

## Delivering inclusive websites

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### Purpose

These guidelines are for public sector website owners and digital media project managers wishing to deliver inclusive, accessible websites. This document sets out the minimum standard of accessibility for public sector web content and web authoring tools. It recommends a user-centred approach to accessibility, taking account of user needs in the planning and procurement phases of web design projects.

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## Background

This document sets out the minimum standard of accessibility for public sector websites and contains practical guidance on how to achieve this. The Disability Discrimination Act 2005 amended the 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 public sector 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, public sector website owners should adopt [best practice in commissioning accessible websites](#),<sup>1</sup> as set out in PAS (Publicly Available Specification) 78.

## Legal context

Public sector bodies must pay due regard to the [Public Sector Disability Equality Duty](#)<sup>2</sup>. 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](#)<sup>3</sup> at Level Double-A. However, a [survey of public sector services](#)<sup>4</sup> 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](#)<sup>5</sup> agreed to promote

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<sup>1</sup> Website accessibility guidance PAS 78

<http://www.equalityhumanrights.com/en/publicationsandresources/disability/pages/websiteaccessibilityguidance.aspx>

<sup>2</sup> Disability equality duty codes of practice

<http://www.equalityhumanrights.com/en/forbusinessesandorganisation/publicauthorities/disabilityequalityd/pages/codesofpractice1.aspx>

<sup>3</sup> 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](http://ec.europa.eu/information_society/policy/accessibility/z-techserv-web/com_wa2001/a_documents/ep_res_web_wai_2002.html)

<sup>4</sup> eAccessibility of Public Sector Services in the European Union

<http://archive.cabinetoffice.gov.uk/e-government/eaccessibility/>

<sup>5</sup> Riga eInclusion Declaration

[http://ec.europa.eu/information\\_society/events/ict\\_riga\\_2006/doc/declaration\\_riga.pdf](http://ec.europa.eu/information_society/events/ict_riga_2006/doc/declaration_riga.pdf)

inclusive e-government by 'ensuring accessibility of all public web sites 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](mailto:webguidelines@coi.gsi.gov.uk)

## Minimum standard of accessibility

1. The minimum standard of accessibility for all public sector websites is Level Double-A of the [W3C Web Content Accessibility Guidelines](#).<sup>6</sup> All new websites must conform to these guidelines from the point of publication.
2. Websites owned by central government departments must be Double-A conformant by December 2009. This includes websites due to converge on Directgov or BusinessLink, unless convergence is scheduled before this date.
3. Websites owned by central government executive agencies and non-departmental public bodies must conform by March 2011.
4. Government websites owners are reminded to follow the [conditions of use for a .gov.uk name](#)<sup>7</sup> (Registering .gov.uk domain names (TG114)). Websites which fail to meet the .gov.uk accessibility requirements may be at risk of having their domain name withdrawn.
5. At the time of writing, version 1.0 of the Web Content Accessibility Guidelines is the current standard for web accessibility. At such time that version 2.0 becomes a W3C Recommendation, this policy will be reviewed within six months. Consideration will be given to the adoption of version 2.0 as the minimum standard for public sector websites.

## Content formats not covered by WCAG 1.0

6. Content formats not covered by version 1.0 of the Web Content Accessibility Guidelines (e.g. Flash, PDF, JavaScript etc) should only be used if it is determined that they are the most appropriate for the intended purpose. For example, this could be where the proposed content enhances the functionality or understanding for the intended audience.
7. Every attempt should be made to ensure that the accessibility features of the relevant authoring tool are used.
8. In all cases, web content must always be developed according to the process set out in your [website accessibility policy](#).

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<sup>6</sup> Web Content Accessibility Guidelines 1.0 <http://www.w3.org/TR/WCAG10/>

<sup>7</sup> The conditions of use for a .gov.uk name [http://www.cabinetoffice.gov.uk/government\\_it/web\\_guidelines/domain\\_names/1\\_9\\_4conditions\\_of\\_use.aspx](http://www.cabinetoffice.gov.uk/government_it/web_guidelines/domain_names/1_9_4conditions_of_use.aspx)

## Planning

### Accessibility policy

9. Public sector website owners must develop an accessibility policy according to section 6 of PAS 78, 'Defining the accessibility policy for the website'.
10. Accessibility policies for websites owned by central government departments should be posted on to the [Accessibility Sub-Group of the Digital People network](#)<sup>8</sup> by December 2008.
11. An accessibility policy must:
  - a. demonstrate disability awareness;
  - b. explain how disabled users are to be involved in the development of the website;
  - c. state the level of W3C conformance to be upheld; and
  - d. plan how the level of accessibility will be maintained over time.
12. The process for maintaining website accessibility shall always include:
  - a. a description of the target user population;
  - b. the core tasks that users should be able to carry out;
  - c. an analysis of user needs;
  - d. the steps taken to meet those needs; and
  - e. an evaluation of how successful the site is in meeting those needs.
13. If there are areas of the website which pose potential problems for users with particular impairments, an accessibility policy should contain:
  - a. how the potential accessibility issues are to be addressed;
  - b. how long it is likely to take to repair;
  - c. how the service can be accessed by alternative means; and
  - d. who to contact if there is a specific problem.

[More about developing an accessibility policy](#)<sup>9</sup> in PAS 78.

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<sup>8</sup> Communities of Practice | Digital People – Accessibility  
<http://communities.idea.gov.uk/c/676995/home.do>

<sup>9</sup> Website accessibility guidance PAS 78  
<http://www.equalityhumanrights.com/en/publicationsandresources/disability/pages/websiteaccessibilityguidance.aspx>

## Accessibility statement

14. 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:

[Organisation name] is committed to ensuring that this website is accessible to the widest possible range of people. If you have any questions or suggestions regarding the accessibility of this site, or if you have difficulty using any part of it, please contact us.

15. An accessibility statement should contain the following parts:

- A clear statement that demonstrates the organisation's commitment to web accessibility.
- Information about any areas of the website that do not yet conform to the overall accessibility targets of the website.
- Contact details for people wishing to report problems with the website.
- A link to the website accessibility policy.

16. Accessibility statements should assume that the user has little or no knowledge of web design issues and should therefore limit the use of technical jargon (e.g. levels of conformance to web accessibility standards).

[More about writing an accessibility statement](#)<sup>10</sup> on the Juicy Studio website.

## Help using the site

17. 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 change the text size or background colour).

18. As a minimum, it is recommended that websites link to the BBC resource [My Web My Way](#).<sup>11</sup> This website was specifically designed to help users on a wide variety of platforms.

19. In addition, instructions on how to use any bespoke accessibility features should be provided. This might include descriptions of how to change the text size; how to select a different colour scheme; how to enable speech output; or how to use any shortcut or access keys that have been implemented.

20. Contact details (e.g. email, telephone, textphone, typetalk) should also be provided for help with any technical issues that users might have.

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<sup>10</sup> Writing a Good Accessibility Statement <http://juicystudio.com/article/writing-a-good-accessibility-statement.php>

<sup>11</sup> My Web My Way <http://www.bbc.co.uk/accessibility/>

## Developing a business case

21. In addition to the legal drivers, there are social, financial and technical incentives for accessibility. Public sector organisations should take these into account when developing a business case for web accessibility.

### Social factors

22. Public sector websites 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. Social incentives for accessibility include:

- Disabled people have easier access to printed, audio or visual material.
- 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

23. 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. 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

24. Technical concerns vary throughout the different levels of government. The resources and technical capabilities of a district council may differ from those of a 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 web accessibility 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](#)<sup>12</sup> on the W3C website.

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<sup>12</sup> Developing a Web Accessibility Business Case for Your Organization  
<http://www.w3.org/WAI/bcase/Overview>

## Procurement

### Requirements

25. Fixing an inaccessible website after it has been completed can be difficult and 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.
26. 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.
27. To help in the process of procuring accessible websites, the British Standards Institute and the Disability Rights Commission (DRC) collaborated to produce a [Publicly Available Specification \(PAS 78:2006\) "Guide to good practice in commissioning accessible websites"](#).<sup>13</sup> This is available free of charge from the Equality and Human Rights Commission website.
28. 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.
29. 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
30. 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.

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<sup>13</sup> Website accessibility guidance PAS 78

<http://www.equalityhumanrights.com/en/publicationsandresources/disability/pages/websiteaccessibilityguidance.aspx>

## Software accessibility

31. 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.
32. So that content authoring is possible for people with the widest range of abilities, the interface to authoring tools must also be accessible. Accessibility criteria must therefore be specified in the procurement of these systems, in the same way that accessibility is taken into account when commissioning websites.
33. The [e-GIF specifications for accessibility and usability](#)<sup>14</sup> has adopted the [W3C Authoring Tool Accessibility Guidelines](#)<sup>15</sup> for human-computer interfaces. When procuring web-based authoring tools including CMSs, public sector website owners should specify a minimum of Level Double-A conformance to these guidelines.
34. For more general software accessibility requirements, it is recommended that organisations refer to ISO 16071<sup>16</sup>, the international standard on software accessibility.
35. Where an authoring tool falls short of the minimum level required, this should be documented and the likely impact for users should be assessed.

[More detailed guidance on procuring accessible software](#)<sup>17</sup> at the RNIB Software Access Centre.

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

<sup>15</sup> Authoring Tool Accessibility Guidelines 1.0 <http://www.w3.org/TR/ATAG10/>

<sup>16</sup> ISO/TS 16071:2003 Ergonomics of human-system interaction – Guidance on accessibility for human-computer interfaces

<sup>17</sup> RNIB Software Access Centre <http://www.rnib.org.uk/softwareaccesscentre>

## Measuring accessibility

36. The only way to find out if a website is accessible is to test it. There are two elements to verify 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.
37. An accessibility test plan is an essential component of your website accessibility policy. When developing your accessibility test plan, you should consider using an appropriate mixture of tools and techniques. For example, you may wish to use expert reviews early on in the development cycle, user testing on later designs and automated testing at regular intervals thereafter. Please note that this approach may not be appropriate in specific cases. It merely serves to highlight that different methods for evaluating accessibility may be more or less appropriate at different stages of the development cycle.
38. Your accessibility test plan must include methods for testing both technical and usable accessibility.

### How to test for technical accessibility

39. Approaches for determining technical accessibility include:

- **Automated testing** to determine whether the website upholds some of the checkpoints of the W3C Web Content Accessibility Guidelines (WCAG);
- **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

40. There are a number of free and commercially available automated testing tools that provide a way to measure conformance to some of the W3C guidelines. Website developers and testers should be 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

41. Validation testing should be undertaken by website developers to ensure that their mark-up conforms to W3C guidelines and specifications. The [W3C Markup Validation Service](#)<sup>18</sup> should be used to validate HTML and the [W3C CSS Validation Service](#)<sup>19</sup> should be used to evaluate the validity of any CSS. This is an important exercise as assistive technologies may rely on mark-up meeting these specifications.

## Assistive technology tool testing

42. 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

43. Approaches for determining usable accessibility include:

- **User testing** to identify any usability and accessibility problems real-world users may have.
- **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

44. 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.

45. 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*.

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<sup>18</sup> W3C Markup Validation Service <http://validator.w3.org/>

<sup>19</sup> W3C CSS Validation Service <http://jigsaw.w3.org/css-validator/>

46. 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.

### Expert review

47. 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-through, 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.

48. 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

49. 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.

50. Because of the amount of effort spent inspecting a page, a useful technique is to 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.

### Further reading

51. The W3C Web Accessibility Initiative (WAI) has published [a document that describes approaches for preliminary review of website accessibility](#),<sup>20</sup>

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<sup>20</sup> Evaluating websites for accessibility <http://www.w3.org/WAI/eval/>

including general procedures and tips for evaluation during website development and for the ongoing monitoring of established websites.

52. W3C WAI has published a [list of web accessibility evaluation tools](#).<sup>21</sup>
53. W3C WAI has published [information about evaluation, repair, and transformation tools](#) useful for website developers.<sup>22</sup>
54. W3C WAI provides [basic guidelines on including disabled people in accessibility evaluation](#)<sup>23</sup> throughout web development.
55. Both the [Usability Professionals Association](#) (UPA)<sup>24</sup> and the [Market Research Society](#)<sup>25</sup> provide Codes of Conduct covering how consultants and researchers should interact with users when performing evaluations.

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<sup>21</sup> Complete List of Web Accessibility Evaluation Tools

<http://www.w3.org/WAI/ER/tools/complete.php>

<sup>22</sup> Evaluation, Repair, and Transformation Tools for Web Content Accessibility

<http://www.w3.org/WAI/ER/existingtools.html>

<sup>23</sup> Involving Users in Web Accessibility Evaluation <http://www.w3.org/WAI/eval/users>

<sup>24</sup> Usability Professionals Association <http://www.upassoc.org/>

<sup>25</sup> Market Research Society <http://www.mrs.org.uk/standards/guidelines.htm>

## User profiles

56. 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.
57. 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

58. **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.
59. **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).
60. **Users with mild vision impairment**, e.g. users who might enlarge text in the browser with high contrast and use colour preferences.

## Motor difficulties

61. **Users with severe motor difficulties**, e.g. users who are quadriplegic who might use [speech recognition software](#) or switch access as an alternative to the keyboard or mouse.
62. **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.
63. **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

64. **Users with medium dyslexia**, e.g. users who might change site colours or text formatting, and who might supplement this with [text to speech software](#) for reading sections of text.
65. **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

66. **British Sign Language (BSL) users** who might experience problems with multimedia content or complex language.
67. **Non-signing deaf or hard of hearing**, e.g. users who might benefit from captions or transcripts of audio content.
68. 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.
69. Furthermore, the above categorisation does not mean that a user profile should be developed for each of the above types. A common approach is to add some of the above characteristics to a few of the existing profiles that have been defined for a website.

[More information on including accessibility in user profiles](#)<sup>26</sup> in Just Ask: Integrating Accessibility Throughout Design.

## Older users

70. Older people can suffer from physical disabilities, such as a restricted ability to move their arms or hands. They might experience difficulty using a mouse.
71. 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.
72. 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](#)<sup>27</sup> on the University of Maryland website.

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<sup>26</sup> Just Ask: Integrating Accessibility Throughout Design <http://www.uiaccess.com/accessucd/>

<sup>27</sup> Universal Usability Web Design Guidelines for the Elderly (Age 65 and Older) <http://www.otal.umd.edu/uupractice/elderly/>

## Assistive technology

73. 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

74. Screen readers are software applications that read the text on a web page. Most screen readers can also read alternative (alt) text for images. If a web page includes accessibility features, a screen reader can usually provide the user with more information about the page – for example, by announcing heading levels or by reading all the links on the page.

### Braille displays

75. 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

76. 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

77. 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

78. 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

79. 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. Second – there is speech enablement as a channel, either client-based or server-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.

## Content design

80. This section suggests possible design solutions to problems that might be faced by people using 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.
81. Use of the following guidelines should be considered within the context of your website and its current accessibility policy. Consideration should be given to likely impact for end users as well as conformance to the W3C Web Content Accessibility Guidelines (WCAG).

## Language and text

### Keep the content simple

82. Avoid the use of jargon and complex words. This can be helpful users with cognitive impairments, and benefits all users. See also [WCAG 1.0 Guideline 14](#)<sup>28</sup>

### Justified text

83. Text shouldn't be justified as [users with dyslexia](#) find this more difficult to read than if the text is left aligned.

### Graphical text

84. The use of images of text is undesirable for a number of reasons.
85. [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.
86. 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.
87. 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.
88. Images of text should be limited to logos and not used for items such as headings or navigation.

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<sup>28</sup> <http://www.w3.org/TR/WCAG10/#gl-facilitate-comprehension>

## Ensure that text size can be changed

89. Ensure that text sizes are not fixed and can be resized. Some people need to change the text size to make it more legible. [Users with motor control difficulties](#) may need to increase the text size to make it easier to select links.

## Links and Navigation

### Make a big clickable area

90. Ensure that links and images are a decent size and not too close together. For example ensure that 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.

### Descriptive links

91. 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 particularly important for [screen reader users](#) who may use a list of links to navigate the page.

### Site maps

92. 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 signpost the different areas. See also [WCAG 1.0 Guideline 13](#)<sup>29</sup>

### Keyboard shortcuts

93. Providing a 'skip to content' link enhances the accessibility for users accessing the website via the keyboard, particularly if they have to tab through a large number of navigational links to get to the main content.
94. Highlighting 'skip to content' links as they are activated may be useful for keyboard-only users with vision (e.g. motor impaired) as this may be the only cue to their existence.
95. Where access keys are used, they should generally be confined to the numerical keys as these are the least likely to conflict with other keyboard shortcuts (e.g. those used by screen readers).

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<sup>29</sup> <http://www.w3.org/TR/WCAG10/#gl-facilitate-navigation>

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

96. 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 [WCAG 1.0 Guideline 9](#)<sup>30</sup>

## Images

### Images and icons

97. 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](#).

### Alternative (alt) text

98. Ensure that all meaningful 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 [WCAG 1.0 Guideline 1](#)<sup>31</sup>

99. One of the most common alt text mistakes is to use “Image (or picture or photo) of x”. A screen reader will tell the user that an image is present – they don’t need this information twice. Do not start alt text with “Image (or picture or photo) of...”

100. Use empty alt text if normal text already conveys the information provided by the image. For example, if you use a document thumbnail to illustrate a text link to a PDF, and the text link includes the title of the document, use empty alt text for the image (a pair of double quotes with no space between them). Using alt text that repeats the title of the document is pointless and distracting for users of screen readers.

101. Use empty alt text for any images that are purely decorative – for example the rounded corners of boxes.

## Colour

### Allow for flexibility

102. 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

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<sup>30</sup> <http://www.w3.org/TR/WCAG10/#gl-device-independence>

<sup>31</sup> <http://www.w3.org/TR/WCAG10/#gl-provide-equivalents>

they have not been forced by the web developer. You could also consider offering a different stylesheet.

### **Do not rely on colour alone to convey information**

103. [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.
104. You may find it useful to test web pages with [VisCheck](#)<sup>32</sup> to simulate how they look to colour blind users.

### **Use good contrasting colours**

105. Consider using a tool such as [Juicy Studio's Colour Contrast Analyser](#)<sup>33</sup> or [Fujitsu ColorSelector](#)<sup>34</sup> to help you measure colour contrast and determine the best combinations. See also [WCAG 1.0 Guideline 2](#)<sup>35</sup>

## **Layout**

### **Consistent design**

106. This is 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.

### **White space**

107. Good white space separating page elements makes it easier for [users with cognitive difficulties](#) to read web pages.

## **Forms**

108. 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](#),<sup>36</sup> please refer to WebAIM.
109. It is important to allow sufficient space in form fields to allow users to enter the correct information. For example, using the Typetalk service from the

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<sup>32</sup> VisCheck <http://www.vischeck.com/>

<sup>33</sup> Juicy Studio: Colour Contrast Analyser <http://juicystudio.com/services/colourcontrast.php>

<sup>34</sup> ColorSelector: FUJITSU <http://www.fujitsu.com/global/accessibility/assistance/cs/>

<sup>35</sup> <http://www.w3.org/TR/WCAG10/#gl-color>

<sup>36</sup> Creating Accessible Forms <http://webaim.org/techniques/forms/>

Royal National Institute for the Deaf (RNID), textphone users may wish to add the prefix 18002 for a voice telephone user to be able to contact them.

[More information on textphone users and RNID Typetalk](#)<sup>37</sup> on the RNID website.

## CAPTCHAS

110. CAPTCHAS (**C**ompletely **A**utomated **P**ublic Turing test to tell **C**omputers and **H**umans **A**part) are used in forms to make sure that the entity filling out the form is a human being rather than a computer program that was written to submit the form many times. One type of CAPTCHA is to take a random string of characters, generate a distorted image of the text and require the user to type the letters in the image. This works because it is easier for a human being to solve than a computer.
111. However, tests relying solely on visual perception (e.g. an image of distorted text) present an accessibility barrier to some users, for example due to visual impairments. Therefore, forms with CAPTCHAs should provide an alternative audio version in addition to the visual test. For example, an audio file such as an MP3 is provided with the letters spoken by different speakers and with background speech. Again, the idea is that the test is easier for a human to pass than a computer.

## Tables

### Associate data cells with their headers for data tables

112. 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](#),<sup>38</sup> please refer to WebAIM.

## Animation

### Ensure animation can be paused or switched off

113. 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. See also [WCAG 1.0 Guideline 7](#)<sup>39</sup>

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<sup>37</sup> RNID Typetalk Factsheet

[http://www.rnid.org.uk/information\\_resources/factsheets/rnid\\_typetalk/factsheets\\_leaflets/](http://www.rnid.org.uk/information_resources/factsheets/rnid_typetalk/factsheets_leaflets/)

<sup>38</sup> Creating Accessible Tables <http://webaim.org/techniques/tables/data.php>

<sup>39</sup> <http://www.w3.org/TR/WCAG10/#gl-movement>

## Audio and video content

### Captions and transcripts

114. Audio and video 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.

### Text equivalents for a movie

115. 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.

### Provide accessible controls

116. When providing audio or video on a web site, it is important to provide accessible controls to allow users (including keyboard and screen reader users) to interact with the video playback controls.

## Adobe Flash

117. Flash-based content can be accessible if authors follow established best practices for developing accessible content in Flash. It is important for Flash authors to incorporate best practices and appropriate tests during development to ensure that content is accessible:

- For Flash movies, text equivalents should be provided for all objects that provide information. It is generally advisable to make the text equivalents short and concise. Flash movies and objects can also contain a longer description, which should be used cautiously since use of many long descriptions can result in an application that is tedious to listen to.
- In cases where a single text equivalent is used for an entire Flash movie, the 'child' objects of the movie should be made inaccessible by the Flash author. 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.
- Text equivalents may be assigned using the accessibility panel in the Flash authoring tool.
- Tab and reading order for Flash content should be controlled to ensure a sensible reading order.

[More detailed information on creating accessible Flash movies](#) at the Adobe Accessibility Resource Centre.<sup>40</sup>

## Non-HTML Documents

118. The presentation of lengthy non-HTML documents on the Web should generally be avoided in favour of web pages. However, there may be instances where documents will need to remain in their original form e.g. for legal reasons. For these documents, there are a basic set of guidelines which should be adhered to:

- Ensure the text is sans serif (e.g. Arial, Helvetica), with a minimum font size of 12 points.
- 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.
- Avoid underlining, except for links.
- Hyperlinks should be spelt out (e.g. in a footnote or endnote) because users may only have access to the printed version.

## Styles and Headings

119. Use heading styles for headings – not simply bigger or bolder text. Heading styles ensure consistency; make a document easier to navigate for sighted users (and easier to maintain); and enable automatic tables of contents. They usually also provide the document with a built-in structure that is accessible to screen readers – when a Word document is converted to PDF, for example.

120. If you intend to publish Microsoft Word documents, it is important to consider their accessibility and usability. When a document has been created using the styles and headings features specified above, those reading the document (and also those creating them) can use various inbuilt navigation systems. For mouse users the Document Map is available (View > Document Map). By clicking headings displayed in the Document Map this expands or collapses headings in the tree and allows users to jump instantly to that heading in the main document. Screen reader users can use the Outline view (View > Outline) to achieve much the same effect or alternatively use the navigation features built into their screen reader software such as 'Headings list'.

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<sup>40</sup> Adobe Accessibility Resource Centre <http://www.adobe.com/accessibility/>

[More detailed information on creating accessible Word documents](#)<sup>41</sup> on the TechDis website.

## Print Stylesheets

121. Where the use of non-HTML documents can be avoided, websites should use stylesheets to optimise web page content for printing.

## PDF (Portable Document Format)

122. 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.

123. 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 documents. Measures should be taken to maximise the accessibility in the source in order to enhance the accessibility of the resulting PDF file when converted.

124. The basic guidelines for non-HTML documents should always be followed.

125. In addition to the basic guidelines for non-HTML documents, publishers of PDF files should:

- Use 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 meaningful alternative text to any graphics that appear in the document.
- Use features inbuilt into the word processor or design package to correctly specify heading levels and other styles to identify document elements such as Titles and Headings.
- Document authors when using the source document should avoid using character formatting techniques such as bolding text and modifying the font and size of text to create the visual appearance of heading levels and other structural elements.

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<sup>41</sup> TechDis Accessibility Essentials [http://www.techdis.ac.uk/index.php?p=3\\_20](http://www.techdis.ac.uk/index.php?p=3_20)

- For tabular information, use the word processor or design package's inbuilt 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).
- If you intend to use the PDF as an interactive document or form, add form fields and other controls with appropriate short descriptions for the form elements and controls.

### **Repairing or improving the accessibility of an existing PDF file**

126. 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, use the following process:

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](#)<sup>42</sup>

## Presentations

### Slide Content

127. 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.
- Write no more on a slide than you would on a postcard.
- Ensure the text is a minimum size of 24 points where possible.

### Microsoft PowerPoint

128. 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 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

129. 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.

130. W3C have defined a set of [Mobile Web Best Practices Guidelines](#)<sup>43</sup> 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

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<sup>42</sup> The Adobe Acrobat 8 family and accessibility  
<http://www.adobe.com/enterprise/accessibility/acrobat.html>

<sup>43</sup> W3C Mobile Web Best Practices Guidelines <http://www.w3.org/TR/mobile-bp/>

certain assumed capabilities. [W3C's mobileOK Basic tests](#)<sup>44</sup> 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](#)<sup>45</sup>. 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.

131. Designers should follow the Mobile Web Best Practices guidelines when creating web sites to be accessed via mobile devices.
132. Web sites should conform to the automated mobileOK basic tests, whilst aiming towards conformance to the full mobile OK tests.

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<sup>44</sup> W3C mobileOK Basic Tests 1.0 <http://www.w3.org/TR/mobileOK-basic10-tests/>

<sup>45</sup> W3C Mobile Web Best Practice Checker <http://validator.w3.org/mobile/>

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