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<h2>Accessibility and Usability Standards for Technical Standards Guidance</h2>			
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DQ Content Authority	Tiffany Hall (Chief information Officer)		
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Description	<p>Intended Audience: All BBC Staff</p> <p>Use: To provide information and support required in order to ensure that the necessary technical standards are in place to accessibility and usability of internally-facing applications that are under development or that require amendment.</p>		
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British Broadcasting Corporation

Accessibility and Usability Standards Document Seven -
Technical Standards Guidance

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1. Introduction

This document is the seventh in a series of eight which cover Accessibility and Usability Standards. Other documents which cover Accessibility and Usability Standards that should be consulted are:

- Document One – Procurement
- Document Two – Procurement and Checklists
- Document Three - Integration Summary
- Document Four - Integration Checklist
- Document Five - Training Inclusively for Disabled People
- Document Six - Training Inclusively for Disabled People Checklist
- Document Eight – Accessibility and Usability Standards for producing accessible emails

In June 2004, the BBC Governors announced their intention to increase the proportion of disabled staff at the BBC from 2.8% to 4% by 2007. This target was exceeded: as of May 2009 the figure is 4.4%. There is now a new target in place – 5.5% before the end 2012.

This has inevitably increased the percentage of access technology users needing to access our desktop applications and broadcast technology. Technology Distribution and Archive intend the BBC to be a world class leader for accessibility of technology, implementing corporate ownership of access, rather than the outdated model of associating patch up fixes with the disabled individual. In this way, the BBC will be technologically accessible wherever a disabled person happens to log in and will enable them to move from work-station to work-station or studio to studio.

The Governors' targets are prompted by changes in the law since 1995 (further updated in 2010 and again in 2011) and research which clearly demonstrates a strong business case for employing more disabled members of staff. Providing a fully accessible technological environment will help the BBC to employ the most talented individuals. The aim therefore is to provide an accessible environment that disabled members of staff can work in or move into, not to address 'problems' at an individual level.

The 1995 Disability Discrimination Act (DDA) was replaced in 2010 with the Equalities Act (EA) and places a duty on the BBC, as it does other UK organisations, 'to make reasonable adjustments' so as not to place a disabled person at a substantial disadvantage compared with people who are not disabled and to ensure that disabled people are not treated less favourably than non-disabled colleagues. What constitutes a 'reasonable adjustment' is an important consideration as well as the process that facilitates the decision. This is because a failure to make reasonable adjustments could have considerable financial consequences for the BBC's reputation and brand, as well as having cost implications if a case is brought before a tribunal. The law was further updated in April 2011 to reflect the Public Sector Equality Duty. This new single Duty strengthens UK equalities legislation and covers up to nine groups of people who share certain 'protected characteristics'. The Duty will have significant implications for many BBC activities and functions.

The PSED requires public bodies to have due regard to the need to:

- Eliminate discrimination, harassment and victimisation;
- Advance equality of opportunity between people who share a protected characteristic and those who do not;
- Foster good relations between people who share a protected characteristic and those who do not.

The BBC also recognises the importance of ensuring its technologies and applications are usable to all members of staff. By following a user centred design approach, based on ISO 9241 Part 210, the BBC can ensure that systems allow staff to work more efficiently, effectively and comfortably. In fact, making a product technically accessible is not enough as accessibility does not always imply usability. For instance, coding a form field so that its label is associated with the data entry field will make the field accessible to JAWS or VoiceOver users. However, if the content of the label is not meaningful, then the data entry field becomes meaningless to all users. To ensure all staff can work optimally, accessible products must also be usable, appealing and pleasurable to use.

Investing in accessible and usable products provides a number of significant business benefits:

- Increased effectiveness and efficiency of your workforce
- Decreased training time and learning time
- Reduced maintenance costs
- Better user satisfaction, leading to a happier more confident workforce

2. Technical Standards for Development.

This document provides information and support required in order to ensure that the necessary technical standards are in place to support all users and Assistive Technology for applications that are under development, or that require amendment to make them accessible and usable. It refers to publicly available standards and also draws upon the experience we have gained through work that has been carried out with external consultants and experts in this field.

A key consideration when implementing technical standards is that they must be integral to the project under consideration. It is therefore important that due consideration is given at the planning stage about how the standards will be applied, verified and tested.

Development staff should be clearly briefed as to their responsibilities in this area, and why it is in line with BBC policy. For many development staff the whole area of accessibility and usability will be an issue that has not been faced before. However, if staff are clear about why such issues are important they can be encouraged to regard their consideration as a challenge to their development skills rather than as a burden that needs to be taken on.

There are a number of sources of information that can be consulted for good technical advice as to the standards that are required. It should be noted that although there are accessibility standards that can be followed in the case of browser type applications and software (essentially The World Wide Web Consortium ([W3C](#)) Web Accessibility Initiative ([WAI](#)) standards and ISO 9241 Part 171: Guidance on software accessibility), there is no such equivalent standard for application development.

There is also a large number of resources regarding making applications accessible for Apple Mac computers (and for the iPhone and iPad). The starting point for understanding accessibility on Apple products is on Apple's [main OSX accessibility page](#) and then the "[accessible from the Mac](#)" link from there.

The ISO 9241 series, the Ergonomics of Human System Interaction, is the most important standard for user experience. In the development of any system, you should follow the process standard defined in Part 210: Human-Centred Design for Interactive Systems. However, 9241 also includes requirements and guidance for World Wide Web user interfaces (Part 151); and electronic visual displays (Part 303).

This document details both external sources of advice and summary advice of our external partners. Even if these standards are applied it will still be necessary to verify and test that the accessibility and usability issues have been addressed correctly – the other documents in this set give advice on this.

3. Standards

Computer applications and information pages can be categorised by the technology that is used to develop those applications or pages. For example, a web page is usually written in HTML but may have Flash or Java components. Other applications may be developed using standard forms-based technology and some pages may be developed using PDF formats.

Below is a set of standards for each of these technologies.

3.1 General Application Standards

- Ensure that users have access to the operating system accessibility tools, without affecting application functionality
- Ensure compatibility with assistive technologies
- Adhere to all user-selected system settings for input and output
- Adhere to the standard keyboard access methods
- Do not require use of a pointing device
- Ensure that all information can be perceived by users with restricted or no vision
- Ensure that all information can be perceived by users with restricted or no hearing
- Ensure that all multimedia content (e.g. audio and video) incorporate Subtitles (or some other text equivalent) or Audio Description.
- Ensure that all sub-systems for incorporating multimedia content provide a mechanism for integrating Subtitles and Audio
- Do not cause the screen to flash at a frequency of above 2 Hertz. (Note that this does not refer to the general refresh frequency of display devices, it is really about text or images that are caused to flash programmatically.)
- Use the simplest language possible for instructions, prompts and outputs and, where possible, supplement it with pictorial information or spoken language
- Ensure a logical tab order for controls, input fields and other objects
- Provide descriptions and instructions for all accessibility features
- Provide help, accessible documentation, training and support materials; use contextual help whenever possible
- Ensure the system keeps the user informed by providing appropriate and timely system feedback
- Keep the navigation model, design and behaviour of screen items consistent; things that look the same should behave in the same way in different places
- Help users recognise, diagnose and recover from errors; better yet, prevent errors through intuitive designs and clear language
- Organise the screen into visually separate blocks of functions and group related information; keep in mind that short-term memory is used to solve intellectual problems and can only hold 6 to 7 items
- Provide easy access to the features that most users will need most of the time
- Provide sensible default or preset values for configurable options; choose the defaults based on what will meet the needs of most users
- Use industry standard conventions wherever possible (for example, keyboard equivalents like Ctrl+C for copy)
- Evaluate as early as possible through user testing or expert reviews

3.2 Colour Contrast and Flicker Standards

It is very important that text and graphics are presented in a way that is readable by all users. One important consideration in this is the contrast of the colours used for foreground and background. Standards regarding colour contrast can be found at the following address:

http://www.bbc.co.uk/guidelines/futuremedia/accessibility/colour_contrast.shtml

These standards include links to colour contrast and colour blindness checking sites.

Individuals with photosensitive epilepsy can have seizures triggered by flickering or flashing in the 3 to 49 flashes per second (Hertz) range with a peak sensitivity at 20 flashes per second. Further individuals with distractibility problems may not be able to focus on page content with flicker occurring in the same visual field. Standards regarding flicker can be found at the following address:

<http://www.bbc.co.uk/guidelines/futuremedia/accessibility/flicker.shtml>

ARIA RoadmapThe ARIA [Accessible Rich Internet Applications] is designed to address the Accessibility of dynamic web content for individuals with disabilities and introduces the technologies to enable mapping of Ajax live regions, events and controls. If you are developing content to be used with Assistive Technology, you may wish to pay attention to Application mode. More information on Application Mode can be found at

<http://yaccessibilityblog.com/library/when-aria-role-application.html>

The roadmap can be found at <http://www.w3.org/TR/2008/WD-wai-aria-roadmap-20080204/>

3.3 Adobe Flex Accessibility

Adobe flex allows developers to build Web, Mobile and EDesktop applications. In it's early days, Flex applications required scripts to make them accessible with assistive technology applications such as Jaws, however, this has since been addressed by Adobe.

Accessibility standatdrds for this platform can be found at

<http://www.adobe.com/accessibility/products/flex/>

3.4 Dojo Accessibility

Accessibility standards for the Dojo platform can be found at

<http://dojotoolkit.org/community/a11yReq>

3.5 HTML Standards

Accessibility of HTML applications is relatively straightforward to achieve. Browser accessibility standards (which apply equally for application development using the browser) are covered under the W3 initiative:

<http://www.w3.org/WAI/intro/components>

However, these guidelines refer to full, general accessibility, i.e. publishing of web sites or applications where the platform the user sits on (e.g. the browser they are using) is unknown.

The assistive technology platform at the BBC is known: Jaws, Dragon, Zoomtext and TextHelp (and for Apple products: VoiceOver, Zoom, Dragon Dictate, formerly MacSpeech, and TextHelp) so some of the "restrictions" placed on a developer in those guidelines do not apply.

Instead, a specific set of accessibility guidelines have been written that take this into account and apply to internal BBC applications/pages.

The standards can be found at:

http://explore.gateway.bbc.co.uk/gatewaysupport/PDF/gsa_GatewayAccessibilityStandardsAndGuidelines.pdf

3.6 Multimedia Content and Development Standards

Any content that contains multimedia components, i.e. audio or video, must incorporate Subtitles (or some other text equivalent) or Audio Description. Equally, newly developed systems that provide a sub-system for incorporating multimedia content must provide a mechanism for integrating Subtitles and Audio.

For content on Gateway there is the Embedded Media Player (EMP) which can deliver subtitles and the technical and editorial standards in place for online content.

3.7 Adobe (Macromedia) Flash Standards

Flash inclusions can be a useful visual way of displaying animated or creative content. There is no reason why Flash should not be included. However, if that Flash content is providing information or functionality then it needs to be written accessibly. Flash is also relatively easy to make accessible provided you follow the following standards:

<http://www.bbc.co.uk/guidelines/futuremedia/accessibility/multimedia.shtml>

If the Flash inclusion is providing interactive content and it is decided to replicate this accessibly by providing a text or HTML equivalent then it is not sufficient to simply render the Flash content as text. It is important that the user experience of the assistive software user is equivalent to that of the standard user. The most important example of this is in e-learning where it is crucial to give the assistive software user a full learning experience rather than a dry reading of text.

Also see the Section Multimedia Content and Development Standards above.

3.8 Microsoft Silverlight

Microsoft have developed a similar development platform to FLASH – SilverLight. The first release of Silverlight produced totally inaccessible applications, but from Silverlight 2 onwards properties were added to allow the developer to create fully accessible applications. Note, however, that it is necessary for the developer to explicitly put information into these areas; it is not done automatically, nor is the developer forced to fill in the accessibility properties.

Some initial detail on how to make SilverLight applications accessible can be found at the Code Magazine article [Creating Accessibility-aware Silverlight 2 Content](#).

A word of warning, however. Because SilverLight is a relatively new development technology it will take some time for assistive technology to “catch up” with this platform. As of SilverLight 4 at end 2010 there were still some difficulties in accessing SilverLight applications even when written using all the accessibility properties provided. Until these

issues are remedied it is recommended that developers avoid using SilverLight if at all possible.

Also see the Section Multimedia Content and Development Standards above. Accessibility standards for Silverlite can be found at <http://www.silverlight.net/learn/advanced-techniques/localization-and-accessibility/making-silverlight-applications-accessible>

3.9 Java (Applet) Standards

Inserting Java applets into browser-based applications or pages can cause some accessibility difficulties. In general the standards that relate to the Java code itself are the same as are detailed in the section on Java Application Standards below.

The particular difficulties that relate to hosting Java within a browser session are down to focus. If the Java is written using the standards mentioned below then the Java component itself will likely be accessible **provided it can get focus**. In reality there is usually no way within the browser of moving focus from the HTML part of the page to the Applet and vice versa.

A programmatic mechanism needs to be provided to bring focus from the HTML part of the page/application to the Applet section and vice versa.

3.10 Forms-Based Application Standards

There are few separate standards here. If the application adheres to the general standards outlined above then the application should be accessible. However, there are one or two things to note when developing these types of application.

- It must be possible to operate the application fully without the use of a mouse or similar pointing device. This is a general standard above but is **absolutely** crucial for forms-based applications.
- Ensure a logical tab order for controls, input fields and other objects. This is a general standard above but is **absolutely** crucial for forms-based applications.
- Ensure that ALL fields can be reached with the tab key, including read-only fields.
- Ensure that there are accelerator keys for ALL fields (i.e. "underline" keys, ones that allow the user to press ALT and a letter or number to bring focus to that field).
- Ensure there are both keyboard and menu equivalents to ALL toolbar functionality.
- Ensure that all graphical buttons have a text equivalent (including accelerator key) actually on the button, not just as a tooltip.

3.11 JAVA Application Standards

There are extensive guidelines on the writing of accessible Java applications on the Sun web site:

<http://www.sun.com/access/developers/>

and

<http://java.sun.com/developer/earlyAccess/jaccesshelper/>

3.12 Document Standards

If documents are to be provided to application users then those documents need to be in an accessible format. Text documents will be automatically accessible but other documents may need some thought to ensure that they are accessible.

3.12.1 Word Documents

Word documents are usually naturally accessible. However, certain things should not be included in Word documents or, if they are, alternative content should be supplied.

- Text boxes. These are not usually read by Jaws, or if they are their context is not always obvious.
- Images. It is perfectly reasonable to include pictures in Word documents but they will not be spoken by Jaws or VoiceOver. If the image shows informational content then that content will need to be supplied elsewhere in the document, e.g. a description of what it shows.
- Objects. By and large Jaws and VoiceOver will not be able to see inside objects. E.g. if there is an inserted Excel fragment in a file Jaws may be aware that an Excel include is there but will not be able to bring focus inside the object to report its contents.

3.12.2 PDF Documents

PDF documents are now pretty well accessible provided a text layer has been included with the document, therefore, PDF document that is simply an image of something will not have a text layer associated with it even if the image is of text. Even so some care needs to be given to creation of PDF files. A set of standards has been written by Adobe on how to create accessible PDF documents. These can be found at

http://www.bbc.co.uk/guidelines/futuremedia/accessibility/accessible_pdf.shtml

3.12.3 PowerPoint Documents

PowerPoint documents can be completely accessible but some care needs to be taken in how the document is written.

- Images can be included but will not be spoken by screen reading programs. Descriptions of the images (if they are informational) can be included on the slide or visually better on the Notes page.
- Text in text boxes can be read but they will be navigated to in the order they are placed on the slide, not the order they appear on the screen.
- Diagrams, e.g. text boxes and pictures joined by lines can be seen by Jaws or VoiceOver. They are read in the order they were put onto the slide. It is often difficult to make sense of these diagrams. An additional text description should be provided in the Notes area.

3.12.4 Excel Workbooks

Excel spreadsheets are usually naturally accessible. However, as with Word documents certain things should not be included.

- Controls, e.g. buttons, combo boxes should not be included. They appear as objects overlaying the basic spreadsheet grid and as such are not seen by Jaws or VoiceOver.
- Charts. It is perfectly reasonable to include charts but if included the underlying data must be visible and readily available also. A Jaws or VoiceOver user will not be

easily able to understand the chart but they will be able to read and assimilate tabular data. (The same is true for magnification users who may not be able to take in the totality of the chart at one go.)

- For Jaws and VoiceOver users it is crucial that information is not rendered by colour or font enhancements, e.g. red for a value that is out of range, or bold for an important value.
- Try to keep cell contents to a reasonable size, i.e. a reasonable amount of text. Jaws reads out the full cell contents as the user navigates around a spreadsheet. Having a single cell containing a lot of text will either slow the user down or mean they will miss potentially important content.
- Comments are perfectly acceptable.
- If possible try to keep column and row headers in a single row or column. This is not absolutely essential since Jaws copes perfectly well with headers spanning several rows or columns but it is sometimes difficult for the users to appreciate that the heading is not contained within a single row or column.
- Ensure there is a clear (i.e. empty cells) separation between data areas.
- It is perfectly acceptable to put data on different pages of a workbook, but in that case it is crucial that:
 - The pages are clearly and succinctly labelled
 - The structure of pages with similar content is identical

3.13 Accessibility on Apple Products

Accessibility considerations when developing applications for Apple products are largely covered by the sections above, e.g. developing an HTML-based application involves the same considerations whether the development is to run on an Apple product or on a Windows-based machine. However, Apple themselves provide a number of resources to help include accessibility when developing for their platforms. The main place to start is on Apple's [main OSX accessibility page](#), with further useful resources available from the "[accessible from the Mac](#)" link on that page.

3.14 Other Accessibility Resources

All the above cover the minimum standards that should apply for application development and documents. More advanced information is freely available on the web with some useful sties being:

IBM's site:

<http://www-306.ibm.com/able/guidelines/index.html>

covering the following subjects:

- Software
- Web accessibility
- Java accessibility
- Lotus Notes accessibility
- Hardware accessibility
- Self contained hardware accessibility
- Documentation accessibility

And Microsoft's accessibility area:

<http://www.microsoft.com/enable>

Note that US based sites will often refer to section 508 legislation, which is American legislation broadly similar to our own Equalities Act.

Microsoft's new UI automation feature is Microsoft's future way of building in more assistance for Assistive Technology products.

3.15 User Experience Interaction Guidelines and UI Style guides

To ensure an application is usable, follow related industry guidelines and style guides. For **Windows** based applications, refer to Microsoft's Windows User Experience Interaction Guidelines at:

<http://msdn.microsoft.com/en-us/library/aa511258.aspx>

These guidelines cover areas such as design principles, controls, commands, text, messages, interaction, aesthetics, experiences and performance. For additional information and resources, visit User Interface Design and Usability at

<http://msdn.microsoft.com/en-us/library/aa152962.aspx>.

For **Mac OS X** based applications, see the Apple Human Interface Guidelines (HIG) at:

<http://developer.apple.com/documentation/UserExperience/Conceptual/AppleHIGuidelines/XHIGIntro/XHIGIntro.html>

Apple's HIGs have been written to assist development teams in creating applications that provide usable and aesthetically refined user interfaces which are also focused on productivity. The guidelines are broken down into three sections:

- Part 1: Application Design Fundamentals (this content is generally applicable regardless of platform, and includes sections on The Design Process, Characteristics of Great Software, Human Interface Design, and Prioritising Design Decisions)
- Part 2: The Macintosh Experience
- Part 3: The Aqua Interface

IBM also provides resources on designing usable solutions:

<https://www-01.ibm.com/software/ucd/design.html>

This site covers design concepts, design patterns, initial experience, UCD process, and Agile approaches to user experience and design.

Note that in order to go beyond creating usable interfaces to creating compelling, leading edge user experiences, each of the industry leaders mentioned in this section also emphasise the need to follow a human centred design process, such as that described in ISO 9241.

4. Accessibility and Usability

One important principle which will need to be addressed is that of ensuring that a system or technology that is made *Accessible* to assistive technology users is also *Usable* by those users. Although a system can be shown to be *Accessible*, this does not mean that it is *Usable*.

Example 1

If a system or technology is designed so that an action can only be completed with a mouse click and not with the keyboard Dragon Naturally Speaking (the BBC's standard voice recognition package for the Windows platform) can be made to access any part of the screen using the mousegrid function. Although, in theory, this make a package *accessible* using Dragon, it is time consuming and frustrating for the user. In this case the mousegrid function, although reaching the objective, means that the user will be working at a diminished level of efficiency. By providing keyboard access to the mouse functionality, e.g. with accelerator keys or menu items information elements on the screen are immediately accessible and usable for the user.

Example 2

For a Jaws, Dragon or VoiceOver user, although it may be possible to tab through a set of fields to reach a certain piece of on-screen information, this may take an inordinate amount of time. Compare this to a sighted user's experience of the same screen of information, where it is easy to use the mouse to click into the required fields. Again, although to a certain extent the system could be said to be *accessible* it is not really *usable by the assistive technology user*. In this case providing accelerator keys, designing with less busy screens or laying out of the screen in a different way would result in much more efficient access to the information.

The two examples above show the importance of accessible design. A key point is that good design for the purposes of accessibility in many cases also translates into good design for all users. Some more examples of good practice have been listed at Appendix Two.

5. Testing and Verification

Following the minimum standards laid out above, reading the information that is freely available and ensuring that development staff are fully briefed, should result in an application that meets the accessibility and usability requirements. However this can only be tested and verified by external bodies that have experience in these fields. An important consideration will therefore be the testing and verification of the development. Reference should be made to the document in this series Accessibility and Usability Standards Document Three – Integration Summary; Section 4; Verification of Accessibility and Usability.

6. Document Control Page

6.1 Document Identification

Title: Accessibility and Usability Standards for
Technical Standards Guidance

Document Ref.: div_06_07

CI Ref.:

Version 2.8

Date: 3rd December 2010

6.2 Authorisation

Name:

Position:

Date:

Signature:

7. History

Version	Date	Author	Description
0.1	11/08/2005	Paul Balbi	First draft
0.2	12/08/2005	Paul Balbi	Incorporation of suggestions from Claire Jennings.
1.0	12/12/2005	DQ Team	Approved for publication in DQ
1.01	16/07/2007	Claire Jennings	Amended Technology Direction to read Future Media and Technology
2.0	08/02/2008	Claire Jennings/Terry Clarke	Added much more detail into the standards sections to include FLASH, Java and document accessibility standards.
2.1	19/06/2009	Terry Clarke	Updated BBC's diversity targets and corrected obsolete links to internal and external standards.
2.11	24/07/2009	Terry Clarke	Provided more up-to-date examples in the appendices.
2.2	21/08/2009	Mickela Perera/ Terry Clarke	Updating with usability content
2.3	20/11/2009	Mickela Perera	Updated introduction and made some minor formatting changes
2.4	18/06/2010	Terry Clarke	Update of references to DDA 1995 to Equalities Act (EA) 2010. Update in the introduction to reference to 8 documents and inclusion of title of new Document 8 Email standards.
2.5	15/10/2010	Terry Clarke	Updated to include reference to Accessibility on Apple products and detail of considerations when developing with Silverlight.
2.6	3/12/2010	Terry Clarke	Include specific references to subtitles and audio description.
2.7	14/04/2011	Erin Flynn	Updated to include new percentage target set by BBC Governance to increase the proportion of disabled staff at the BBC.
2.8	15/08/2011	Paul Bepey	Updated links in document to specific vender Accessibility standards rather than External BBC Future Media Links.

Any comments, queries or change control requests about this document
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Appendix One: Extract from a Formal Investigation conducted by the Disability Rights Commission

This information is taken from the Disability Rights Commission Report 'The Web - Access and Inclusion for Disabled People'. Although the report was looking at web access issues, the key problems identified would equally apply to both browser and application type developments. It is included here to outline key problems that disabled people can face with system development, and is also typical of the sort of issues that have been discovered when investigating applications.

Key problems experienced by blind users

- Incompatibility between screen reading software and web pages, e.g. the assistive technology not detecting some links, or it proving impossible to highlight text using text-to-speech software
- Incorrect or non-existent labelling of links, form elements and frames
- Cluttered and complex page structures
- ALT tags on images non-existent or unhelpful
- Confusing and disorienting navigation mechanisms

Key problems experienced by partially sighted users

- Inappropriate use of colours and poor contrast between content and background
- Incompatibility between accessibility software (e.g. for magnification) and web pages
- Unclear and confusing layout of pages
- Confusing and disorienting navigation mechanisms
- Graphics and text size too small

Key problems experienced by physically impaired users

- Confusing and disorienting navigation mechanisms
- Unclear and confusing layout of pages
- Graphics and text size too small
- Inappropriate use of colours and poor contrast between content and background

Key problems experienced by hearing impaired users

- Unclear and confusing layout of pages
- Confusing and disorienting navigation mechanisms
- Lack of alternative media for audio-based information and complex terms/language
- Inappropriate use of colours and poor contrast between content and background
- Graphics and text too small

Key problems experienced by dyslexic users

- Unclear and confusing layout of pages
- Confusing and disorienting navigation mechanisms
- Inappropriate use of colours and poor contrast between content and background
- Graphics and text too small
- Complicated language or terminology

Appendix Two – Examples







Keyboard Usage

A “Cart” system for digital audio playout included a control that visually mimicked the old style manual “Cartridge” systems.

Finally, Did You No Wrong 2:29.771	Iron Maiden - Flight Of Icarus 3:54.456	Record 2009-07-10 14-18-11 TIELKE 0:41.928			

In development terms this is a single control with no keyboard movement possible between elements. As a consequence, a user is only able to manipulate items in the array with the mouse.

On consultation, the developers then provided an alternative view to the same data, rendering it in a standard list view.

		Finally, Did You No Wrong	Sex Pistols	148	17.07.2009 15:09:53
		Iron Maiden - Flight Of Icarus		234	21.07.2009 15:39:58
		Record 2009-07-10 14-18-11 TIELKE		41	15.07.2009 15:26:53

In this list view the up and down cursors can be used to move the focus from one item to the next. Further to this the developers provided a right click menu (crucially also available from the context menu key on the keyboard) to provide easy access to functions that can be performed on each item.

Closer observation of the images above shows a couple of other advantages affecting all users: there is more data available about each item in the list and the text in the list is visually much clearer than in the “cart” control.

Forms - Tab Order and Speed of Keyboard Access

A content production system was rolled out at the BBC where development (as is often the case) was somewhat organic. As a consequence the tab order (which had been perfect for the first release of the software) had turned into spaghetti:

In the image above the numbers refer to the order in which the controls on the form are reached by pressing the tab key. There are several things to note about this:

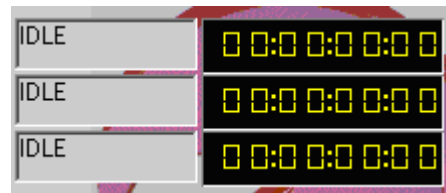
- The order of these controls bears no relationship whatsoever to a “logical” view of the application flow. With such a large form a keyboard user would have to really search around to find where focus had appeared next. Mouse use was the only viable solution (for those that were able) but that reduces the efficiency of use of the application dramatically. (Interestingly, the developers suggested that the tab order could be viewed as a historical record of the order in which the application had been developed!)
- Some of the controls, e.g. “Published As” and “Skeleton” are not reached at all.
- There are accelerator keys defined for many of the fields (a very good thing) but some are duplicated and some just did not work.

Overcomplicated Screen Design

An enquiry about accessibility was put forward with a design that included over sixty flat fields on one screen. When it was pointed out that many users might find the screen layout difficult to follow the application was re-designed from scratch.

Text Rendered as Graphics

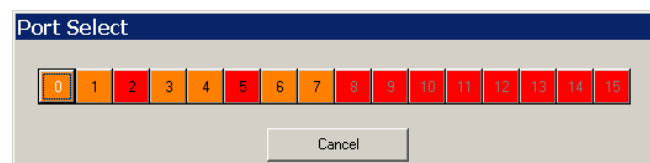
A vision playout and mixing system has some timers indicating the current position of various channels:



Unfortunately the numbers in these timers are not text; they are pictures of numbers. This means that they are not accessible to text to speech systems (like Jaws) and when magnified appear badly pixellated rather than smoothed.

Use Of Colour Alone To Impart Information

In an ingest system in local radio clips can be ingested into many channels. When choosing a channel into which to load a list is presented that is colour coded:



there is only minimal distinction between the orange and the red. People with impaired colour sense would be unable to distinguish these colours. In fact, even for a user with no colour impairment a different viewing angle (e.g. viewing the monitor from a standing rather than sitting position) caused the colours to become completely indistinguishable.

In the monitoring part of the same application the current status is displayed solely as a coloured circle:



When the status changes the colour of the circle changes but not the word ONLINE. Here it may be enough simply to change the word ONLINE to OFFLINE when the status changes (at the same time as changing the colour of the circle).

Font and Colour Schemes

A major system was rolled out at the BBC using terminal services. The resolution on the remote server was very high meaning that in general the text was very small and prompted many difficulties in use. The colour scheme on the remote server was Windows Standard. The problems were not resolvable by the user because:

- the resolution and colour schemes on the remote server were not alterable by the local user;
- there were no facilities available within the application to alter fonts or colours.

The result of this was a large tranche of extra work to provide fat client access in the short term and font and colour changing facilities within the application in the longer term.

Good Practice!

An intranet based query system applied the basic rules of accessibility from the start of the development – the enquiry screens were kept as simple as possible (thus benefiting all users), and Windows and browser conventions were adhered to in the design. The result was that the system was accessible without any additional work being required.