
Access for All? Consideration of multimedia content and design to ensure access for users with disabilities

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In this paper I will address the various areas of disability and the issues that need to be considered by museums and galleries when providing information through multimedia and the World Wide Web. These focus around Web and interface design, Content within the system, Physical access and Evaluation and Consultation. Few museums, whether they use gallery based systems or Web sites, appear to have considered access issues with regard to multimedia. In this context the term multimedia is used to refer to the use of more than one media, whether it be images, text, audio or animation. Therefore I looked outside the museum environment to IT Access organisations such as AbilityNet, IT organisations like Microsoft and disability organisations for example the Royal National Institute for the Blind. I started researching into IT Access in 1998, at the beginning of the COMPASS Project at the British Museum. The COMPASS system, which will go live in November 2000, will feature images and information for 5000 objects on display in the galleries and is designed to make a visit to the Museum a more rewarding experience. COMPASS will be available to use in the Museum and also on the Web.

In the last few years progress within IT and the Web have meant that computers are wrongly assumed to be accessible to everyone. Alongside an estimated 10% of people in the UK with disabilities, we are also seeing a rise in the ageing population¹. In future years, there will be a rise in age related mobility and sensory impairments as well as an increase in the size of the computer literate population using multimedia and the Web.

Within recent years some museums and galleries have improved physical and sensory access to their collections. Changes are being made to enable full wheelchair access to museum and gallery spaces, for example. With the Disability Discrimination Act, which was first introduced in 1995, we now have a statutory, as well as a moral duty to provide effective access to museum collections. Increasingly, museums are turning to multimedia to present content and further information about their collections.

This may be in the form of a Web site, an online catalogue, a public access system or CD-ROMS. However, what considerations should be made for disabled visitors using these systems? What can museum multimedia systems and Web sites offer people with disabilities?

Although in some cases it may be more effective to provide material for specific audiences, for example people with learning disabilities, by addressing the needs of numerous disabilities we are able to work towards providing one system that is accessible to as many users as possible. In order to achieve the most accessible system, awareness of the issues involved and their implementation are key from the beginning of any project.

Before I address guidelines to produce accessible multimedia it is useful to identify the four main areas of disability. This enables you to pinpoint the technical and physical considerations that need to be made, as well as realising the potential that multimedia can have for users with disabilities. To summarise:

Physical Disabilities:

- The aim is to enable wheelchair users full access of multimedia presented within the museum. If the system is built into the gallery wall wheelchair users may have difficulties accessing the controls and seeing the screen.
- Consideration of the types of input devices that are to be used with museum based multimedia is also important for users with hand tremors, the elderly, or even users who are not familiar with computers. Depending on the type of system being presented flexibility should be built in so that alternative input devices may be selected that best suit the needs of as many users as possible.

Visual Impairments:

- The majority of people with visual impairments do have some sight, but may need accessibly designed web pages to be compatible with the access technology that many people use. Some people benefit from the use of magnification software that increases the size of information presented on the screen, whilst others use a screen reader with a speech synthesiser that reads aloud the content presented on the web page. This will be addressed in more detail later on.
- Visually impaired users over the Web may also need to alter they way view a Web site. Some people read pages presented in certain colours and contrasts, and therefore it is important that flexibility is built into the design so that the Web user is able to alter the look and feel of the site through their own browser settings.

Hearing Impairments:

- Allow the user to control audio levels in the museum.
- Do not give any information through audio alone. Visual and textual equivalents should be given for both prompts and any audio that is presented.

Learning Disabilities:

- Learning disabilities encompasses an extremely wide range from dyslexia to the more severe learning disabilities. One in six of the population have literacy difficulties, however multimedia is effective in providing information at a variety of levels². This is also seen through the use of a combination of media, including images, text, audio and animations.
- Content within multimedia systems may also be written specifically for people with learning disabilities and this may include text written in plain language, the use of a glossary to explain technical terms and a clearer approach to the design.

However, it not useful to continue to view disabled access for a system solely within these four main areas of disability. There are enormous variations within the extent of peoples' impairments and it is not uncommon for people to have more than one disability, for example a user with a severe learning disability may also have a sensory or physical impairment.

Therefore having identified some of the key areas to address, it is now possible to consider how these can be achieved through accessible museum multimedia systems and Web sites. This can be approached through four main areas:-

- Web and interface design.
- Content.
- Physical access.
- Evaluation and consultation.

Accessible web and interface design

Web design guidelines have been compiled to ensure that Web pages are accessible to as many users as possible, especially those with visual impairments. In order to promote good access for all users, the Web Accessibility Initiative (WAI), a subgroup of the World Wide Web Consortium (W3C), have produced detailed guidelines, informing Web designers how to make Web content accessible to disabled users. The Royal National Institute for the Blind (RNIB) as well as other organisations, such as Microsoft, have condensed some of these guidelines into a more digestible format. The following includes a summary of some of the more important areas that need to be considered to produce accessible information.

With relation to both the design and layout it is important to remember that there is less control over how the user views the Web site compared to the museum/gallery based system. For example, the user may want to view the site in different colours and text size to that which was designed originally and to enable users to do this, flexibility in the design process is key.

Layout:

- All images, icons and bitmap text should contain ALT-TEXT (alternative text). This gives a brief description of the image. It explains either what can be seen in an image or the function of an icon. This gives people using speech synthesisers access to this information. For the COMPASS system at the British Museum this becomes part of the larger content development issue, with 10,000 images on the system. However, it will be possible produce ALT-TEXT through an automatic process using text that already exists in other fields within the database.

- Avoid using frames and columns on a web site. A frame is the column that remains on the left hand side of page even when information in the rest of the screen space changes. Frames, columns and most tables are not compatible with screen readers and speech software which read across the page as opposed to down the columns.
- One way of providing information that is compatible with access technology is through a text only version of the Web site. When sophisticated searching is required and the Web site really cannot be designed without using tables then it is essential that a text only equivalent of the site is provided. An example of this can be seen at the BBC Online Web pages at and <http://www.bbc.co.uk/cgi-bin/education/betsie/parser.pl/www.bbc.co.uk/home/today/> The standard version of the BBC Online site had been designed using a column format and therefore after several discussions between the BBC and RNIB a retrospective solution was found. By producing a text only site, Betsie (BBC Education Text to Speech Internet Enhancer), the BBC enables users of screen readers to have access to the site's content.

The aim for good Web design however is to produce one site that is accessible to all. Why should visually impaired users of access technology, who have some sight, not receive the benefit of all the resources that went into the design? Considering the various requirements from the beginning of the design process may often mean that a separate text only site is not required.

Design:

As stated earlier it is important that the site is not designed with any constraints, so that the user can alter aspects of the interface to best suit their needs. Other areas to consider include the provision of clear contrast between the background and text, and

using standard size text (remember that users over the Web will be able to alter the size of the text to suit their needs). For museum based multimedia systems, where the user will be less likely to alter the look and feel, it is effective to provide an alternative interface that may be more suitable for many users with visual impairments. Of course there are wide range of sight problems, with varied needs, however it is still useful to provide an alternative interface that will cater for as many people as possible. The BBC Online Betsie version has provided an alternative high contrast interface, using a black background and green text. The COMPASS project is currently considering the provision of an alternative interface for users of the system in the Museum's Reading Room.

- Another design related issue that will also be tested for use on COMPASS is magnification of the text for users in the Museum. This will enable users to zoom into text as well as images, if they require greater magnification. This is not required to the same degree over the Web because it will be accessed by users at home who will be using their own magnification packages to read the site. However, as explained earlier if a Web site has been designed using frames, columns or tables, users of such access technology may have problems reading the site.

Content

Multimedia is useful for providing information at a variety of levels, and using a combination of media can be an effective learning tool for everybody, especially users with learning disabilities. Two key areas that need to be considered are the use of language and design of content. The Intellectual Access Trust, in association with the Royal Museum, in Scotland, carried out a project that adapted a multimedia system on tartan for users with learning disabilities. The evaluation carried out revealed that the adaptations made (including larger hit

zones, clearer text and design) were improvements that were of benefit to all users.

The content on COMPASS will be delivered primarily through 5,000 object records. Each record will consist of an image, 200 words of text, including a title, a catchy headline and glossary links to explain technical terms. Although the text is being written with a public as opposed to curatorial approach, some users, especially those with learning disabilities, may find alternative content more suitable. COMPASS aims to provide 20 - 30 records, that will be kept within a specific area on the system. These will be written using plain language, less text, shorter sentences and bullet points and they may also be suitable for the many foreign visitors both to the Museum and to its Web site.

Physical access

It is crucial that good physical access is provided so that wheelchair users can have full use of the multimedia system based within a museum. In the case of COMPASS, which will be situated in the Reading Room, new accessible desks will be built alongside the existing listed furniture. This allows wheelchair users to access the system in the same historic environment as other users. It is also the aim of the project that the terminal will allow alternative input devices to be used when necessary, which may benefit numerous users including the elderly and people with physical disabilities.

Evaluation

Carrying out research and evaluation into the area of Access IT is of great importance. Consultation with disability organisations and local day care centres for advice on improving access may often reveal small but important points that can then be altered before it is too late. COMPASS will be working with disability groups alongside the standard evaluation and

testing of the system. Any type of evaluation takes a great deal of time and planning, and a Web site also gives you the opportunity to carry out evaluation on line, enabling people for whom getting into the museum may be difficult to feed back their opinions.

Evaluations have shown that when disabled access has been considered for display and interpretation within the museum environment it has not been at the expense of visitors who are fully able or computer literate. To the contrary it has often been to the benefit of all, so that for example, larger font size is also of benefit to the visitor who has simply forgotten their glasses.

Although there are now guidelines to produce accessibly designed Web pages, there are many more things to consider to produce a fully accessible multimedia system within any one environment. As well as the technical Web guidelines there is also physical access, content and consultation to address. As I have touched on with the work of the COMPASS project at the British Museum, there are many independent factors relating to a particular museum/gallery that will affect what is carried out, including the particular audience you are addressing and whether it is gallery based system or Web site.

There are many considerations that need to be made to produce accessible multimedia. No one system or Web site will be perfect for all users. It is a balance between design and good access. But it is important to emphasize that these considerations do not have to be at the expense of the whole system.

Producing one accessible Web site or system for as many users as possible has to be the way forward, and this can go alongside the creation of specific material for some users. If providing information through a Web site or multimedia system, museums and galleries have no excuse for not taking steps towards making it accessible to disabled users. Being aware of the potential that multimedia has for many users with disabilities

and implementing some of the good accessible features results in many users gaining far more access to your multimedia or Web site.

For further details on accessible Web design:

<http://www.w3.org/TR/WAI-WEBCONTENT/>

<http://www.rnib.org.uk/wedo/research/hints.htm>

<http://www.abilitynet.co.uk/>

- 1 (Office of National Statistics).
- 2 The Basic Skills Agency 1995.