ICT Case Study

Web accessibility at the Hunterian Museum

What is web accessibility?

Web accessibility means making sure that information on the World Wide Web is accessible to everyone, regardless of their access needs. For service providers such as museums who deliver online content, this means creating pages that people with disabilities can understand, navigate, and interact with effectively.

Ensuring physical and intellectual access to museum buildings and collections is essential. However, good accessibility practices should not be confined to the physical museum. As more and more museums develop online content, the accessibility of this information is becoming increasingly important.

Millions of people who use the web have disabilities, and often face barriers when trying to access information that many people take for granted. Good web design should take into account a variety of disabilities and access requirements, including:

- **Visual impairments:** These can range from colour-blindness, to total blindness. Users may require screen reading software that “speaks” the text on the screen. This has an influence on many aspects of web design, including the use of colour, and alternative representation of graphical elements and tabular information.

- **Hearing impairments:** People who are deaf or have hearing problems may require alternative textual representation or captioning of audio information on web sites.

- **Intellectual access:** This can be made possible through an appropriate use of language and navigation techniques.

Since October 1999, the Disability Discrimination Act (DDA) has stated that service providers have to make “reasonable adjustments” to the way they deliver their services so that disabled people can use them. This includes web sites.

The accepted guidelines on web accessibility are the **Web Content Accessibility Guidelines (WCAG)**. These recommendations have been drawn up by the World Wide Web Consortium (W3C). They specify technical checkpoints for web developers to follow, and are categorised into three priority levels that directly impact on the accessibility of a web site:

- **Priority 1**
  Priority 1 checkpoints ***must*** be addressed by a web content developer. Otherwise, one or more groups will find it impossible to access information in the document. Satisfying this checkpoint is a basic requirement for some groups to be able to use Web documents.

- **Priority 2**
  Priority 2 checkpoints ***should*** be addressed by a web content developer. Otherwise, one or more groups will find it difficult to access information in the document. Satisfying this checkpoint will remove significant barriers to accessing Web documents.

- **Priority 3**
  Priority 3 checkpoints ***may*** be addressed by a web content developer. Otherwise, one or more groups will find it somewhat difficult to access information in the document. Satisfying this checkpoint will improve access to Web documents.

These summaries have been taken from the W3C web site. The full technical descriptions of each checkpoint can be found on their site, at:

http://ww.w3.org/TR/WAI-WEBCONTENT/full-checklist.html

By addressing these checkpoints, developers can be confident that their site can be used effectively by people with disabilities. To show that a site conforms to these guidelines, three corresponding levels of conformance have been defined by the W3C:

- **Conformance Level "A":** all Priority 1 checkpoints are satisfied;
- **Conformance Level "Double-A":** all Priority 1 and 2 checkpoints are satisfied;
- **Conformance Level "Triple-A":** all Priority 1, 2, and 3 checkpoints are satisfied.

Once the checkpoints have been addressed, a developer can state that their web site adheres to the relevant W3C conformance level.

The Hunterian project

The Hunterian Museum and Art Gallery has a large, full featured web site of more than 1,000 pages, which serves a number of marketing, educational and research purposes. The museum decided to take the step of making the site accessible to people who are visually impaired. This was achieved through a ten week long University of Glasgow scholarship project in the summer of 2003.

The project was undertaken by Andrew Melrose, under the supervision of Jim Devine, Head of Education and Digital Media Resources at the Hunterian, and Ewen Smith, Deputy Director (Operations). Ewen is also chair of the DDA working group. Andrew himself is visually impaired, so he was able to bring a certain empathy to the project.

Project aims & objectives

The main aim of the project was to make the Hunterian web site more accessible to disabled visitors.

The team decided that the W3C Web Content Accessibility Guidelines would be used as a benchmark to work to. Given the time constraints, they decided that the main objective of the project would be to develop the Hunterian's web site to conformance Level "A". This would address the most pressing accessibility issues, and allow the site to be used by the majority of disabled users. The methods and experience developed during this project would also help to inform any future projects to extend the conformance level.

Methodologies used

Different approaches were considered for tackling the problem of making the site accessible. Initial research was undertaken to explore different methods of creating an accessible site.

One common approach to making web sites accessible is to develop a separate text-only site. This removes the obvious problems associated with the use of images and other visual media for visually impaired people, and makes conformance with the W3C guidelines much more straightforward.

However, it was felt that this approach would detract from the overall experience for some disabled visitors, and lead to a two-tier user experience. Creating a separate text-only site also presents problems with keeping both graphical and non-graphical versions up to date. This would effectively double the ongoing maintenance time required to keep the site updated.

The team decided that rather than create a separate accessible site, the existing site would be modified in order to comply with the Priority 1 checkpoints of the W3C guidelines.

Modifications made to the web site

The first stage in the conversion process was to determine what specific W3C guidelines would be applicable to the Hunterian's site. It became clear that due to the highly graphical nature of the site, the most important aspect that required attention was the provision of alternative text for images.

This technique involves inserting special "tags" into the code of the web site that are associated with individual images. Each tag provides a short textual description of the image which can be read by the screen-reading software often used by people with visual impairments. This proved to be the single biggest task in the whole project, as the code for every image on the site had to be checked and modified accordingly.

Another assumption made with the original web site is that everyone who accesses it will have some sort of pointing device (for example a mouse or a trackball). This creates problems for visually impaired users who's primary input device for navigation is often the keyboard. The navigation bars at the top of each page had to be modified to allow users to easily navigate through the web site using the tab and enter keys on the keyboard.

A 'skip navigation' link was also added above the navigation bar. This is useful when using screen reading software, because it allows the user to skip the navigation text which is present on every page and go straight to the main content.

Testing

Testing the accessibility features of the site was an important part of the development process. The team used several tools to check how well the accessibility features of the web site worked in practice:

- **The Lynx web browser**
  Lynx is a web browser that can be used to access web sites. However, unlike other browsers like Internet Explorer or Netscape, Lynx is text-based and does not display images. This can be very useful for testing how web pages will appear to people using screen reading software.

- **Bobby**
  Bobby is a free online service that scans web pages and checks them against the Web Content Accessibility Guidelines. This can be extremely useful because it looks at the code of the web page and then produces a report. The report points out specific areas of the code that don't conform to the Web Content Accessibility Guidelines, and suggests ways that it could be improved.

- **The W3C checklist**

The W3C provides a checklist of points that developers can follow in order to ensure that their web site meets the Web Content Accessibility Guidelines.

Conclusion

As more and more people use the web as a learning resource, accessibility is becoming increasingly important in web design. The Hunterian set out with the aim of making their web site more accessible to visually impaired users. By complying with the W3C's priority one checkpoints, the Hunterian have increased the accessibility of their web site, and made the content available to a wider audience.

To view the results of this project, visit the Hunterian's web site at:

http://www.hunterian.gla.ac.uk

More information and online resources

The Web Accessibility Initiative (WAI), from the World Wide Web Consortium pursues accessibility of the Web through five primary areas of work: technology, guidelines, tools, education and outreach, and research and development. Their site can be found at:
http://www.w3.org/WAI

The Web Content Accessibility Guidelines in full:
http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505

The home page of the Lynx web browser, which can be downloaded for free:
http://lynx.browser.org

The home page of the Bobby online accessibility testing tool:
http://bobby.watchfire.com

mda Fact sheet: Web Accessibility for Museums. This has a very useful introduction to the concepts behind web accessibility, and some of the wider considerations to take into account:
http://www.casportal.org.uk/resources/webacs.htm

SAIF (Scottish Accessible Information Forum) have produced a guide to making web sites accessible:
http://www.saifscotland.org.uk/publications/webguide/00front.html

The SMC web site has various access and DDA resources available on it, including fact sheets and accessibility checklists:

http://www.scottishmuseums.org.uk/members_services/learning_and_access/DDA_intro.asp

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