

Regulatory Compliance and Web Accessibility of UK Parliament Sites

Joanne M. Kuzma
Faculty of Computing, University of Worcester, UK
j.kuzma@worc.ac.uk

ABSTRACT

This research seeks to review whether web accessibility and disability laws lead to strong compliance among UK e-government web sites. This study samples 130 sites of the UK members of Parliament using an online accessibility testing tool and determines if the site design complies with disability laws and Web Content Accessibility Guidelines (WCAG). Awareness is raised about issues disabled users face when attempting to use UK e-government sites. A discussion of UK and international disability law is reviewed in light of web accessibility: the UK's Disability Discrimination Act (DDA) of 1995 and the UN Treaty on the Rights of the Disabled. Although these mandates aim to provide equality in access to web sites for people with disabilities, the results of this study show that total openness of these sites is not widespread and the mere existence of laws does not guarantee compliance.

KEYWORDS: Web Accessibility; Disability; e-government; Accessibility Guidelines (WCAG), UK Disability Discrimination Act, DDA

1. INTRODUCTION

After decades of discrimination and a digital divide between individuals with and without disabilities, several initiatives have been implemented in the past decade to allow these people greater access to web content. First, international standards groups such as the World Wide Web Consortium (W3C) have created design checkpoints and standards for developers to use when creating their site content. Second, in 1995 the UK enacted the DDA law to provide users with disabilities the same ability to access web content as those people without disabilities. The DDA law incorporates some guidelines developed by the W3C group into the legal mandate. In addition, the United Nations (UN) recently adopted the Convention on the Rights of Persons With Disabilities, which recognizes and secures the rights of disabled throughout the world. However, even with the combination of laws and standards, fully accessible e-government sites remain rare. Most sites do not meet certain common guidelines, yet some of these factors can be easily implemented by web designers during initial site design or even retrofitted into sites that have already been developed.

2. FRAMEWORK FOR ACCESSIBILITY NEEDS

2.1 UK Legal Framework

With the increasing number of people, including those with disabilities, accessing government web sites, these sites have the potential to improve the quality of life for people with disabilities by providing more political participation and making government information more available (Rubaii-Barrett & Wise, 2008). The UK Office for Disability Issues estimates there are over 5.7 million people of working age in the UK who have some form of physical impairment and of this number, 42 percent of disabled people are currently or have used the web in the past (Williams, et al, 2007). This is a sizable number of people with disabilities who could benefit from using web sites that are properly designed for accessibility, and would make a significant difference in their lives. Therefore, governments should ensure that as many people as possible have equal access to their sites.

Two methods can be used to provide better accessibility for disabled web consumers: legal mandates and industry guidelines. Friedman & Bryen (2007) indicate that individual countries should not merely rely on guidelines and industry standards. Instead, individual countries need to enact their own standards or legislation because these legal regulations carry the force of the law rather than voluntary guidelines. The legal mandate in the UK is the Disability Discrimination Act (DDA), civil law which was passed in 1995. Part III of the Act (Code of Practice) was enacted in 1999 and obliges providers of goods, facilities and

services to provide equal access to all customers. Section 19, sub-section (3, c) of the DDA lists accessibility to and the use of information services (Office of Public Sector Information, 2009). This section states that providers have a “duty to take all steps that are reasonable to change any practice, policy or procedure which makes it impossible or unreasonably difficult for disabled persons to make use of a service” (Sloan, 2001). Under this section, there are three ways in which a provider of services can discriminate against a disabled person with regards to web accessibility:

- In refusing to provide, or deliberately not providing, to the disabled person any service which he provides, or is prepared to provide, to members of the public
- In failing to comply with any duty imposed on him by section 21 in circumstances in which the effect of that failure is to make it impossible or unreasonably difficult for the disabled person to make use of any such service
- In the standard of service which he provides to the disabled person or the manner in which he provides it to him (Sloan, 2001).

According to Sloan (2001), while the DDA does make a passing reference to accessible web sites as a possible auxiliary aid or service, there is no specific mention of a web site as an example of a service. However, because the use of web sites by the public was relatively new when the law was originally enacted, it can be argued that the law naturally extends to technologies such as web pages. A Disability Rights Commission report states that “a website in itself constitutes a service, or is the primary medium for the delivery of a service, and is covered under Part 3 of the DDA Act” (DRC, 2004). According to Sloan (2001), it is irrelevant where the web site provides services either free or for a fee, and even free-use sites for a promotional use or advice would fall under the category of ‘service.’ Thus, e-government sites would fall under the auspices of the DDA.

Under the DDA Code of Practice, government web operators have more responsibilities to ensure accessible content compared to other entities, such as retail sites. The code requires them to “have due regard to the need to promote disability equality in everything they do. This includes considering disability equality in procedure of services” (RNIB, 2009). The code gives a specific example of a government web site redesign project:

“The head of Information in a government department is overseeing the redesign of the department website, which is being contracted out to a web designer. The head of information ensures that the tender documents include reference to the disability equality duty and in particular the need to ensure that the website is fully accessible to disabled people. The standard terms of contract are revised to reflect the fact that any updating information and/or maintenance work on the website must ensure access for disabled people, in order to ensure that the department is meeting its disability equality duty” (RNIB, 2009).

There are legal ramifications to web operators who may discriminate against disabled people based on DDA law, and they should realize they could be sued for not following legal requirements. According to the Royal National Institute of Blind People (RNIB) (2009), a disabled person who feels they have been discriminated against by a web service firm can apply to the Court for an order that the service provide make their web site accessible and also provide compensation for injury to feeling for their discrimination. According to Peck (2003) in an interview with Julie Howell, the Digital Policy Development Officer for the RNIB, there have been several legal cases against web sites regarding lack of accessibility. Both cases were resolved between the parties and settlements were made. In addition, successful case laws in other countries could provide impetus for future claims against other UK providers. A useful reference instance was a case brought against the Sydney Olympic Committee in Australia in 2000, resulting in a landmark decision against the web site owners, requiring them to pay substantial compensation (RNIB, 2009).

2.2 UN Global Legal Framework

In addition to protection under DDA law, disabled people in the UK may eventually have some protection under a new UN mandate. Currently, the UN is trying to promote some level of protection to those with disabilities. In 2006, The UN Assembly passed a Treaty on Rights of Disabled to attempt to protect the needs of 650 million disabled people in the world. Not only does this treaty address access to physical

facilities, it also provides and impetus to improve access to information and communications infrastructures, including Internet accessibility (Arbour, 2007). Article 9 of the Conventions' draft provision contains two clauses which directly relate to Internet access. The first clause states "take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to ... information, communications and other services, including electronic services." The second clause specifically refers to internet services, implying web sites: "private entities that provide services to the general public, including through the internet, to provide information and services in accessible and usable formats for persons with disabilities (UN, 2006).

As of June, 2009, 139 nations have signed the convention, 82 signed the optional Protocol, 57 ratified the Convention and 36 ratified the Protocol (UN, 2009). The UK signed the convention in 2008 and the protocol in early 2009 (UN, 2009). They are expected to ratify the Convention in June 2009 (Employers Forum on Disability, 2009). The UK's statutory body on disability, the Disability Rights Commission (DRC) has welcomed this development. According to the DRC chairman, Bert Massie "The greatest significance will be a 'leveling up' of provision across the world, and the creation of civil and human rights for disabled people" (Adams-Spink, 2006).

However, even though laws may exist, there is still a dearth of e-government sites in all countries that provide full access to people with disabilities. Many countries providing e-government services either fail to consider the needs of disabled people or their services do not reach those constituents (Foley, 2005).

2.3 Industry Standards

Besides the legal aspect of providing protection to disabled web users, the World Wide Web Consortium (W3C) has developed various standards to encourage accessibility for those with physical impairments. In 1999, the W3C established the first accessibility standard for the web, WCAG 1.0. It comprises series of 14 guidelines, each having one or more checkpoints which are the basis for conformance to meeting the needs of those with disabilities. Each checkpoint is assigned a priority to determine the impact on accessibility (W3C, 2008b). There are three priority checkpoint levels in WCAG 1.0:

- Priority 1: A web developer must satisfy these requirements, and this is the minimum requirement.
- Priority 2: A web developer should satisfy this checkpoint, but it is not mandatory,
- Priority 3: A web developer may address this checkpoint.(W3C, 1999)

The W3C released an updated standard in December 2008, WCAG 2.0. This version applies more broadly to various web technologies and is designed incorporate future technology changes. It is organised around guidelines with criteria, and most sites already conforming to WCAG 1.0 should not have to make significant changes to conform to 2.0 (W3C, 2008b).

Web designers should aim to at least meet the minimum requirements under their country's law, or the minimum under WCAG recommendations. According to the UK Cabinet Office (2003), a good government web site should follow W3C guidelines, which at this time the minimum level of requirement is WCAG 1.0, Priority 1.

2.4 Ensuring UK Compliance

The UK Cabinet Office (2003) supports the W3C guidelines on providing accessible web sites, and issues specific guidelines for developing UK government sites to provide adequate service for people with disabilities. It has published a framework that pulls together advice from a range of web publishers, usability experts, government officials and academics to clarify how to design usable web sites, which includes web accessibility for disabled users. It serves as a set of guidelines that government site designers can use including effective design, testing and web accessibility options.

Some UK organisations for the disabled do offer their constituents some services regarding web accessibility. For example, visually impaired users are offered some consultancy services by the RNIB. They operate a Legal Advocacy Service that considers supporting these individuals who may seek

representation on accessibility issues under DDA law. However, before recommending legal action, the RNIB works with the web user to determine if they have sufficient training and equipment to be able to access web sites. The next step is for the RNIB to approach the web site in question to alert them to accessibility issues (Accessibility Forum, 2003). According to Wallis (2005) the National Library for the Blind does provide some level of guidance for organizations wishing to create accessible sites. In addition, The Techdis service is funded by the Joint Information Systems Committee (JISC) to provide support to UK education on issues related to disability, accessibility and technology.

2.5 Accessibility Studies

Several studies have tested the level of web site accessibility for UK sites and found few meet accessibility requirements for their disabled users. In 2005, the e-Government Unit of the UK Cabinet Office found that “97 percent of official sites were unusable by disabled people, largely because they ignored well-known techniques for making data accessible” (BBC News, 2005). Only three percent of the sites that were studied passed basic W3C accessibility guidelines. Another survey in 2008 by the UK Public Accounts Committee found that in the past six years the quality of government web sites has only improved slightly and one in six has actually gotten worse, and one-third of sites failed to meet the Cabinet Office’s accessibility standards (Steward, 2008).

The Disability Rights Commission (DRC, 2004) in the UK completed a study of 100 web sites to review problems disabled users encounter most frequently. The study found that just eight checkpoint errors and warnings accounted for 82 percent of the reported problem. The most reported problems included:

- Checkpoint 1.1: Provide a text equivalent for every non-text element
- Checkpoint 2.2: Ensure foreground and background color combinations provide sufficient color contrast, etc.
- Checkpoint 6.3: Ensure pages are usable when scripts, etc. are turned off, or provide an alternative.
- Checkpoint 7.3: Until user agents allow users to freeze moving content, avoid movement in pages.
- Checkpoint 12.3: Divide large blocks of information into more manageable groups where natural and appropriate.
- Checkpoint 13.1: Clearly identify the target of each link.
- Checkpoint 14.1: Use the clearest and simplest language appropriate for a site’s content.

The UK Cabinet Office (“Europe-wide survey,” 2006) conducted a 2005 survey of 436 European public-service web sites, and found that only three percent met full conformance with WCAG guidelines. The results showed four common errors that were prevalent among most sites. The dominant issue was the failure to provide alternative text (alt tags) for non-text elements, which was the same primary problem found in the DRC study. The survey results also showed problems with frameset technology, the omission of frame titles and failure to provide a no-frames alternative. Finally, sites often used JavaScript, which sometimes fails to work with certain assistive technology. In 2007, a study of 468 UK council web sites found that only two met the accessibility level required by government legislation (‘Local authority website, 2007).

3. METHODOLOGY

This project consisted of four phases.. First, an online accessibility tool was chosen and the types of disability checkpoints available in the product was reviewed. The second phase was to chose the MP sites for the study. The next step was running an analysis to determine accessibility problems. Finally, an in-depth analysis was performed on the results.

An online accessibility tool from Erigami, Truwex, was chosen for this project.. The Truwex tool allows web creators to test their site against several legal requirements and industry standards including: 1) WCAG level 1.0 for UK DDA, 2) WCAG level 2.0, 3) web analytics validation, 4) German BITV check and 5) US Section 508 law (Erigami, 2008b). The tester can choose to analyze their site against one or all of

these options and gives pass/fail results and details of both critical guidelines deviations (errors) and non-critical issues (warnings) as well as informational message about each issue (Erigami, 2008a).

For this analysis, two options were chosen to test: WCAG 1.0 for UK DDA and WCAG level 2.0. Also, since W3C Working Group released the final draft of level 2.0 in December 2008, standards that may eventually be incorporated into DDA law, it is also important to review this guideline level as well. For both of these, three priority level checkpoint results were analyzed: a) Priority 1 minimum needed requirements (errors), b) Priority 2 recommended issues that should be addressed but not mandatory (warnings) and c) Priority 3 issues which may be addressed by designers but not required (warnings). If an error or warning for any of these three priority levels is found for the site, the WCAG guideline will be displayed in the results.

The research was accomplished through completing an analysis of the Members of Parliament (MP) sites, specifically those in the House of Commons to determine their adherence to DDA law and WCAG guidelines. As of November, 2008, there are 646 MP members in the House of Commons (BBC News, 2008). Of the 646 MPs, 130 (20 percent) of the total member sites were analyzed. The 130 MP web sites were randomly chosen from an alphabetical list of 646 members of the House of Commons listed in the UK Parliament site at <http://www.parliament.uk/directories/hciolists/alms.cfm>. Since MPs are instrumental in legislating laws, such as DDA, this study was taken to determine if strong accessibility laws correlate with effective accessibility design in the MP sites. However, if issues are found, the study determines how serious the problems are and what are the main types of WCAG accessibility design problems.

4. RESULTS

Table 1 shows a compiled report of accessibility testing results of 130 MP web sites. The first column shows various statistical results, while the second and third columns show results for WCAG level 1.0 and 2.0. The first two rows of the table show that for the 130 tested sites, there were a total of 217 failures, (or serious errors) and 1002 non-critical warnings for WCAG level 1.0 guidelines and 504 failures (serious errors) and 1415 warnings for level 2.0. For WCAG level 1.0, the average MP site had 1.7 serious errors (failures) and 7.7 warnings. For WCAG level 2.0, sites averaged 3.9 errors (failures) and 10.9 warnings. The range of serious errors (failures) ranged from zero errors up to a maximum for four errors for WCAG 1.0. Warnings ranged from a minimum of four warnings up to a maximum of 11 types of WCAG 1.0. For WCAG 2.0, the rate of failures ranged from none to a maximum of eight, while warnings ranged from a minimum of six warnings up to a maximum of 15.

Table 1: Accessibility Results for MP Web Sites

	WCAG 1 Results	WCAG 2 Results
Failure issues (total)	217	504
Warning issues (total)	1002	1415
Mean failure per page	1.7	3.9
Mean warnings per page	7.7	10.9
Range of failures per page	0 to 4	0 to 8
Range of warnings per page	4 to 11	6 to 15
Number of sites with no failures	30	7
Number of sites with no warnings	0	0

Of the 130 sites tested, only 30 (23 percent) met WCAG level 1.0, which is the DDA minimum requirements for meeting accessibility requirements, by containing no failures (errors). All of the sites showed non-critical warnings under level 1.0 guidelines. The results for WCAG level 2.0 fared much worse, with only seven sites (five percent) reporting no failures (errors), and all sites showed warnings.

The online report gave comprehensive findings on specific errors and warnings for each priority level. Table 2 shows the major types of WCAG 1.0 errors and warnings. Although a number of different types of errors and warnings were compiled, only the top two issues for each priority level were included in this study. The first column is separated into WCAG 1.0 priority levels 1, 2 and 3. The second column shows WCAG specific checkpoint numbers along with their text explanation. The top two accessibility errors and warnings were tabulated for each priority level. Results for priority 1 show that of 130 sites, 82 (63 percent) had an alt tag that was missing. The second major error also dealt with alt tag problems, with 54 sites (42 percent) having clickable images without alt tags. For priority 2 warnings, most issues dealt with luminosity contrast (97 sites, 75 percent), and low contrast text (88 sites, 68 percent). Common priority 3 warnings were: inline styles (97 sites 75 percent), and missing marking language (84 sites, 65 percent).

TABLE 2. WCAG 1.0 Error and Warning Guideline Results

WCAG 1.0 checkpoints		Statistics	
		Total	Average
Priority1 (errors)	(1.1) Alt is missing	82	0.63
	(1.1) Clickable image without alt	54	0.42
Priority 2 (warn)	(1.4) Low luminosity contrast text is found	97	0.75
	(2.2) Low-contrast text is found	88	0.68
Priority 3	(14.3) Inline styles are found	97	0.75
	(4.3) Document language markup is missing	84	0.65

Table 3 shows WCAG 2.0 errors and warnings. For priority 1 errors, all 130 sites had the same two errors: the use of color must not be a single method for indicating important information on a web page, and changes in the natural language must be clearly identified. Priority 2 warning results also showed that many of the sites showed a propensity for the same warnings. Two warnings were found in all 130 sites: Mark up quotations and Use the latest W3C technologies available whenever possible

TABLE 3. WCAG 2.0 Error and Warning Guideline Results

WCAG 2.0 checkpoints		Statistics	
		Total	Average
Priority 1 (errors)	(2.1) The use of color must not be a single method for indicating important information on a web page	130	1.0
	(4.1) Changes in the natural language must be clearly identified	130	1.0
Priority 2 (warn)	(3.7) Mark up quotations	130	1.0
	(11.1) Use the latest W3C technologies available whenever possible	130	1.0
Priority 3	(13.6) Page without skip link	2	0.02
	(4.3) Document language markup is missing	1	0.01

5. DESIGN GUIDELINES

Evaluation results in Table 2 show that the vast majority of MP web sites have WCAG 1.0 priority 1 errors, which means these sites do not meet UK DDA law. Most of the priority 1 checkpoint errors deal with problems with alt tags. Guidelines for alt tags require that text alternatives be provided for any non-text data (such as images) so that people who use assistive technologies, such as Braille readers, can access the content (W3C, 2008a). Alt tags convey the text equivalent of the image display, and are necessary to those with disabilities, as they may not have the ability to physically 'see' the image. For most web designers, implementing these features is not difficult and will not change the layout or appearance of the web pages (Will County, 2003). It is important to provide alt tags because not all users may have the

ability to 'see' the images, or non-disabled users on slow dial-up may decide not to download images due to slow transfer times ("Europe-wide survey," 2006).

Although WCAG 1.0 priority 2 checkpoints are not mandatory, an effective web designer should implement these into their implementation. Two categories were found in most MP sites: low luminosity and low contrast text. WCAG guidelines for contrast and luminosity exist to make it easier for people with disabilities to see content by better separation of foreground from background (W3C, 2007b). One way this can be done is by the effective use of color contrast. For example, color-blind users may have trouble reading red text on a green background, so a black and white color scheme may be more effective for contrast. Luminosity of the text is also an important design factor, and the guidelines for minimum luminosity contrast ratio of at least 5:1 (W3C, 2007a). Designers can use color contrast analyzer tools to check against the W3C ratios for contrast and luminosity.

Although WCAG level 2.0 is not yet the determinant for UK DDA law, it is suggested that web designers understand these standards as they could eventually be included in DDA law. When testing for level 2.0, none of the sites met the guidelines for priority 1 and 2. For priority 1, most issues dealt with color or language problems. According to Accessibility Forum (2001), a designer should not allow a situation where a user has to distinguish between otherwise identical red and blue squares for different functions (such as printing versus saving). The guidelines do not prohibit against the use of color to enhance importance features, but it does require another method of identification, such as text labels in conjunction with the use of color.

Like the WCAG 2.0 priority 1 results, the priority 2 results had two issues where all 130 of the MP sites did not meet the guidelines. First, quotations need to be marked with Q and BLOCKQUOTE elements in order to allow international browsers to properly display the required quote system (W3C, 2000b). Second, the guidelines suggest that sites use the latest W3C technologies available whenever possible. A situation may occur where sites use non-HTML technologies, such as PDF or Flash, which often cannot be viewed using many assistive tools. If these technologies are used, the guidelines suggest providing an alternative version to the content that would be accessible (W3C, 1999).

Several errors that appeared in this study were also found to be a problem in other studies. Several of the main problems found in the Disabilities Right Commission (DRC, 2004) study and the 2005 Chinese government study (Shi, 2006) were also main issues with the UK MP sites. The major error for both studies was WCAG 1.0 checkpoint 1.1, which mandates text equivalents (alt tags) for non text items. Exclusion of alt tags is one of the most common errors in web accessibility design, yet it represents one of the easiest fixes from a technical perspective (Guenther, 2002). The DRC (2004) survey also indicated that checkpoint 2.2 (color issues) was a major problem, and this checkpoint issue was found in the current MP research results.

6. IMPLICATIONS

The results of this study raise a pertinent and disturbing issue with regards to legal enforcement. Although sites should be designed to adhere to DDA law and industry guidelines, there are many sites, such as the sites in this UK MP study where this has not been achieved. Enforcement of the DDA law specifically regarding web sites is lacking, even among those government entities that are creating these specific laws. Since the MPs in the government have created the DDA, it would be expected that their sites should have total compliance with DDA requirements. It is suggested that better enforcement action be taken by the government in ensuring that all UK-based sites, not just e-government entities, are adhering with accessibility law.

Since the DDA Act is a civil law, disabled people who feel they may have been discriminated against would bring their claims in county court. Although there have been general disability cases regarding DDA law, only a few cases have been brought regarding web accessibility (Peck, 2003). A myriad of reasons may exist for this. First, in order to file a potential claim, a person must pay a fee of £120. Since disabled citizens often have lower incomes, this could be an issue. Although the fee can be waived in the case of financial hardship, many people are unaware of this (RNIB, 2009a). In fact, a study by the DRC indicated

that the main reasons that disability claims are not made is because of stress and the costs of the legal process (Denvir, et al, 2007). Because of the difficulty with the process of bringing disabilities claims, the RNIB recommends that the government make changes to the claims process in order to overcome barriers in bringing cases to court, such as bringing cases in front of tribunals who are better trained in disability issues. This would not only help those with general disability issues, but those who wish to bring action regarding discrimination of web site access. Disabled people should also be aware that they do have legal rights to sue government agencies under DDA discrimination. For example, in 2006, a Sheffield woman won a disability case against the UK Department for Work and Pensions (Law Centres Federation, 2009). Thus, it is possible for UK web users to sue government entities in order to secure accessible sites.

In order to increase the level of web accessibility in the UK, organisations that work with the disabled could take a more active role in promoting compliance with legal mandates. For blind users, the RNIB is active in promoting web accessibility compliance. However, there are other forms of disability, both cognitive and physical, that can affect user's ability to successfully access web pages, and these users may not have a group that promotes accessibility for their impairment. Rather than a piecemeal approach where various organizations for the disabled may or may not assist with web accessibility for their constituents, a centralized government entity may be an approach to aid all disabled people with legal issues regarding web accessibility.

According to Paciello (2000, p. 19), one of the main reasons for poorly designed web sites is lack of awareness among web developers. He estimates that 50 percent of the poor design is because developers are unaware of legal and industry requirements for effective accessibility. Thus, it is recommended that more conferences, education and workshops be made available to developers in order to raise their awareness and to provide better level of accessibility for disabled web users. Specifically, the DRC (2004) lists specific recommendations that both the government and web designers should implement in order to provide more accessible sites including:

- Formulating and providing written website policies for meeting the needs of disabled people.
- Organisations which provide training, as well as web authoring firms, should promote good coding practices.
- Website developers should accept that good practice should entail meeting the needs of the disabled.
- The Government should raise awareness of web accessibility needs and the costs of meeting those needs.
- The Government should facilitate the development of best practice guidance for website development and promote a formal accreditation process.
- Professional bodies should provide awareness training.

The findings in this study show that certain errors consistently show up in both MP sites and other public and private-sector web content. Therefore, these sites will need to be retrofitted to allow for greater accessibility for people with disabilities. However, web designers need not go with a total immediate redesign. Instead, a prioritised schedule of alterations could be implemented. Critical priority 1 checkpoints or easier changes to alt tags could be applied first. Some changes, such as including text for alt tags for images could be accomplished rather quickly. Some changes, such as changing sites from frames to non-frames or implementing text luminosity changes would affect the look and feel of the entire site and would require more time for a site redesign.

7. CONCLUSION

This research shows that a preponderance of the UK e-government MP sites are not meeting legal mandates and industry accessibility guidelines. The UK has a strong law regarding disability access, and has also signed with the UN Convention to support technology access for disabled citizens. Yet, even with both of these legal mandates and W3C industry web accessibility guidelines, compliance among e-government MP web sites is lacking. Most of the sites contain many of the same common checkpoint errors, which result in problems for disabled constituents. It is suggested that the government take a stronger role in policing their own sites and creating stronger enforcement. In addition, more education

should be provided to encourage web designers to understand current DDA law and industry guidelines when creating new sites. Having a site that meets accessibility requirements will open the market to a wider range of customers and will provide people with disabilities a more positive experience and increase the value of UK government sites.

8. REFERENCES

- Accessibility Forum, (2001) "Final Rule, E&IT Accessibility Standards Quick Reference Guide: Tool for Analysis and Project Work", [online] Accessibility Forum: Documents Library, <http://accessibilityforum.org/docs/final_rule_quick_ref_guide.doc>.
- Accessibility Forum, (2003) "RNIB Campaign for Good Web Design – September 2003", [online] <http://www.accessifyforum.com/viewtopic.php?t=394>.
- Adams-Spink, G. (2006) "UN agrees disability treaty text", *BBC News*, August 26, 2006, [online] http://news.bbc.co.uk/1/hi/in_depth/5274354.stm
- Anderson, S. (n.d.), "Don't Use Frames to Design Your Website", [online] *Hobo-web.co.uk*, <<http://www.hobo-web.co.uk/tips/41.htm>>.
- Arbour, L. (2007) "Record number of countries sign UN treaty on disabilities on opening day", [online] UN News Centre. <<http://www.un.org/apps/news/story.asp?NewsID=22085&Cr=disab&Cr1>>
- BBC News, (2005) "Government Sites 'fail disabled.'" [online] November 29, <<http://news.bbc.co.uk/1/hi/technology/4478702.stm>>.
- BBC News, (2008) "Members of Parliament", [online] October 24, <http://news.bbc.co.uk/1/hi/uk_politics/82552.stm>.
- Cabinet Office, (2003) "Quality Framework for UK Government Website Design: Usability issues for government websites", [online] <<http://archive.cabinetoffice.gov.uk/e-government/docs/qualityframework/pdf/quality.pdf>>.
- Denvir, A., Broughton, A., Gifford, J., Hill, D. (2007) "Research Paper: The experiences of sexual orientation and religion or belief discrimination employment tribunal claimants", Department of Trade and Industry, [online] <http://www.employment-studies.co.uk/pdflibrary/acas0207.pdf>.
- Disability Rights Commission (DRC), (2004) "The Web: Access and Inclusion for Disabled People", London, The Stationery Office. [online] http://www.equalityhumanrights.com/Documents/Disability/Accessibility_guidance/web_access_and_inclusion.pdf.
- Employers Forum on Disability (2009) "UN disability rights convention 'to be ratified in June'", May 14, 2009 [online] <http://www.efd.org.uk/media-centre/news/4720/un-disability-rights-convention-be-ratified-june>
- "Europe-wide survey finds public sector websites are not designed to be accessible", (2006) *The British Journal of Healthcare Computing & Information Management*. February 2006, Vol 23, No. 1, p. 8.
- Erigami, (2008a) "Erigami Home Page", [online] <<http://www.erigami.com/>>.
- Erigami, (2008b) "Truwex Online 2.0: Section 208 and WCAG Accessibility, Privacy, Quality Assurance Tool", [online] <<http://checkwebsite.erigami.com/accessibility.html>>.
- Foley, P., Alfonso, X., Fisher, J., Bradbrook, G. (2005) "eGovernment: Reaching socially excluded groups?", Report prepared by IECRC and Citizens Online for the IDEa. [online] <http://www.idea.gov.uk/idk/core/page.do?pagelId=1074872>.
- Friedman, M. and Bryen, D., (2007) "Web Accessibility Design Recommendations for People with Cognitive Disabilities", *Technology & Disability*, Vol 19, No. 4, pp 205-212.
- Guenther, K. (2002) "Section 508 and Your Web Site", *Onlinemag*, Mar/Apr 2002. Vol 26, No. 2, p. 71.
- Law Centres Federation (2009) "DWP discriminates against blind woman", [online] <http://www.lawcentres.org.uk/news/detail/dwp-discriminates-against-blind-woman/>.
- "Local authority website league table 'should be scrapped'", (2007) *24dash.com* [online] http://www.24dash.com/news/Central_Government/2007-03-07-Local-authority-website-league-table-should-be-scrapped
- Office of Public Sector Information, (2009) "Disability Discrimination Act 1995", [online] http://www.opsi.gov.uk/acts/acts1995/ukpga_19950050_en_4
- Paciello, M. (2000) *Web Accessibility for People with Disabilities (R & D Developer Series)*, CMP Books.
- Peck, N. (2003) "Interview – Julie Howell, Royal National Institute of the Blind", *SitePoint.com*, October 25, 2003, [online] <http://www.sitepoint.com/article/national-institute-blind/>.

- Royal National Institute of Blind People (RNIB), (2009a) "Publications Archive", [online] http://www.rnib.org.uk/xpedio/groups/public/documents/Visugate/public_pricejust.hcsp#P14_3916
- Royal National Institute of Blind People (RNIB), (2009b) "UK Law", [online] http://www.rnib.org.uk/xpedio/groups/public/documents/publicwebsite/public_legalcase.hcsp.
- Royal National Institute of Blind People (RNIB), (2009c) "Web Access Centre", [online] http://www.rnib.org.uk/xpedio/groups/public/documents/code/public_rnib008789.hcsp.
- Rubaii-Barrett, N. and Wise, L. (2008) "Disability Access and E-Government: An Empirical Analysis of State Practices", *Journal of Disability Policy Studies*, June 2008, Vol 19, No. 1, pp. 52-64.
- Shi, Y. (2006) "E-Government Web Site Accessibility in Australia and China: A Longitudinal Study", *Social Science Computer Review*, Aug 2006, Vol 24, pp. 378-385.
- Sloan, M. (2001) "Web Accessibility and the DDA", *Journal of Information Law & Technology (JILT)*, [online] http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2001_2/sloan
- UN, (2006) "Draft Convention on the Rights of Persons with Disabilities", [online] <http://www.un.org/esa/socdev/enable/rights/ahc8adart.htm>.
- UN, (2009) "Convention & Optional Protocol Signatories & Ratification", [online] <http://www.un.org/disabilities/countries.asp?navid=17&pid=166>.
- W3C, (1999) "Web Content Accessibility Guidelines, W3C Working Draft", [online] *Web Content Accessibility Guidelines*, <http://www.w3.org/TR/1999/WD-WAI-PAGEAUTH-19990217/#gl-use-w3c>.
- W3C, (2000a) "Core Techniques for Web Content Accessibility Guidelines 1.0.", [online] *W3C Notes*, <http://www.w3.org/TR/WCAG10-CORE-TECHS/#comprehension>.
- W3C, (2000b) "Examples for Checkpoint", [online] *Examples: WAI Web Content Accessibility Curriculum*, <http://www.w3.org/WAI/wcag-curric/sam37-0.htm>.
- W3C, (2000c) "HTML Techniques for Web Content Accessibility Guidelines 1.0", [online] *W3C Notes*, <http://www.w3.org/TR/WCAG10-HTML-TECHS/>.
- W3C, (2007a) "W3C Working Draft", [online] *WCAG 2.0 Guidelines*, <http://www.w3.org/TR/2006/WD-WCAG20-20060427/guidelines.html>.
- W3C, (2007b) "W3C Working Draft", [online] *Web Content Accessibility Guidelines 2.0*, <http://www.w3.org/TR/2007/WD-WCAG20-20070517/Overview.html>.
- W3C, (2008a) "W3C Proposed Recommendation", [online] *Web Content Accessibility Guidelines (WCAG) 2.0*, <http://www.w3.org/TR/WCAG20/#text-equiv>.
- W3C, (2008b) "Overview of WCAG 2.0 Documents", [online] *Web Accessibility Initiative*, <http://www.w3.org/WAI/intro/wcag20.php/>.
- Wallis, J. (2005) "The web, accessibility, and inclusion: networked democracy in the United Kingdom", *Library Review*. Vol 54, No. 8, pp. 479-485.
- Williams, B., Copestake, P., Eversley, J., & Stafford, B. (2007) "Experience and Expectations of Disabled People: A Research Report for the Office of Disability Issues", Office for Disability. [online] <http://www.officefordisability.gov.uk/research/pdfs/eedp-full-report.pdf>.