference
<u>&lt;map&gt;</u>		Defines an image map
<u>&lt;mark&gt;</u>	New	Defines marked text
<u>&lt;menu&gt;</u>		Defines a menu list
<u>&lt;meta&gt;</u>		Defines meta information
<u>&lt;meter&gt;</u>	New	Defines measurement within a predefined range
<u>&lt;nav&gt;</u>	New	Defines navigation links

[http://www.w3schools.com/html5/html5\\_reference.asp](http://www.w3schools.com/html5/html5_reference.asp)

# Alt Tag Examples



# Previous Examples

- First image:
- Alt="" (provides no information at all)
- Second image:
- Alt="smp001.jpg" (really useless information)
- Third image:
- Alt="picture of Gretel at seven months" (now we know what the image is – though of course we still do not know it is a dog)
- Its obvious which one would give the user some useful information.

# Further Examples

- The following W3C site provides some further information and examples:
- <http://www.w3.org/standards/webdesign/accessibility#examples>
- They list 3 of the most common issues:
  - Alternative text for images
  - Keyboard input
  - Transcripts for podcasts

# Government Site Example (Kingston City Council)

Kingston City Council, Melbourne, Australia Home Page

Search

**City of KINGSTON**

KINGSTON

Home  
Contact Us

Discover Kingston  
Council & Services  
Environment, Planning & Infrastructure  
Recreation & Entertainment  
Business In Kingston  
Kingston Community  
Careers  
Tenders  
ePayments  
A-Z Index

Libraries  
Arts  
Waves  
Don Tatnell

http://www.kingston.vic.gov.au/index.asp?acc=yes - Original Source

```
27 <table width="100%" border="0" cellspacing="0" cellpadding="0">
28 <tr>
29 <td width="100%" height="94">
30 <table width="100%" border="0" cellspacing="0" cellpadding="0">
31 <tr>
32
33 <td width="156" style="HEIGHT: 94"><a href="#skiplinks"><IMG
src="http://www.kingston.vic.gov.au/images/TopLogo1.gif" width=156 height=94 border=0
alt="Skip Links" ></a></td>
34 <td width="398" style="HEIGHT: 94"></td>
35 <td width="12" style="HEIGHT: 94"><IMG
src="http://www.kingston.vic.gov.au/images/Top1.jpg" width=12 height=94 alt='Kingston City
Council'></td>
36
37 <td align="right" valign="top" bgcolor="#E6EDF5">
38 <table width="100%" border="0" cellspacing="0" cellpadding="0" >
39 <tr>
40 <td align="right" style="background-image: url
(http://www.kingston.vic.gov.au/images/Whitespacer.gif)" bgcolor="#E6EDF5"><a
href="http://www.kingston.vic.gov.au/Search/Search.asp" class="newsheading"><IMG
src="http://www.kingston.vic.gov.au/images/Icon_Search.gif" border=0 width=82 height=39
alt='Search'></a></td>
41 </tr>
42 <tr>
```

http://www.kingston.vic.gov.au/index.asp?acc=yes

# The Code...

```
<td width="156" style="HEIGHT: 94"><a href="#skiplinks"><IMG  
  src="http://www.kingston.vic.gov.au/images/TopLogo1.gif" width=156 height=94 border=0  
  alt="Skip Links" ></a></td>  
<td width="398" style="HEIGHT: 94"></td>  
<td width="12" style="HEIGHT: 94"><IMG src="http://www.kingston.vic.gov.au/images/Top1.jpg"  
  width=12 height=94 alt='Kingston City Council'></td>  
<td align="right" valign="top" bgcolor="#E6EDF5">  
<table width="100%" border="0" cellspacing="0" cellpadding="0" >  
<tr>  
<td align="right" style="background-image:  
  url(http://www.kingston.vic.gov.au/images/Whitespacer.gif)" bgcolor="#E6EDF5"><a  
  href="http://www.kingston.vic.gov.au/Search/Search.asp" class="newsheading"><IMG  
  src="http://www.kingston.vic.gov.au/images/Icon_Search.gif" border=0 width=82 height=39  
  alt='Search'></a></td>  
</tr>
```

- Notice that along with accessible code, there is a policy on website accessibility:
- [http://www.kingston.vic.gov.au/Page/Page.asp?Page\\_Id=1117&h=-1](http://www.kingston.vic.gov.au/Page/Page.asp?Page_Id=1117&h=-1)



# Another National Site (Cancer Council)

The screenshot shows a Windows Internet Explorer browser window displaying the 'W3C accessibility - Cancer Council Victoria' page. The address bar shows the URL: [http://www.cancervic.org.au/about/about-this-site/w3c\\_accessibility](http://www.cancervic.org.au/about/about-this-site/w3c_accessibility). The page features a navigation menu with links: ABOUT US, ABOUT CANCER, SUPPORT SERVICES, HOW YOU CAN HELP, CANCER RESEARCH, PREVENT CANCER, and MEDIA. The main content area is titled 'W3C accessibility' and contains the following text:

This site has been built by [DDSN](#), using the [CM3 Content Management System](#). This system has been designed to meet W3C WAI Level A compliance, which means it's designed to comply with worldwide standards for disability access.

These standards (the [Web Content Accessibility Guidelines 1.0](#)) were developed and recommended by the World Wide Web Consortium (W3C) and can be found on their website. [Version 2.0](#) has been drafted. Our site has been designed and developed for accessibility to all users, including those using alternative browsers, which cater for specific disabilities. Details of the [disability access browsers available](#) can also be found on the W3.org site.

**Exceptions**

**Portable Document Files (PDFs)**

Adobe Acrobat PDFs have been used to present lengthy documents & formatting that can't always be presented in HTML or text. If you have problems downloading these documents, print versions are usually available on request (call 9635 5000) or alternative formats can be requested by from [webmanager@cancervic.org.au](mailto:webmanager@cancervic.org.au).

By downloading (it's FREE) the latest version of Adobe Acrobat reader you'll find there are a number of features that support disabled users. Including the ability to:

- ☐ Read PDF files aloud using standard operating system text-to-speech functionality
- ☐ Have greater control when using screen readers

The right sidebar contains a 'Cancer Council Helpline 131120' banner, a 'SUN SMART' banner, a 'Donate Online' button, and a 'Website Evaluation' section with a 'COMPLETE OUR SURVEY' button and a note 'Updated: 07 Apr, 2010'.

[http://www.cancervic.org.au/about/about-this-site/w3c\\_accessibility](http://www.cancervic.org.au/about/about-this-site/w3c_accessibility)

# The Code

```
<body onload="setSize();SetUniformHeight('Tertiary,Main,Secondary');PositionFooter();">
<a name="PageTop"></a>
<div id="Header">
<div id="Logo">
<a href="/" title="Click to return to The Cancer Council Victoria home page">

</a>
</div>
<div id="MenuAnchor">
<ul>
<li class="first">
<a href="/" title="Home">
Home
</a>
</li>
<li>
<a href="#Main" title="Skip to content">
Skip to content
</a>
```

# Guidelines for Website Accessibility

- Who established the guidelines?
- Who recognizes these guidelines?
- Are they international?
- Why is the W3C involved in this area?

The impact of disability is radically changed on the Web because the Web removes barriers to communication and interaction that many people face in the physical world. However, when websites, web technologies, or web tools are badly designed, they can create barriers that exclude people from using the Web.

The mission of the Web Accessibility Initiative (WAI) is to lead the Web to its full potential to be accessible, enabling people with disabilities to participate equally on the Web. (Henry & McGee, 2010)

# Guidelines cont...

- Worldwide Web Consortium (W3C) has established the guidelines through international consultation
- Guidelines have 2 versions
  - Version 1.0 – established in 1999
  - Version 2.0 – established in 2008
- Differences are major
  - Version 1.0 – 14 Guidelines with 65 checkpoints ranging from Priority 1 – must satisfy this checkpoint for all people to access the content to Priority 3 – may address this checkpoint to further improve accessibility

# Guidelines cont...

- Version 2.0
  - Works on 4 principles: Content must be
    - Perceivable
    - Operable
    - Understandable
    - Robust (POUR) (W3C)
- New Standards (Version 2.0)
  - Shift towards a more testable set of statements
  - Not technology-specific
  - Designed to be easier to understand
  - Developed with automated testing in mind

# WCAG 2.0 – POUR

- Perceivable
  - Information and user interface components must be presentable to users in ways they can perceive
- Operable
  - User interface components and navigation must be operable
- Understandable
  - Information and the operation of user interface must be understandable
- Robust
  - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies

# WCAG Version 2.0 cont...

- These principles contain 12 guidelines which contain a total of 61 'testable' Success Criteria.
- The purpose of the Success Criteria allow WCAG 2.0 to be used where requirements and conformance testing are necessary such as in design specification, purchasing, regulation and contractual agreements
- Does not use Priority Levels (as in Version 1.0)

# WCAG Version 2.0 cont...

- Each Success Criteria is assigned one of three defined levels of conformance A (lowest), AA, AAA (highest)
- Level A
  - Minimum conformance level
  - The web page satisfied all the Level A Success Criteria, or a conforming alternate version is provided (e.g. provides a PDF, but also an HTML version of a document)
- Level AA
  - Satisfies all the Level A and AA Success Criteria, or a Level AA conforming alternate version is provided
- Level AAA
  - Satisfied all of Level A, AA and AAA or are in the process of conforming



# Auditing Accessibility

- User involvement:
  - Use a screen-reading tool such as *Jaws*. Can you understand the content? You can view some video clips on UTube showing demonstrations of the Jaws program.
  - Available from Freedom Scientific – view information at this link:  
<http://www.freedomscientific.com/products/fs/jaws-product-page.asp>
  - A screen reader will literally read the text of a screen (including the content of alt tags) to a visually impaired user, or provide Braille transcript

# Auditing Accessibility cont...

- W3C and other Checklists
  - Version 1.0 : <http://www.w3.org/TR/WCAG10/full-checklist.html>
  - Version 2.0 : <http://www.usability.com.au/resources/wcag2checklist.cfm>
- Third-party checklists:
  - This one from Webcredible is good:
  - <http://www.webcredible.co.uk/user-friendly-resources/web-accessibility/testing-web-accessibility.shtml>

# Auditing Accessibility cont...

- Automated on-line website accessibility tools
- Check either one page or a whole site
- ‘Bobby’ was one of the first and most-used software applications, has been purchased by IBM and expanded into an enterprise-wide system
- There are numerous freeware & shareware applications.
- W3C provides a list of accepted tools:  
<http://www.w3.org/WAI/RC/tools/complete>
- This one from the University of Illinois is quite good:  
<http://fae.cita.uiuc.edu/>.. You can check one page at a time, or register for a free account to check a whole website.

# When Designing a Website

- POUR principles of WCAG 2.0
  - Perceivable, Operable, Usable, Robust
- Remember that what you put in the website is literally read to the user
  - Examples – empty or meaningless alt tags
  - Use CSS for consistency
  - Watch your headings – make sure they are set as headings not straight text – It is hard to understand the context if a heading sounds like a sentence fragment
  - Use the principles in the checklists e.g. colours, amount of text, length of lines, flashing colours and images
  - You should not have not be able to do anything with a mouse for which you could not use the tab key (navigation)
  - Don't use frames
  - Provide alternates to PDF files e.g. html option (which is actually the reverse trend of the last 5 – 10 years)

# Always Consider Your Potential Users

- Keep the navigation simple
- Don't hide information (e.g. hovering over a link that changes colour in order to access the drop-down list – with no explanation given)
- Don't make assumptions about your user's ability – they may have multiple low-level disabilities e.g. poor sight, low literacy, English as a second language, physical impediments

# Benefits

- Remember that the accessibility features that you build into your site will provide you with many benefits:
  - You will be promoting social inclusion for disabled people
  - You will be including more people in your potential market hence financial benefits
  - You receive the technical benefits, such as enhanced visibility to search engines
  - The easier your site is to use, the more people will be inclined to use and recommend it
  - You satisfy legal requirements, hence you will not receive complaints to the Australian Human Rights Commission (savings due to possible legal costs)

# Barriers to Implementation

- Cost of compliance
  - Australian Human Rights Commission seldom consider this grounds for exclusion. You must obtain a written exclusion – it is required that you make all ‘reasonable’ attempts to address the issues
  - Most authors consider including website accessibility to be a cost-efficient exercise as it promotes greater use of the website and satisfies legal requirements

# Barriers cont...

## – Cost (continued)

- Promotes efficient presentation of information, optimizing navigability and ensuring sites are easier to use. This in turn reduces the load on the server
- Promotes separation of content (through CSS) which reduces maintenance
- Encourages the use of design techniques which work in different browsing environments which will ensure they are able to translate to new technologies as they are developed



# Barriers cont...

- Technical knowledge and ability
  - Developing websites is costly
  - Should be considered that not having an accessible website is even more costly
  - Initial development requires technical knowledge and ability
  - Usually performed by the I.T. department, but may be out-sourced

# Barriers cont...

- Time and effort
  - Required to produce a quality product
  - Better to take the time at development, than to ‘retrofit’ a website to comply with guidelines
  - Requires management support

# Barriers cont...

- Awareness of guidelines and legal requirements
  - ‘ignorance is no excuse’
  - Clearly supported by all levels of government in Australia
  - Assistance and advice is readily available
  - No excuse for government and associated agencies – clearly mandated in all documents

# Barriers cont...

- Corporate attitudes
  - Due to increased time and cost in developing a site properly, this should be clearly mandated and supported by management
  - The need to conform to guidelines and the benefits and/or risks associated with compliance need to be provided to sponsoring bodies to gain their support

# Conclusion

- Website accessibility is an important issue in design
- You need to be aware of the issues and guidelines
- You need to be committed to ensuring inclusion of as many users as possible – remember those benefits!
- Remember that an accessible website is more usable (and hence more popular) for everyone.
- In the end, you may be legally obliged to do it.

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