COI

Delivering inclusive websites: user-centred accessibility

Version:	1.0
Date authored:	14/05/2007
Policy official:	Adam Bailin
Date last updated:	2/10/2007
Date issued:	Tba
Lead official:	Alex Butler
Guidance number:	TG102

Purpose

This guidance is for Government website owners and digital media project managers wishing to deliver inclusive, accessible websites. This guidance sets out the accessibility requirements for Government web content and web authoring tools. This document recommends a user-centred approach to accessibility, taking account of user needs in the planning and procurement phases of web design projects. The Guidance also covers some of the design solutions to problems commonly faced by people interacting with websites.

Background

This document sets out the minimum level of accessibility for Government websites and contains practical guidance on how to achieve this. The Disability Discrimination Act 2005 amended Disability Discrimination Act 1995 (DDA) and placed an additional duty on the public sector to promote disability equality in the full range of public sector activity, including procurement, policy-making and service delivery. This duty is in addition to and builds upon the specific DDA duties to make reasonable adjustments for disabled people, which apply to Government bodies as employers, providers of services and deliverers of public functions.

In order to help fulfil the disability equality duty for web publishing and online service provision, Government website owners should adopt best practice in commissioning accessible websites,[1] as set out in PAS (Publicly Available Specification) 78.

Legal context

Government departments must pay due regard to the Public Sector Disability Equality Duty[2]. This places the emphasis on taking account of user needs at the start of the design process, rather than making adjustments at the end. Delivering inclusive citizen-centred services means analysing user needs; taking steps to meet those needs; and measuring success. This process, as defined in PAS 78, is encapsulated in an accessibility policy – a helpful way to plan inclusive web design activities.

European perspective

In 2002, the European Parliament set the minimum level of accessibility for all public sector websites[3] at Level Double-A. However, a recent survey of public sector services[4] showed that 70% of websites in the European Union failed to conform to Level-A of the W3C guidelines. **E-inclusion** is a European policy initiative which aims to ensure that ICT (Information & Communications Technology) is usable by a wider population; and to promote the use of ICT to achieve social inclusion objectives. The Riga eInclusion Declaration[5] agreed to promote inclusive e-government by 'ensuring accessibility of all public web sites

---

[1] PAS 78: Guide to good practice in commissioning accessible websites http://www.drc-gb.org/pas/
[2] The Duty to Promote Disability Equality: Statutory Code of Practice (England and Wales) http://www.drc-gb.org/library/publications/disability_equality_duty/the_duty_to_promote_disability1.aspx
[3] European Parliament Resolution (2002) 0325 http://ec.europa.eu/information_society/policy/accessibility/z-techserv-web/com_wa2001/a_documents/ep_res_web_wai_2002.html
[4] eAccessibility of Public Sector Services in the European Union http://archive.cabinetoffice.gov.uk/e-government/eaccessibility/
[5] Riga eInclusion Declaration http://ec.europa.eu/information_society/events/ict_riga_2006/doc/declaration_riga.pdf

by 2010, through compliance with the relevant W3C common web accessibility standards and guidelines'.

Further information and advice is available from COI Digital Policy webguidelines@coi.gsi.gov.uk

Guidance

Minimum level of accessibility

1. The minimum level of accessibility for all Government websites is Level Double-A of the W3C guidelines.[6] Any new site approved by the Cabinet Sub-Committee on Public Engagement and the Delivery of Service (DA(PED)) must conform to these guidelines from the point of publication.

2. Continuing standalone sites must achieve this level of accessibility by December 2008. Websites which fail to meet the mandated level of conformance shall be subject to the withdrawal process for .gov.uk domain names, as set out in Naming and Registering Websites (TG101).

Planning

Developing a business case

3. In addition to the legal drivers, there are social, financial and technical incentives for accessibility, which provide tangible benefits for an organisation. Depending on the nature of the organisation, factors relating to each of these areas will be differently weighted. The key to making an effective business case for inclusive design is to determine the most appropriate breakdown of benefits.

Social Factors

4. Websites across local and central government must address the needs of citizens throughout the country. An accessible website can provide access to information on a far wider scale than previously possible.

5. Online Social Responsibility (OSR) is a growing philosophy throughout the Internet. An organisation that demonstrates good OSR can help empower people with disabilities, promote equal opportunities and break down barriers to information. Social incentives for inclusive design include:

    *   People with disabilities have easier access to printed, audio or visual material.

---

[6] Web Content Accessibility Guidelines 1.0 http://www.w3.org/TR/WCAG10/

- Citizens can access services and information, regardless of experience or ability.
- Everyone will find the website easier to use, improving their ability to successfully complete goals online.
- People using all kinds of devices, from the oldest to the newest, will be able to use the website, helping to reduce the impact of the digital divide.
- Greater interaction between citizens and government is possible with a user friendly, accessible website.

Financial Factors

6. A user friendly and accessible website can help reduce costs both directly and indirectly. Accessibility is often viewed as an expensive afterthought, but it can provide many cost benefits. The key is to build in accessibility from the outset, making inclusive design a priority throughout the development lifecycle of the website.

7. Financial incentives for inclusive design include:

- Accessible web pages tend to be lighter (physically smaller) which reduces bandwidth costs and improves page response times – leading to an improved customer experience.
- Increasingly, people will be able to access services and information online, representing a reduction in costs needed for ancillary resources such as call centres.
- Ongoing maintenance and hosting costs can be significantly reduced.
- Providing one website that supports multiple audiences is more efficient than running multiple websites for multiple audiences.

Technical Factors

8. Technical concerns will vary throughout the different levels of e-Government. The resources and technical capabilities of a district council may differ from those of a key central government body. However, improving technical performance and delivering reliable digital services is important across the board. Technical incentives for inclusive design include:

- Following recognised standards and guidelines for inclusive web design can help ensure that future technologies will be able to access the site.
- Compatibility with more browsers and technologies such as mobile.
- Access to a wide range of assistive technologies.
- Improved levels of traffic may be driven to the site through Search Engine Optimisation (SEO).

[More about developing a business case for web accessibility](#)[7] on the W3C website.

Accessibility Policy

9. Government website owners are strongly recommended to develop an accessibility policy according to section 6 of PAS 78, 'Defining the accessibility policy for the website'.

10. An accessibility policy should include:
    1) A description of the target user population.
    2) An explanation of the core tasks that users should be able to carry out.
    3) A description of the process used to develop and maintain content to meet the needs of the target users, including:

        a) identifying user needs
        b) developing the website to meet those needs
        c) measuring success in meeting those needs

    4) Details of the level of accessibility of the content e.g. Level Double-A of the W3C Guidelines.
    5) An explanation of any areas that are unlikely to be accessible to the target user population with either a realistic plan to repair these areas or details of alternative provisions.

    [More about developing an accessibility policy](#)[8] in PAS 78

Accessibility Statement

11. An accessibility statement is a statement of intention. At its most simple, an accessibility statement will provide an open commitment to accessibility. An example of a simple accessibility statement would be:

12. This <website name> is committed to ensuring access for people with disabilities. Each page on our website will conform to the Web Content Accessibility Guidelines (WCAG) Level Double-A.

13. An accessibility statement fulfils two purposes. Firstly, it defines targets for web accessibility and outlines the methods used to achieve them. Secondly, it acts as a declaration of commitment to inclusive design, acknowledging that accessibility is a key driver for the website.

---

[7] Developing a Web Accessibility Business Case for Your Organization
http://www.w3.org/WAI/bcase/Overview
[8] PAS 78: Guide to good practice in commissioning accessible websites http://www.drc-gb.org/pas/

14. It is important that any accessibility statement is accurate and truthful. A commitment to web accessibility can be a very positive statement, but if visitors to the website doubt its veracity, it can have a damaging impact on the reputation of the organisation.

15. An accessibility statement should contain the following parts:

- A clear statement that demonstrates the organisation's commitment to web accessibility.
- An indication of the guidelines and standards the website conforms to.
- Information about any areas of the website that do not yet conform to the overall accessibility targets of the website.
- Contact information for people wishing to report problems with the website.

16. In addition, the accessibility or help section should contain information for users on how to configure their browsers and operating systems to customise and enhance their experience (e.g. how to increase text size or change the background colour). It is recommended that websites link to BBC resource My Web My Way.[9] This website was specifically designed to help users on a wide variety of platforms.

17. An alternative contact such as telephone, textphone and email address should also be provided for help with any technical issues that users might have.

    More about writing an accessibility statement[10] on the Nomensa website.

Procurement

Requirements

18. Fixing an inaccessible website after it has been completed can be difficult, costly and may not succeed in providing effective access. The best way to create an accessible website is to make sure that accessibility criteria are included throughout the project life cycle, starting with the procurement or commissioning stage.

19. The Disability Discrimination Act creates the environment for anticipatory action and this approach is needed when a public sector department or agency buys software or systems for use by employees or the general public, as procurement is covered by the Disability Equality Duty.

---

[9] My Web My Way http://www.bbc.co.uk/accessibility/
[10] Writing an accessibility statement http://www.nomensa.com/resources/articles/accessibility-articles/writing-an-accessibility-statement.html

20. To help in the process of procuring accessible websites, the British Standards Institute and the Disability Rights Commission (DRC) have collaborated to produce a [Publicly Available Specification (PAS 78:2006) "Guide to good practice in commissioning accessible websites"](#).[11] This is available free of charge from the DRC website.

21. PAS 78 provides guidance on the steps that should be taken to commission accessible websites, the guidelines and specifications to be adopted, and the role of software tools and user testing within the development life cycle. It is the reference point for good practice in website procurement in the UK and abroad.

22. PAS 78 suggests that the following principles are followed when commissioning an accessible website:

    - Uphold W3C guidelines and specifications
    - Check for conformance
    - Involve disabled people in the requirements gathering and conceptual design process
    - Arrange regular testing by disabled people

23. It is important to remember that websites require attention to accessibility throughout their life cycle – the job is not done as soon as the website is live. Maintenance and upgrades must also include accessibility criteria.

Software accessibility

24. It is possible for full applications to be delivered via the web and served to the user within a browser, so it may be necessary to consider guidelines and standards that specifically relate to software rather than web content. In order to build an accessible website, authoring tools must produce content that upholds web content accessibility standards. This is especially important if the organisation will be using a Content Management System (CMS) to produce content automatically. This must be taken into account during the procurement of authoring tools and CMS.

25. So that content authoring is possible for people with the widest range of abilities, it is also important that the interface to the content authoring tools or CMS is also accessible. Accessibility criteria must therefore be specified in the choice and procurement of these systems, in the same way that accessibility is taken into account when commissioning websites.

---

[11] PAS 78: Guide to good practice in commissioning accessible websites http://www.drc-gb.org/pas/

26. The e-GIF specifications for accessibility and usability[12] has adopted the W3C Authoring Tool Accessibility Guidelines[13] for human-computer interfaces. When procuring a CMS or website authoring tool, Government website owners should specify a minimum of Level Double-A conformance to these guidelines. For more general software accessibility requirements, it is recommended that Departments refer to ISO 16071[14], the international standard on software accessibility.

More detailed guidance on procuring accessible software[15] at the RNIB Software Access Centre.

---

[12] e-GIF v6.2 Technical Standards Catalogue, Table 14 Specifications for Accessibility and Usability http://www.govtalk.gov.uk/egif/eaccess.asp#table14

[13] Authoring Tool Accessibility Guidelines 1.0 http://www.w3.org/TR/ATAG10/

[14] ISO/TS 16071:2003 Ergonomics of human-system interaction – Guidance on accessibility for human-computer interfaces

[15] RNIB Software Access Centre http://www.rnib.org.uk/softwareaccesscentre

User Profiles

27. It is important to define your target audience to understand the needs, preferences and abilities of potential users of your website. User profiles help to develop this understanding. They illustrate the common issues faced by users and any [assistive technologies](#) they might use.

28. There are four main categories of impairment to consider. These are vision impairment; motor difficulties, cognitive and learning; and deaf and hard of hearing.

Vision impairment

29. **Users with severe vision impairment**, e.g. users of [screen reader](#) software. Screen reader users typically have issues with poorly labelled images, or links which don't make sense when read out of context.

30. **Users with medium vision impairment**, e.g. users of [magnification software](#). Magnification users are hindered by images of text (which become pixelated at high resolutions).

31. **Users with mild vision impairment**, e.g. users who might enlarge text in the browser with high contrast and use colour preferences.

Motor difficulties

32. **Users with severe motor difficulties**, e.g. users who are quadriplegic who might use [voice recognition software](#).

33. **Users with medium motor difficulties** or upper limb disorder, e.g. users who might only use a keyboard, a mouse being too difficult to use. Keyboard users have issues with navigation or forms that don't have a logical tab order.

34. **Users with mild motor difficulties**, e.g. users who might use a mouse or equivalent adaptive technology but who might have fine mouse control difficulties. Link size is an important issue for this group of users.

Cognitive and learning

35. **Users with medium dyslexia**, e.g. users who might change site colours and text formatting, and who in many cases might supplement this with [text to speech software](#) for reading sections of text.

36. **Users with mild to medium learning or cognitive disabilities**, e.g. users who might use a symbol browser to convert web pages to symbols or have no special access methodologies and rely on someone else assisting them.

Deaf and hard of hearing

37. **British Sign Language (BSL) users** are especially relevant if there is multimedia content on the site or language issues.

38. **Non-BSL deaf or hard of hearing**, e.g. users who might benefit from captions or transcripts of audio content.

39. It should be pointed out that the above categorisation is purely for illustrative purposes. In reality, users may have a combination of impairments. For example, older users may have a combination of reduced vision, restricted mobility and decline in memory.

Older users

40. Older people can suffer from physical disabilities, such as a restricted ability to move their arms and/or hands. They might experience difficulty using a mouse.

41. The performance of the eye diminishes with age and can lead to decreased visual acuity, contrast or colour sensitivity, reduced field of vision, or an increased sensitivity to glare. Older people that have such visual impairments tend to find it difficult to point to specific objects on the screen and click on small icons with the mouse.

42. Older people that suffer from a reduced spatial ability and a decline in memory might find it difficult to navigate deep hierarchies of a web site.

   Detailed information on designing websites to be usable by older people[16] on the University of Maryland website.

---

[16] Universal Usability Web Design Guidelines for the Elderly (Age 65 and Older) http://www.otal.umd.edu/uupractice/elderly/

Assistive Technology

43. Assistive technologies are any item, piece of equipment, software or hardware system that helps a person with disabilities to interact with computers. The following page describes some of the more common examples.

Screen readers

44. These are software applications that read a Web page one line at a time, horizontally across the screen. The text is spoken using a speech synthesiser.

Braille displays

45. These are hardware devices that provide tactile outputs that are generally set up to output from screen reader software, but instead of outputting through a speech synthesiser they output to a refreshable retractable Braille display or a fixed single line display. Braille displays are unable to output multimedia or graphics content and totally rely on the provision of appropriate text and text alternatives.

Screen magnifiers

46. Magnifiers or enlargers work by increasing the size of the image displayed on a screen. Navigation can be a problem as the user may only see a portion of the original screen at any one moment.

Speech recognition

47. These applications allow a user to give commands and enter data by talking to their computer – so the input device is a microphone rather than a keyboard. Such software contains a vocabulary and users need to train the software to recognise their individual voices.

Adaptive hardware and input devices

48. Users with a physical disability are more likely to struggle using the standard keyboard or mouse and may find it easier using ergonomic or specialised devices. Specialised keyboard and mouse designs are often referred to as assistive technology. Common technologies employed by physically disabled users are: alternative keyboards, on-screen keyboard emulators, mice, switches and pointing devices.

Speech enablement

49. This falls into two categories:
First – applications that enable browsing of web content in audio. Combining text-to-speech technology they are generally limited to web browsing. This technology does not cope with multimedia or graphical content and therefore relies on the provision of appropriate text and alternative texts.

50. Second – there is speech enablement as a channel, either client-based or served-based, intended as an option for users who have difficulties reading a website. This is a text-to-speech method that offers enhanced legibility for users with dyslexia, learning difficulties or with English as a second language.

Signing avatars

51. This is an emerging technology using virtual humans, that is, computer animations that allow the creation and delivery of sign language content on a website. Avatars can also be used as virtual personalities to which a user may relate in a more natural way, eg, lip speaking avatars.

Measuring Accessibility

52. The only way to find out if a website is accessible is to test it. There are two elements to verifying that a website is accessible: technical accessibility and usable accessibility. Technical accessibility determines whether the site will work with a range of assistive technologies. Usable accessibility determines whether the site will be usable by disabled people.

53. When developing an accessibility test plan, an appropriate mixture of tools and techniques must be considered. The plan shall include methods for testing both technical and useable accessibility.

How to test for technical accessibility

54. Approaches for determining technical accessibility include:

- **Automated testing** to determine whether the website upholds W3C guidelines and specifications;
- **Validation testing** of code to determine whether it upholds W3C guidelines and specifications – tools include validators for html and style sheets;
- **Assistive technology tool testing** to determine whether the website can be accessed using the tools commonly used by disabled users.

Automated testing

55. There are a number of commercially available automated accessibility tools that provide a way to measure conformance to some W3C guidelines. However, it is important to ensure that website developers and testers are aware of the capabilities and limitations of the tool being used. Although these tools check for a relatively small proportion of the W3C guidelines, they can be useful for analysing a whole site for technical accessibility.

Validation testing

56. Validation testing should be undertaken by website developers to ensure that their mark-up conforms to W3C guidelines and specifications. W3C's Mark-up Validation Service[17] should be used to validate HTML and the W3C CSS Validation Service[18] should be used to evaluate the validity of any CSS. This is an important exercise as many assistive technologies rely on mark-up meeting these specifications.

---

[17] W3C's Mark-up Validation Service http://validator.w3.org/
[18] W3C CSS Validation Service http://jigsaw.w3.org/css-validator/

Assistive technology tool testing

57. Assistive technology tool testing is a way to check that the tools commonly used by disabled users can read and interact with the web content and controls can be activated. If a website conforms to the W3C guidelines, assistive technologies should work with the site. Assistive technology tool tests can provide a relatively quick way for a tester with specialist knowledge of the tools to assess the website's technical accessibility.

How to test for usable accessibility

58. Approaches for determining usable accessibility include:

- **Expert reviews**, involving specialists in usability and accessibility, to evaluate the website in order to find potential problems;
- **Conformance inspections** to determine the Web Content Accessibility Guidelines (WCAG) conformance level for the website or check that it meets a specified WCAG conformance level;
- **User testing** to identify any usability and accessibility problems real-world users may have.

Expert review

59. There are different types of structured expert review methods, including:

- Heuristic evaluation, where an interface is inspected against a set of heuristics or guidelines, and;
- Cognitive walk-though, where evaluators step through a series of actions with a goal of completing a typical user task.

In all cases, experts can use assistive technology as part of the expert review process. However, specialist training is often required to make sure that the way the technologies are used closely matches the way they would be used by a disabled person.

60. Expert reviews can be conducted on early designs and finished code and are relatively quick and inexpensive to perform. They are useful for identifying quality and consistency issues not typically identified during user testing. However, they do not find the same type or number of problems as user testing and in some cases can identify problems that real users would not experience. It should also be noted that the quality of the findings is directly related to the skill and experience of the experts.

Conformance inspection

61. A conformance inspection is a systematic manual review of each web page against the W3C guidelines as specified, which typically follows a validation test and involves reviewing each piece of content and control on a page. Conformance inspections provide a single method for determining whether a

website upholds WCAG. However, they are time consuming and require an expert in accessibility, usability and website design.

62. Because of the amount of effort spent inspecting a page, a useful technique is to only test a representative sample of the total web pages. This sample may be pages with high usage or involve critical functions such as form filling.

User testing

63. User testing involves recruiting a set of representative users and asking them to attempt to use a website to achieve a set of representative tasks. User testing should include users from a range of disabilities and preferences, including a mix of beginners and experienced web users using a range of assistive technologies.

64. It is recommended that user testing is included in all website development projects as it provides the best evidence that a website will be usable by disabled people. The testing process used should conform to BS EN ISO 13407:1999, *Human-centred design processes for interactive systems.*

65. User testing relies on creating user profiles that describe the types of people who you want and believe should be able to use the website and then recruiting users who match these profiles.

Further reading

66. The W3C Web Accessibility Initiative (WAI) has published a document that describes approaches for preliminary review of website accessibility,[19] including general procedures and tips for evaluation during website development and for the ongoing monitoring of established websites.

67. W3C WAI has published a list of web accessibility evaluation tools.[20]

68. W3C WAI has published information about evaluation, repair, and transformation tools useful for website developers.[21]

69. Both the Usability Professionals Association (UPA)[22] and the Market Research Society[23] provide Codes of Conduct covering how consultants and researchers should interact with users when performing evaluations.

---

[19] Evaluating websites for accessibility http://www.w3.org/WAI/eval/
[20] Complete List of Web Accessibility Evaluation Tools http://www.w3.org/WAI/ER/tools/complete.php
[21] Evaluation, Repair, and Transformation Tools for Web Content Accessibility http://www.w3.org/WAI/ER/existingtools.html
[22] Usability Professionals Association http://www.upassoc.org/
[23] Market Research Society http://www.mrs.org.uk/standards/guidelines.htm

Content and Document Design

70. This section describes some of the things you can do to enhance the accessibility of your website. This is not an exhaustive list of web accessibility guidelines; it illustrates some of the techniques that may be used to make your website more usable by a wider population. Wherever possible, the impact for different user profiles is explained.

Text

Keep the content simple

71. Avoid the use of jargon and complex words. This can be helpful users with cognitive impairments, and benefits all users. See also Guideline 14 of the Web Content Accessibility Guidelines 1.0[24]

Don't use justified text

72. Text shouldn't be fully-justified as users with dyslexia find this more difficult to read than if the text is left-aligned. They may also miss words which have been highlighted by bold, italics or underline.

Use a non-serif font

73. A non-serif (also known as sans-serif) font like Arial or Helvetica should be used. Non-serif fonts are easier to read on screen.

Limit the use of graphical text

74. The use of images of text (often used for important items such as headings or navigation) is undesirable for a number of reasons.

75. Users who have low vision may prefer different fonts or colour combinations, may need to increase the text using browser options, or use magnification software to enlarge the text beyond the maximum size the browser can offer.

76. Images of text cannot have their appearance altered by the user – they cannot be enlarged in most browsers, cannot have their colours altered to a higher contrast combination (e.g. white on black) and cannot have their font changed to one preferred by the user.

77. Unlike normal text, images of text become pixelated when enlarged by magnification software (particularly at higher levels), so users reliant upon this method of access can have significant difficulty in reading the information.

---

[24] http://www.w3.org/TR/WCAG10/#gl-facilitate-comprehension

Ensure that font size can be increased

78. Ensure that text sizes are not fixed and can be resized in the. It is important that text is not a fixed size as some users need a larger print version to make the page more legible. This will enable users who have fine motor control difficulties to increase the font size enabling them to click more accurately on links.

Links and Navigation

Make a big clickable area

79. Ensure that links and images are a decent size and not too close together. For example ensure that the graphical buttons such as the 'Go' button on a 'Search Form' is a good size enabling users who have poor motor control to be able to select the button more easily. Separate adjacent links by several pixels – not just one or two.

Use descriptive links

80. Link text should give the user a clear idea of the destination and make sense when read out of context. Avoid the use of 'click here', for example. This is important for screen reader users.

Provide a site map

81. A site map will allow users to gain an overall feel for the layout, whilst also allowing direct access to any page on the website. If possible, include images or icons to visually sign post the different areas. See also Guideline 13 of the Web Content Accessibility Guidelines 1.0[25]

Provide skip links

82. Provide a means to skip over navigation via a 'skip navigation' link and on long pages a 'Back to Top' link between sections. This enhances the accessibility for users accessing the website via the keyboard as they will be able to select one link to jump over the navigation into the main page content instead of laboriously tabbing through each link.

Ensure that all functionality is available through the keyboard as well as the mouse

83. This can be checked by tabbing through links and forms using the keyboard to ensure they can be accessed – and in a sensible order. This is important because users with vision impairments will not have good hand-eye co-ordination and are more likely to interact with the website solely through the use of their keyboard. See also Guideline 9 of the Web Content Accessibility Guidelines[26]

---

[25] http://www.w3.org/TR/WCAG10/#gl-facilitate-navigation
[26] http://www.w3.org/TR/WCAG10/#gl-device-independence

Images

Use images and icons

84. Images and other media used to enhance textual content can often aid in the understanding of the information. This can be helpful users with cognitive impairments.

Provide alternative (alt) text

85. Ensure that all images have meaningful alt text. This alt text is read out by the screen reader so that the user understands what is being shown on the screen. This is important for users with severe vision impairments. See also Guideline 1 of the Web Content Accessibility Guidelines 1.0[27]

Colour

Allow for flexibility

86. Some dyslexic users find it more comfortable to read text on a beige background. Ensure that colours can be changed in the browser and that they have not been forced by the web developer. If your website has been built using CSS for the layout and colours, you could also consider offering a different stylesheet.

Do not rely on colour alone to convey information

87. Blind users may not be able to get information about colour definitions from their screen reading software and using colour also presents difficulties for colour blind users.

Use good contrasting colours

88. Colour contrast can be measured. Juicy Studio's colour contrast analyser[28] can analyse colour combinations and let you know if they produce enough of a contrast against the W3C recommendations.

    See also Guideline 2 of the Web Content Accessibility Guidelines 1.0[29]

---

[27] http://www.w3.org/TR/WCAG10/#gl-provide-equivalents
[28] http://juicystudio.com/services/colourcontrast.php
[29] http://www.w3.org/TR/WCAG10/#gl-color

Layout

Provide a consistent design
89. This can be achieved through the use of Cascading Style Sheets where the web developer can reuse the same layout and design for each page in the website. This can be helpful users with cognitive impairments, and benefits all users.

Make use of white space
90. Good white space separating page elements makes it easier for users with cognitive difficulties to read web pages.

Forms

Associate text labels with form fields
91. Associating labels with form fields is important for screen reader users so that they can identify which label describes each form field. For more information on creating accessible forms,[30] please refer to WebAIM.

Tables

Associate data cells with their headers for data tables
92. Using table headers for data tables helps a screen reader user to associate the content of a data cell with the row or column it's in. For more information on creating accessible tables,[31] please refer to WebAIM.

Multimedia

Ensure animation can be paused or switched off
93. Animation can be a distraction and seriously compromise the ability of people with learning disabilities to read content on a page. If you provide moving content ensure there is a way to disable the movement. Alternatively allow it to loop for a few seconds and then stop automatically. See also Guideline 7 of the Web Content Accessibility Guidelines 1.0[32]

Provide captions or transcripts of important audio content
94. Audio content can be inaccessible to deaf and hard of hearing users. Providing a text equivalent is important for these users but also beneficial to others for example, users in a noisy environment.

---

[30] Creating Accessible Forms http://webaim.org/techniques/forms/
[31] Creating Accessible Tables http://webaim.org/techniques/tables/data.php
[32] http://www.w3.org/TR/WCAG10/#gl-movement

Provide text equivalents for a movie

95. Text equivalents should be provided for an entire movie in cases where the movie can be conveyed using a single text equivalent. Examples include movies that show a simple animation, banner adverts or complex multi-media that cannot otherwise be made accessible.

96. For Flash movies, the text equivalent should be placed in the name field. It is generally advisable to make the contents of this field short and focused in order to describe the function of the movie. The description field can be used for longer descriptions. Some screen readers will read this content by default. Be cautious as long descriptions used can result in an application that is tedious to listen to.

97. In cases where a single text equivalent is used for an entire movie clip, the 'child' objects of the movie should be made inaccessible. This will prevent animations within the movie from causing frequent updates to the screen reader. It also assists automated testing of the content for accessibility.

98. The text equivalent may be assigned using the accessibility panel.

   [More detailed information on creating accessible Flash movies](http://www.adobe.com/accessibility/) at the Adobe Accessibility Resource Centre[33]

Document accessibility

99. The presentation of lengthy printed documents on the Web should generally be avoided in favour of web pages. However, there are instances where documents will need to remain in their original form e.g. when forms need to be printed and signed. For these documents, there are a basic set of guidelines which should be adhered to:

   - Ensure the text is sans serif (e.g. Arial), with a minimum font size of 12.
   - Ensure the text is left aligned, not justified as justified text leads to 'rivers of white text' being distracting to the reader.
   - White space can be just as useful as the text. Over cluttering and complicating the page reduces readability.
   - Avoid excessive use of capitalised, underlined or italicised text, consider bold for emphasis.
   - Hyperlinks should be spelt out (e.g. in a footnote or endnote) because users may only have access to the printed version.

---

[33] Adobe Accessibility Resource Centre http://www.adobe.com/accessibility/

Styles and Headings

100.   One of the most important things to consider when creating a document is
         the appropriate use of styles and headings. The inbuilt structuring system of
         your word processing package should be used when creating any document.

101.   Headings and sub-headings provide an intrinsic structure to the document.
         An appropriate style should be applied to headings and sub-headings so that
         the structure is also reflected visually.

Print Stylesheets

102.   Where the use of documents can be avoided, websites should use
         stylesheets to optimise web page content for printing. These stylesheets
         should follow the basic guidelines for printed documents.

Microsoft Word

103.   As Microsoft Word is the most commonly used word processing package,
         it is important to ensure that consideration is given to accessibility and
         usability within a Microsoft Word document. If a document has been created
         using the styles and headings options, those reading the document (and also
         those creating them) can use an inbuilt navigation system (View > Document
         Map) enabling users to navigate a long document. Clicking the Document
         Map will allow the user to expand and contract headings or jump to the
         relevant section of a large document.

More detailed information on creating accessible Word documents[34] on the
TechDis website.

PDF (Portable Document Format)

104.   The portable document format (PDF) can be accessible if authors follow
         established best practices to include appropriate structure and equivalents for
         users with disabilities. It is important for PDF authors to incorporate within
         their PDF authoring workflows those steps that result in the creation of
         accessible PDF files.

105.   PDF is a destination format, that is to say PDF files begin in other
         applications, such as desktop publishing and word processing programs or as
         another file type, typically as a TIFF file in the case of scanned content.
         Measures should be taken to maximise the accessibility in the source in order
         to enhance the accessibility of the resulting PDF file. The basic guidelines for
         printed documents should always be followed.

106.   In addition to the basic guidelines for printed documents publishers of PDF
         files should:

---

[34] TechDis Accessibility Essentials http://www.techdis.ac.uk/index.php?p=3_20

- Favour tools and techniques that will result in the production of accessible PDF documents.

- Use the facilities (if available) in the word processing or authoring application to add alternative text to any graphics that appear in the document.

- Use styles for identifying document elements such as Titles and Headings. Avoid using character formatting techniques such as bolding text and modifying the font and size of text to create the appearance of these structural elements.

- For tabular information, use the product's table editor (if available).

- If possible, select products that provide authors with the option to export tagged accessible PDF. This will reduce the amount of time verifying structure after the PDF is produced.

- If you intend to create a PDF by scanning a paper document, submit the content to Optical Character Recognition (OCR) and add the necessary accessibility components prior to distributing the PDF file (see section on PDF accessibility repair below).

You Must Improve the Accessibility of an Existing PDF File
107. If a PDF file is created without following the above guidelines, it may require additional enhancements to improve its accessibility. To optimise the accessibility of existing or legacy PDF files, the following process should be followed:

1. First determine if the PDF file was created by scanning a printed page. Perform optical character recognition (OCR) on documents that were created as a result of scanning a document to create a PDF image of the scanned page.

2. Second, determine if the PDF file is intended to be used as an interactive document or form. If so, add form fields and other controls with appropriate short descriptions for the form elements and controls.

3. Third, determine if the PDF file has been given structure or "tagged". If it has not been tagged, add tags to the file. Tags specify the logical read order of the PDF file and provide hooks for other accessibility elements such as alternative text descriptions for graphics.

4. Once the PDF file has been tagged, add alternative text to graphics that are in the document and short descriptions to any form fields and interactive controls that are part of the document.

5. Verify that the tagging is correct by evaluating its read order and ensuring all necessary alternate text elements are present for graphics and multimedia elements. If the document is a form or features interactive navigation, verify that short description labels are provided for form fields and interactive controls.

For more detailed information refer to the [Adobe information for PDF and Acrobat Accessibility](#)[35]

Presentations

Slide Content
108.   When creating presentations a number of slide content issues should be considered:

* Use short concise ideas and content, using bullet points and lists where appropriate.
* When using bullet points and lists ensure every point is ended with punctuation (e.g. a Full Stop, Semi-Colon or Comma). Ensuring this will enable a screen reader user to distinguish between different ideas. Without the presence of punctuation different ideas will be read as a single sentence, without pausing between concepts.
* Write no more on a slide than you would on a postcard. Ensure the text is a minimum size of 24 where possible.

Presentation Environment
109.   The environment in which the presentation is being delivered will also affect the readability of material. For example, if presenting in a light room, display dark coloured text on a light coloured background (e.g. navy on cream). Conversely, if presenting in a darkened room, ensure the background colour is dark and the text light. If using a dark background ensure the weight of text is increased (e.g. bold).

110.   Remember in a room with no raised seating, the bottom of your slide will not be visible to those seated further back.

Microsoft PowerPoint
111.   One of the most important features which should be utilised when creating a Microsoft Powerpoint presentation is the Notes Field. It provides presenters with an ideal opportunity to clarify content presented on the slides. It is also important that the Notes Field is used to exemplify the meaning of any visual

---

[35] The Adobe Acrobat 8 family and accessibility
http://www.adobe.com/enterprise/accessibility/acrobat.html

content. For example if a presentation contains an image of a graph, the Notes Field should be used to explain the content of the graph and its reason for insertion. This will enable a screen reader user to understand the use of any images within the presentation.

Mobile

112.   In order to realise its full potential the Web has to be accessible via any browser-enabled device anywhere and at any time. Today many of the web services and content available via desktop computers are not easily accessible through mobile devices. An increasing variety of mobile device form factors, connectivity options and browsing constraints continue to slow down the growth of the mobile web. In order to cope with highly differentiated capabilities and limitations of mobile devices, content authors and service developers are often forced to deploy multiple versions of their offerings and/or rely on widespread use of adaptation techniques.

113.   W3C have defined a set of Mobile Web Best Practices Guidelines[36] that - when followed by authors and developers - are likely to make their content accessible with equal ease to users of desktop and mobile devices of certain assumed capabilities. W3C's mobileOK Basic tests[37] are based on a limited subset of the Mobile Web Best Practices. Their outcome is machine-verifiable, hence claims of mobileOK Basic conformance are easy to check using the W3C Mobile Web Best Practice Checker[38] The full mobileOK tests include the mobileOK Basic tests and are based on a larger subset of the Mobile Web Best Practices. These tests are not all machine-verifiable.

114.   Designers should follow the Mobile Web Best Practices guidelines when creating web sites to be accessed via mobile devices.

115.   Web sites should conform to the automated mobileOK basic tests, whilst aiming towards conformance to the full mobile OK tests.

---

[36] W3C Mobile Web Best Practices Guidelines http://www.w3.org/TR/mobile-bp/
[37] W3C mobileOK Basic Tests 1.0 http://www.w3.org/TR/mobileOK-basic10-tests/
[38] W3C Mobile Web Best Practice Checker http://validator.w3.org/mobile/