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Declaring conformance on web accessibility

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Management summary and recommendations

“We design websites that not only look fantastic but also work. We take pride in making websites accessible for everyone - from the mobile phone user to the disabled.”
<http://www.gawds.org/showmember.php?memberid=904>

Some web developers clearly take great pride in making websites that are both accessible and of high overall quality. Fully accessible websites are an important goal in achieving equal access to the information society by people with disabilities and older people. Accessibility guidelines are well established and set out a measurable standard, however various studies have found that too few websites meet these requirements.

Recognised national certification organisations have an important role in determining the quality of accessible websites. Some websites display certification marks from a national certification body or make non-certified declarations of accessibility. Where websites provide a declaration it is essential that these claims are reliable, and measurable against relevant standards. This study investigated the use of declaration of accessibility and differences in effect between third party independent certification by a recognised certification body and self declaration.

The W3C Web Accessibility Initiative (WAI) web pages provide a considerable body of material to support the design including the Web Accessibility Content Guidelines 1.0 (1999) and 2.0 (2008). They give additional advice and information on evaluation of website accessibility and use of conformance logos including the recommendation to aim for conformance priority level AA. WCAG 2.0 is supported by documented techniques in support of the success criteria.

Each national certification schemes is subject to different legal and regulatory frameworks with a greater emphasis placed on accessibility of government websites. Websites for this study were selected from five countries with established certification schemes: Germany, Italy, Netherlands, Spain and UK. Each scheme has different procedures and methodologies for evaluating websites. As at the time of the assessments in 2010, these requirements and procedures are largely based on WCAG 1.0, while plans are variously in place to upgrade to or harmonise with WCAG 2.0 and for government websites to meet accessibility guidelines by the end of 2010.

The study identified 100 websites from government and public bodies and commercial organisations, half of these were selected because they displayed web accessibility logos from a recognised national organisation and were listed in the organisation directory. Half the selected websites were ‘self declared’ - carrying the WCAG 1.0 or WCAG 2.0 conformance logos and link to W3C website, or were leading national websites having a strong statement of accessibility.

For consistency, the evaluation tools and test programmes chosen for this study used WCAG 2.0. The tests included both automatic and manual testing. The automatic test tool automatically selected 25 pages from the web address given. Those which passed or had 10 or less failure points at WCAG 2.0 level A were subject to manual testing. Twenty-three out of 76 Government and public body websites were manually tested. Results for the commercial sites were much worse overall, and only two out 24 were found to have 10 or less failure points.

All of the manually tested website pages showed some evidence of accessibility awareness and best practice. Three certified government and public body websites passed all or all but one of the level A success criteria, and a further three had four or less failed checkpoints. None of the self declared government and public body websites passed all criteria and only three had four or less failed checkpoints. The remaining third (3 certified and 5 self declared) showed some evidence of meeting accessibility guidelines but failed between six and eight different checkpoints included basic

issues affecting perception, such as text equivalence and operability, keyboard only input, skip navigation and control of forms.

There were few overall differences that indicate any significant differences between the effectiveness of certification and self declared during automatic testing and manual inspection. The manual inspection results were marginally in favour of the certified websites which included the two websites which passed all manual tests, and which had a lower average number of criteria failed. In the automatic tests, three self declared websites passed all criteria at level A, however this early lead was not maintained and failures were found during manual testing. The main differences between certification and self declaration identified in this study are:

1. Finding certified websites was much easier where the certification body offered a directory, however some of the certification bodies have relatively low numbers of listed sites. Finding websites which self declare is more problematic since there is no directory. Few popular and prestigious websites such as those tested during the MeAC study and reviewed for this study make any declaration of accessibility policy.
2. Government and public bodies appear to be making better progress than Commercial organisations and appear to be more likely to use certification bodies or make a strong statement of accessibility policy. In Italy, the certification body lists over 800 websites many of which are related to local government.
3. During the search for websites that self declare some instances were found of misuse of the WCAG logos and links and misunderstanding of the terms of use including where this was embedded within the page footer as part of the content management system and therefore on every page, or only used within a statement about accessibility policy and not elsewhere. The WCAG logos and links should only be applied to the pages which meet the guidelines, leaving scope for the website owner to declare that some pages may not be accessible.
4. The results of the automatic and manual testing revealed basic failures among the certified sites. This may be due to differences in methods between certification schemes or the result of drift over time – where the website has changed since certification.
5. Some of the government websites making strong statements of accessibility did remarkably well in the automatic testing with three passing automatic testing to level A. These were all self declared. This suggests that there may be good internal policies and a commitment to continue to monitor conformance.
6. At the detailed level, inspection results in relation to individual success criteria, there is slight indication that the websites that had self declared did not, as a group, perform as well as the certified sites. It was disappointing to find more than half the websites failed Criteria 1.1.1 on the provision of non-text alternatives. It was noted that the introduction of multimedia elements is creating a new hazard to passing manual tests at WCAG 2.0 level A. Five criteria were identified that account for half of all failures (see Section 7.1).

It is recommended that:

- Both certification and self declaration of accessibility are important strategies for promoting best practice, and improving access opportunities by people with disabilities. More positive action is needed to increase the number of leading commercial organisations to demonstrate a commitment to accessibility.
- The certification bodies should make a move towards WCAG 2.0, to encourage the use of this guidance at national level, and reduce the confusion resulting from the continued reliance on the outdated WCAG 1.0.

- Certification bodies should ensure that the integrity of the approved website is maintained following certification and that the organisation has plans in place for maintenance. It should act to remove websites from the register if they fail to maintain the standard.
- Action is needed to further plans to harmonise accessibility evaluation procedures and systems of conformance declaration to WCAG 2.0. It is noted that a previous attempt through the Unified Web Evaluation Methodology (UWEM) project offered an opportunity for harmonising accessibility evaluation throughout Europe but failed to achieve international acceptance.
- Website developers and owners should make use of appropriate declaration for their business type and promote their achievements by providing a clear statement of accessibility policy.
- Website developers and owners should put in place a maintenance plan and retest to ensure that the website pages remains accessible. When adding new multimedia elements and other 'non-text' elements they should ensure that these, and their control elements are identifiable in accordance with WCAG 2.0.
- Automatic evaluation tools alone are insufficient to identify all criteria at WCAG 2.0 level A but can be used to highlight specific issues. Human intervention is currently still needed for judgement calls and interpretation of the many techniques and results. It is recommended that training on awareness and best practice should be focussed on the five criteria which are most commonly failed.
- W3C should have in place some element of quality control to assess whether the WCAG logo and links are mis-used since in the long term this will devalue its usefulness in identifying accessible websites.

1. Introduction

The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect. Tim Berners-Lee, W3C Director and inventor of the World Wide Web
<http://www.w3.org/WAI/>

1.1 Background

Previous surveys of European websites to determine progress towards inclusion and levels of conformance to published Web Content Accessibility Guidelines (WCAG) have revealed disappointing low levels of compliance within government and the commercial sectors [3, 4, 5, 6]. This lack of progress towards accessibility of websites leaves barriers to full participation in the information society by people with disabilities, whether using assistive technology, needing to make use of alternative input or output devices such as keyboard only operation, or simply needing an acceptable level of colour contrast.

This study specifically addresses the issues of declaration of accessibility made about a website and published on the website. Declarations of accessibility are important and highlight to potential users that this website meets agreed standards of accessibility, as well as acting as a beacon of good practice and claiming credit for the commitment and effort taken to make a website accessible. Two models of claiming conformance exist – that the website is certified by a recognised certification body as meeting published guidelines, and the other by self declaration that the website meets accessibility guidelines. As a result of either model, the declaration can be publicised on the website using the logos for the certification body or level of conformance to WCAG and a statement of accessibility policy.

The purpose of this study was to determine whether there are differences in effect of these two models by testing the accessibility of websites which are certified, or which make a declaration of conformance to agreed standards.

The objectives of this study were set out in the briefing documents as follows:

- To examine how many websites that claim that they are accessible according to relevant standards, in reality are complying with these standards
- To specify on the websites that are complying in reality with the referenced web accessibility standards, how many self-declare their conformity and how many declare their conformity through an assessment by an independent third party.
- To specify on the websites that are not complying in reality with the referenced web accessibility standards, how many self-declare their conformity and how many declare their conformity through an assessment by an independent third party.
- To propose recommendations on which of the two web accessibility declaration models is the most appropriate one in order to ensure web accessibility.

The briefing documents called for the selection and testing of 100 websites drawn from five European countries. A combination of automatic testing could be used followed by manual testing of those identified as passing the automatic tests.

1.2 Conformance assessment

A conformity assessment is a 'demonstration the specified requirements are fulfilled' (CEN/BT/WG 185 2008) [2]. This requires that there is:

- a set of specified requirements
- a procedure for assessing conformity to the requirements
- a statement that fulfilment is demonstrated.

As part of an examination of the issues of improving eAccessibility to goods and services in Europe consideration was given to the current state of certification on web accessibility in different countries and differences in national regulations affecting the requirements, especially of government and public bodies [2].

The results of CEN/BT/WG 185 2008 were used within this study in order to identify certification bodies and countries having strong policies on delivering accessibility especially in the government and public sector.

1.3 Measuring progress towards conformance

With each certification body applying different evaluation methodologies it was decided that all websites tested should be tested to the same scheme. The initial automatic testing and manual testing used to evaluate the selected websites took account of Web Content Accessibility Guidelines 2.0 (WCAG 2.0 2008) in order to support like for like comparison.

Within the briefing document it was proposed that the results of the assessments should be used to categorise the levels of accessibility awareness and achievement using the following grading scheme:

- a) The website does not show any evidence of accessibility awareness.
- b) The website shows limited accessibility features (eg: text resize widget and a "skip navigation" link on the page and add alt attributes to images).
- c) The website shows a real effort towards accessibility but not implemented correctly (eg: the heading structure may not correctly reflect the logical structure)
- d) Fully accessible.

As a result of the testing of the websites described in this report, this framework was revised:

- A: Fully accessible – for the purposes of this study this category was reserved for small number of websites that passed all WCAG 2.0 success criteria at level A or with only a single minor failure instance
- B: The website shows a real effort towards accessibility but not always implemented correctly. Including minor issues associated with Criteria 1.1.1
- C: As B, the website shows real effort towards accessibility but with significant failures including criteria 1.1.1 and no more than 5 failure points at WCAG 2 level A.
- D: The website shows limited accessibility features (eg: text resize widget and a "skip navigation" link on the page and add alt attributes to images), but fails to successfully implement multiple criteria at level WCAG 2 level A.
- E: The website does not show any evidence of accessibility awareness.

2. Web content accessibility guidelines

Web Content Accessibility Guidelines (WCAG) were produced as part of the World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI). The goal of the Guidelines is to provide a single shared standard for web content accessibility that meets the needs of individuals, organizations, and governments internationally. W3C is considered to be a 'de facto' standards body working by consultation and consensus between experts, industry and government and user organisations.

Briefly, WCAG 1.0 (1999) set out guidelines to delivering improved accessibility during website design, development and to support evaluation [8]. There were 14 guidelines each with a number of individual checkpoints. Conformance to the three priority levels 1, 2 and 3 is expressed as WCAG 1.0 A, AA or AAA. These guidelines have been integrated into national requirements and regulations, certification schemes, and in-house guidelines for large organisations such as the Europa site of the European Union.¹

The much revised WCAG 2.0 (2008) is framed around four key principles of perception, operation, understandability and robustness [1]. The guidelines are intended to be technology independent. The extensive accompanying information published by the Web Accessibility Initiative (WAI)² includes techniques to meet the guidelines and resolve common failings. WCAG 2.0 guidelines have been translated as authorised versions in 4 European languages with others having unofficial translations or candidates for becoming authorised versions in 13 further European languages.

As previously, the Guidelines are organised into 3 levels of priority with the expectation that organisations will move towards the second level AA. These guidelines are framed as testable success criteria. In WCAG 2.0, a single issue can be covered by more than one success criteria at different levels of compliance, for example the required standard of contrast between text and background is lower at level A than at level AA.

WAI additionally provides information on how to evaluate websites, including automated and expert testing and more recently on involving disabled and older people in user testing. WCAG conformance logos and links are available from the WAI website, together with conditions of use³. The logo applies only to the page on which it is displayed and the whole page must meet all the Guidelines. The WCAG logo is used to indicate which set of Guidelines (1 or 2.0) and which priority level (A, AA, AAA). Additionally, the logo must be used with a link code which directs back to the WAI conformance page.

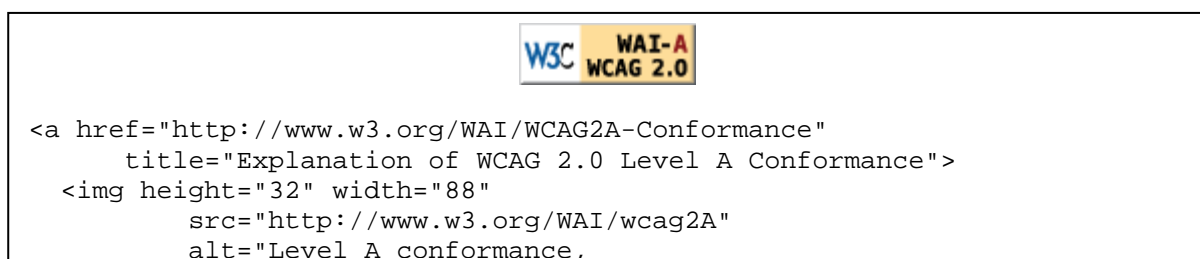


Figure 1 WCAG 2.0 conformance logo and link code

¹ http://europa.eu/geninfo/accessibility_policy_en.htm

² <http://www.w3.org/WAI/>

³ <http://www.w3.org/WAI/WCAG2-Conformance.html>

3. National certification schemes

National certification schemes on web accessibility have been developed in a number of European Countries and documented in CEN/BT/WG 185 (2008) and in a further study on compliance with WCAG 2.0 (European Commission 2009). Schemes were identified in Belgium, France, Netherlands, Italy, Germany, Spain, Ireland and UK. Some recent additional information presented here is taken from the website of the certification body.

Table 1 Summary of national certification schemes

Name	Country	Accredited/certification/mandatory
AENOR	Spain	Certification by accredited body
DREMPElvrij	Netherlands	Inspection by accredited body
BIK BITV-test	Germany	Inspection/assessment, accredited, publically funded
Segala	Ireland	Conformity assessment, method of determination = Mixed
Eurocert	Belgium, France and Spain	Conformity assessment, method of determination = Mixed
PubbliAccesso	Italy	Mandatory 3 rd party for private companies supplying public information eg railways 1 st and 2 nd party for public bodies
See It Right	UK	Assessment method of determination = Mixed

3.1 Legal and regulatory framework

Each of these countries took part in the Riga Ministerial Conference - "ICT for an Inclusive Society" June 2006 and supported the Declaration on e-Inclusion which includes:

“Promoting and ensuring accessibility of all public web sites by 2010, through compliance with the relevant W3C common web accessibility standards and guidelines. Calling upon the private sector to do likewise, to consider accessibility principles from the outset of the web development process, and to develop the appropriate authoring tools and software.”

http://ec.europa.eu/information_society/events/ict_riga_2006/doc/declaration_riga.pdf

For the purpose of this study, certification schemes were selected from Germany, Italy, Netherlands, Spain and UK. As set out in a previous study (European Commission 2009, Appendix 2) each have different national legal and regulatory frameworks which underpin efforts towards equality of access to ICT and web accessibility. These are summarised and updated in Table 2.

Table 2 Legal and regulatory framework

Country	Legal position
Italy	The ‘Stanca’ Law No. 4 of 9th January 2004. Two subsequent decrees implemented the Law: the Decree of the President of the Republic (March 1, 2005, No.75) containing the Implementation

	<p>Regulations, and the Ministerial Decree (July 8, 2005) containing the Technical Rules.</p> <p>The public agency CNIPA (Centro Nazionale per l'Informatica nella Pubblica Amministrazione - National Centre for IT in Government) designed the implementation rules for the Stanca law, including the general operational and organisational practices for achieving accessibility, the procedures for conformity assessment, and the market surveillance methods.</p> <p>Public administrations may carry out a self-assessment or use a third-party from a list of officially recognised evaluators.</p> <p>The law covers public services and private organisations in so far as they deliver public services.</p>
Netherlands	<p>In June 2006 the Council of Ministers decided that all websites of the central government should comply with the Web Guidelines by the end of 2010. Each minister is responsible for the websites that are built by or commissioned by his or her ministry.</p> <p>Since April 2007, the Web Guidelines were declared as a national standard for government websites by the national standardisation body.</p> <p>In December 2008 the National Implementation Programme on Better Services was officially agreed between the central government and local and regional governments. This document states that all governmental websites should be accessible according to the Web Guidelines also by the end of 2010.</p> <p>There are no obligations on private websites to be accessible, though they may apply for the Drempeelvrij certification.</p>
Spain	<p>Legislation in relation to website accessibility was first established in Law 34/2002. This was later affirmed and expanded in the anti-discrimination Law 51/2003 and then affirmed again in relation to public websites in the Royal Decree 1494/2007 on accessibility to the information society, and in the public procurement Law 30/2007.</p> <p>Article 5 of the Royal Decree 1494/2007 provides regulation related to Law 51/2003 by specifying a mandatory minimum level of accessibility for government websites of "priorities 1 and 2" of the UNE Standard 139803:2004 (referring to WCAG Levels A and AA).</p>
Germany	<p>Federal Disabled Equalization Law (BGG) and the Federal Decree on Barrier-free Information Technology (the so-called BITV regulation) are the main legal/regulatory provisions for web accessibility. BITV came into effect for German federal websites eg Federal Ministries and agencies, supra-regional insurances companies or charitable trusts.</p> <p><i>At the time it did not apply to regional government. BITV was based on WCAG1, updating to WCAG 2.0 is ongoing.</i></p>
UK	<p>The Disability Discrimination Act (1995, updated 2005) is the main legislative basis for website accessibility. The original Act contains provisions to prevent discrimination against disabled people by service providers and requires service providers to make [reasonable adjustments in order to make] services accessible to disabled people. The Code of Practice to part III of the Act gives the example of a website as a service that is covered by the Act.</p> <p><i>The recently published standard BS 8878 (2010) Web Accessibility Code of Practice sets out the process of developing an accessible website and refers to latest W3C accessibility guidelines including authoring tools: WCAG2.0, ARIA, and ATAG.</i></p>

3.2 Certification Methodology

The certification schemes have a number of important differences in approach to accessibility evaluation and the methods applied. These include whether the checkpoints are derived wholly from WCAG or make use of other references, and the overall approach and methodology. This includes how many pages are tested; what checkpoints are used; whether tests are automatic or manual, or involve users with impairments using assistive technology; and whether results allow for a ranking scale or pass mark.

Some of these elements are captured in Table 3, however not all certification bodies publish full details of their approach of methods. This combines to make like for like comparisons difficult as the processes and results are consequently different. In a European Framework 6 project a number of partners set out to provide a mechanism for harmonisation through the Unified Web Evaluation Methodology (UWEM).

Technosite in Spain and Foundation Quality Mark, Drempelvrij in the Netherlands make use the UWEM in the design of their certification schemes. UWEM was developed under the WAB Cluster, which was a cluster of three European projects: Support EAM, EIAO, BenToWeb. They developed a conformity assessment scheme intended to promote better harmonization between European organisations working in the field of conformity assessment of websites. UWEM supported automatic and manual testing for single page and large website use, and monitoring activities. In parallel, Support EAM proposed a certification mechanism within a CEN Workshop Agreement (CWA 15554 June 2006).

Although some objections were registered in relation to methodology and training issues, this body of work remains highly relevant to a consideration of third party and self-certification mechanisms, such as maintenance of a public register and time limit on use of the logo following certification.

3.3 Migration of certification towards WCAG 2.0

UWEM provided a plan to migrate towards WCAG 2.0 before the project funding was completed and prior to the final publication of WCAG 2.0 (2008).

Technosite and Foundation Quality Mark Drempelvrij currently indicate that they have plans to migrate their existing practices towards conformance with WCAG 2.0. The BIK project also reports on activity to align the BITV-test with WCAG 2.0. In the UK, the RNIB offers two certification schemes with the original See it Right certificate linked to WCAG 1 and Surf it Right conforming to WCAG 2.0

3.4 Certification directories

It is an important element of the certification process that certification bodies should provide information on the test procedures used and provide a directory of approved websites.

The information provided by the certification bodies and the number of websites certified varied. For example, in addition to providing a company name and website URL some directories such as BIK BITV-test, Germany indicated the date of certification, as well as providing details of the web developers. In the Netherlands, Drempelvrij provided a link to the certificate which also included the date of certification.

Apart from the Italian PubblAccesso, the number of websites held on the various registers is very low, with four of seven the registers having less than 50 certified websites each.

Table 3 National certification schemes and number of websites listed (August 2010)

Country: Certification scheme	URL of certification	No of websites listed
Italy: PubblAccesso	http://www PubblAccesso.gov.it/logo/elenco.php :	886
Netherlands: Drempelvrij	http://www.drempelvrij.nl/register :	123 Additionally includes marginal fails and warnings
Spain: AeNOR	http://www.accessible.aenor.es/index.asp?MP=3&MS=0&MN=1&r=1280*1024	23 Search box directory, searched using 'AA' and 'AAA'
Spain: Technosite	http://www.technosite.es/auditoria_entidades.asp :	42
Germany: BIK BITV-test	http://testen.bitvtest.de/index.php?a=sl&prid=90	58 Sites that pass the BITV with a score of 90+
UK: See it right/Surf it right	http://www.rnib.org.uk/professionals/webaccessibility/accessiblewebsitedirectory/Pages/accessible_website_directory.aspx	13 See it right and Surf it right tested in the last year
UK: Shaw Trust	http://www.healthyworklife.org.uk/our_clients 1	Shaw Trust lists 27 clients but does not have a directory of certified websites

Table 4 National certification schemes: evaluation source and methods

Country	Certification scheme	Basis of evaluation	No of checkpoints	Method	Progress to WCAG 2.0
Italy	PubbliAccesso http://www.PubbliAccesso.gov.it/	WCAG 1.0, 508 and technical experience	22 derived from and a further 12 points relating to usability	Mixed Automated, and expert	Authorised translation into Italian December 2009 http://www.w3.org/Translations/WCAG20-it/
Netherlands	Foundation Quality Mark drempelvrij.nl Test houses include: http://www.accesibility.nl/ http://www.qualitighthouse.nl/	Based on WCAG 1, level A also AA and some AAA	16 priority 1 checkpoints. Score out of 16. Pass 46 checkpoints including priority2	Inspection, UWEM	WCAG 2.0 is due to become part of the official mark from mid-2011 Authorised translation into Dutch December 2010 http://www.w3.org/Translations/WCAG20-nl/
Spain	AeNOR	This standard is based on and compatible with WCAG 1.0.		Inspection and audit	Candidate authorised translation reviewed as at January 2010. Technosite reports developing methodology to test to WCAG 2.0
Spain	Technosite	WCAG 1.0, A and AA	Euracert (AnySurfer, Accessiweb, Technosite)	UWEM	
Germany	BITV-Test, BIK (Barrierefrei Informieren und Kommunizieren)	Based on WCAG 1 to level AA. BITV-test was published in 2004 and has been continually updated.	Developed by the BIK project 52 checkpoints based on WCAG 1.0 level A and AA are weighted according to their impact on accessibility. Maximum score of 100, over 90 is	Tests are carried out by trained personnel, with results from 2 testers compared. Tests are primarily manual and do not include use of assistive	Action is ongoing to harmonise existing tests to WCAG 2.0 success criteria and techniques. Authorised translation into German October 2009: http://www.w3.org/Translations/WCAG20-de/

			accessible and over 95 is very accessible	technology	
UK	See it Right/Surf it Right (RNIB)	See it Right is aligned with WCAG 1.0 A,AA and some AAA	Not published	Mixed	Surf it Right is aligned with WCAG 2.0
	Shaw Trust Accessible	WCAG 1.0 and WCAG 2.0.	Not published	Mixed, experienced AT users	As required by client

4. Methodology

Given the considerable variation in the way that conformance testing takes place we chose to apply one consistent and systematic process for selecting the websites and a consistent and systematic process for applying both automatic and manual tests of conformance. We describe here first the selection process and then the test process.

4.1 Website selection

The overall aim of the selection process was to identify 100 websites from government, public bodies and relevant commercial interest which claimed that they met accessibility guidelines either as a results of a third party certification process or as self declaration. The following selection criteria were applied in order to balance key factors affecting conformance including national requirements and certification processes available.

4.1.1 By country

Different European countries are at different stages of legislature, standardisation and availability of national certification schemes on web accessibility. This study investigated websites from five European countries where there were existing certification schemes UK, Germany, Netherlands, Spain and Italy identified in a previous study [2]. Consideration was also given to identifying international sites including those using the identification codes .org, .com and .eu

4.1.2 Certified websites

Most of the certification bodies in these countries provided directories of websites that they have tested and have passed the defined standards for that certification body:

- Directories of accessible websites provided by third party certification bodies were reviewed from the following: AENOR and Technosite in Spain, BIK-BITV in Germany, PubblAccesso in Italy, Drempelvrij in Netherlands and See it Right (RNIB) and Shaw Trust in UK.
- Websites which have been certified usually choose to display the certification logo of the awarding body. Lists of government and commercial websites reviewed in a previous web accessibility studies (MeAC 2007) were inspected to verify which, if any, displayed certification logos.

4.1.3 Self declaring websites

The W3C does not maintain a directory of websites using WCAG logos and link, however they do set out the rules by which website owners may apply the logos together with the links to the relevant statement. For example, the visible logo image together with underlying link should only be applied to the page which has met the appropriate criteria and does not apply to the whole site. Applied strictly, a single page level failure causes the whole page to fail. It is acceptable to indicate in the web accessibility policy statement which pages do not meet the guidelines and action being taken to improve them.

Backlinking tools were identified which can be used to search for links from within the backlinking directories. These tools are primarily intended to support developers with search engine optimisation by establishing who links to your website. The tool selected was able to backlink to the specific reference page within the W3C site and offered the opportunity to download up to 1000 website addresses⁴. The search was run separately for WCAG 1 level A,

⁴ The search link used the reference link: "a href=http://www.w3.org/WAI/WCAG1A-Conformance" where WCAG1A was amended to cover different levels and WCAG 2.0

AA, AAA and WCAG 2.0 level A, AA and AA. The results were filtered for country codes and a sample were selected for inspection of the type of business. Those weeded out included websites for web development companies, business to business sites, and social and personal websites.

In addition to backlinking, other lists and directories were investigated:

- Listings of web accessibility competitions eg BENE, Germany
- Directories promoting web designers demonstrating web standards compliance, specifically <http://w3csites.com/>
- Lists of popular web sites per country eg Alexa, <http://www.alexa.com/>

4.1.4 MeAC listings

The MeAC study (2007) [5] reported on website accessibility studies conducted in 25 European countries, inspecting 6 government sites and 6 leading private/sectoral organisations in each country. The URL's given for these sites were selected from 5 countries: UK, Germany, Italy, Netherlands and Spain, giving a pool of 60 websites that were examined to determine the presence of certification logos or statements relating to accessibility policy.

Where a website had been moved or combined with another site since 2007, this new link was examined for possible inclusion in this study.

Searches within these websites used the search terms 'W3C', 'WAI', 'accessibility' or national equivalents eg Barrierefrei (Germany), Accesibilidad (Spain), toegankelijkheid (Netherlands) to discover statements of accessibility policy or declaration.

4.1.5 By category

A distinction was made between Government and Commercial websites. Government and public bodies have been under more regulatory pressure to meet accessibility guidelines and previous studies have revealed greater progress when compared with the disappointing results from the commercial sector. The websites listed in the certification body registers were inspected to identify government and local government sites as well as commercial websites within the sub-categories of travel, entertainment and banking or similar.

The initial search results for self certified websites and some of the registers gave very little information about the website apart from the URL. Careful inspection was needed to identify those within the required categories of government and commerce and to create meaningful sub-categories. The search results returned many non-relevant sites notably vanity sites from web development companies, large corporate business to business sites and personal websites.

4.1.6 Final selection

The initial pool of websites identified was reviewed and the final selection of 100 websites took account of the need for like for like comparisons of certified and self declared conformance to accessibility guidelines. The final selection included an equal number of certified and self certified websites. Additional balancing criteria included the number of selections per country, and declared level of WCAG conformance. The final selection contains a higher proportion of government, local authority and public bodies (76) and lower proportion of commercial organisations. (24)

4.2 Automatic testing

Automatic testing of web accessibility is a useful strategy for processing a large number of websites quickly and to ensure consistency and objectivity. Various tools are available for testing to WCAG 1.0 and are now adding WCAG 2.0, some of these such as TAW⁵, WAVE⁶ and SortSite™⁷ are available online and will support a developer running a test of a single page online as well as larger assessments. We selected SortSite™ to run automatic tests at WCAG 2.0 across 25 pages of each of the selected websites. This automatic tool uses over 100 checkpoints and was used to identify which sites passed all testable success criteria. The results from automatic checking were reviewed to remove false negatives and duplicated results.

Although WCAG 2.0 was published nearly two years ago many of the certification bodies and self-certified sites have tested and continue to test to WCAG 1, and use different or additional checkpoints. WCAG 2.0 was chosen to act as a diagnostic tool to identify successful websites and in order to achieve consistency for comparison.

4.3. Manual testing

Websites that passed automatic testing were tested manually by an expert using the testpoints identified with the SortSite™ tool as requiring manual inspection. An initial inspection of the results revealed that very few of the websites passed all automatically testable criteria even at level A, and thus the criteria for manual inspection was adjusted from pass to those with 10 or less fails at WCAG 2.0 level A.

Some important criteria and checkpoints within WCAG 1 and 2.0 cannot be verified automatically and require manual assessment. Manual testing is a detailed inspection using a schedule of checkpoints derived from the WCAG 2.0. Some of the success criteria can be met by a number of different techniques. Furthermore manual testing also helped to resolve different causes of failure within the same success criteria, and multiple instances of the same criteria within the same or different pages. The manual testing was applied to 5 pages typically home page, information pages, task specific pages such as purchasing transactions, site maps and search tools.

Further details about the automatic and manual tests run by Shaw Trust and using SortSite™ are provided in Appendix 6.

⁵ <http://www.tawdis.net/ingles.html?lang=en>

⁶ <http://wave.webaim.org/>

⁷ <http://try.powermapper.com/demo/sortsite.aspx>

5. Results of the selection activity

The selection process highlighted some of the differences between the certification process and self declaration and these are reported here, followed by an analysis of the results of the automatic and manual testing.

5.1 Certification schemes

All the third party certification bodies with the exception of Shaw Trust have public registers of websites that have successfully passed the certification process. Technosite for example, display the company name and logo, while BIK offers a detailed listing with name date, web developer and the BITV-test score.(see Fig. 2 and 3)



Figure 2 Certification register: Technosite

28.07.2010	brand eins URL: www.brandeins.de/ CMS: Typo3 Agentur: blindwerk - neue medien KG	92
08.03.2010	einfach-teilhabe.de URL: www.einfach-teilhabe.de CMS: Government Site Builder Agentur: MATERNA GmbH Information & Communications	98,5
23.02.2010	Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz	95,5

Figure 3 Certification register: BIK

5.2 Self-declaration

Tracing websites making an independent declaration of accessibility was much harder than finding certified sites. Of the various strategies applied most did not produce useful results for selecting websites for this study. Directories of popular websites such as Alexa were dominated by websites that were not in the defined categories – for instance national search engines rated very high, or there was no identifiable evidence of an accessibility statement or logos and links. Simple searches for WCAG links or logos produced unanalysable results. Searching through W3sites which is a trade directory for web designers was disappointing because accessibility was not offered as a searchable category. The best resource for identifying self-declaration of conformance to WCAG was a backlinking search tool which had some in built biases towards websites with an English language version. In addition, 10 websites were selected from the MeAC listings because they provided a very positive statement of their accessibility policy.

5.3 Category differences

There was some indication that government and public sector opted for different approaches to declaring accessibility. In particular the national government sites appeared to be more likely to have either full third party certification or provide a strong statement of accessibility policy. They appeared less likely to use WCAG logos or links on their own – although there were some instances of displaying multiple logos of standards compliance and other certificates.

By contrast, within the non-governmental public sector the pool of websites using WCAG logos was much greater but the pool of websites that were certified was much smaller. Differences in numbers of selected sites by category reflects those differences found within the certification registers.

Table 5 Websites selected per category of government and public body

Category	National government	Local government	Health and other public bodies
Certified	15	20	3
Self declaration	8	13	17
Total	23	33	20

5.4 National differences

As far as possible, selected sites were chosen to represent different national practices and requirements. In addition, ten sites were selected which represented European bodies using the address code .EU and a further European body using .ORG.

While every effort was made to balance the number of websites selected per country the variations in numbers reflect the differences in the numbers of relevant sites found within the certification directories and the results returned in the online searches. (See Table 6.)

Table 6 Websites selected per country

Country	Government and public bodies	Commercial
UK	18	7
Italy	18	4
Spain	12	5
Netherlands	9	4
Germany	8	4
.EU	10	0
.ORG	1	0
Total	76	24

5.5 Final selection of certified and self declared websites

The number of websites selected from each certification body and self declared websites is summarised in Table 7, showing numbers per certification scheme, and per WCAG conformance declaration.

- **How many certified websites were selected?** There are 50 certified websites from 7 certification schemes. Government and public bodies were reasonably well represented within the national certification scheme registers and the selection includes eight each from Germany, Italy and Netherlands, and a total of eight from Spain from two certification schemes.

- **How many self declared websites were selected?** There are 50 self declared websites, 40 displayed WCAG logos and 10 made a statement of accessibility. The Government and public bodies appeared to be more likely to choose WCAG 1.0 level AA and this is reflected in the numbers chosen for automatic testing. A total of 26 websites were included which declared conformance to WCAG 1 and 14 to WCAG 2.0.
- **Was there any evidence of misuse of self declared conformance logos?** The results of the backlinking tool revealed large numbers of results, however it was noted that those claiming AAA conformance were particularly unsatisfactory. Close inspection revealed that there were some instances of mis-use of the logo, for instance, as part of a limited general statement about accessibility policy, mis-matching between logo and the link destination, and default inclusion within the page template in a popular Content Management System (CMS) tool.

Table 7 Final selection of certified and self declared websites

Certification scheme	Government and public bodies	Commercial	Self-declaration	Government sites and public bodies	Commercial
BIK BITV-test, Germany	8	2	WCAG 1 A	5	1
PubliAccesso, Italy	8	3	WCAG 1 AA	15	5
Drempelvrij, Netherlands	8	3	WCAG 2 A	4	1
AENOR, Spain	4	1	WCAG 2 AA	7	2
Technosite, Spain	4	2	Total WCAG	31	9
See it Right, RNIB, UK	3	1	Statement of accessibility	7	3
Shaw Trust Accessible, UK	3	0	Total WCAG & Statement	38	12
Total certified	38	12			

6. Results of automatic testing

The results of automatic testing were inspected for inconsistencies and duplication of test results. The resulting failed 'testpoints' discussed below relate to the number of tests carried out by the automatic tool and do not directly relate to the number of WCAG 2.0 success criteria. The automatic tool uses multiple tests to cover different aspects of some criteria. The resulting total number of failed testpoints should be regarded as indicative of the level of effort and success in meeting WCAG 2.0 criteria at level A. The results of the automatic tests give a general indication of differences between certification and self declaration and were used to select the more successful websites for detailed manual inspection. No results were returned for two websites due to unresolved technical issues.

Average number of failed testpoints

An initial examination of the results of the automatic tests reveals that the average number of testpoints failed overall was 16.9 with a range from none to 37. The overall difference between certified and self-declared websites is marginally in favour of the certified sites:

Certified:	16.5
Declaration:	17.3

The results for the government and public bodies were notably better on average than the commercial sector:

Government and public bodies:	15.8
Commercial sector:	20.0

Within the websites selected from the government and public bodies there is a considerable difference between those making a declaration in the form of a strong statement and those displaying WCAG conformance logos:

Certified, government and public bodies:	15.4
Declared, government and public bodies:	16.3
Declared WCAG only:	18.4
Declared by statement only:	7.1

The thirteen websites selected from the previous MeAC studies provided particularly good results, and particularly for those carrying a strong statement of accessibility but no conformance logos:

MeAC source, all	10.2
MeAC source, certified	13.8
MeAC source, declared by statement	7.1

As a group, the .EU project websites were the worst performing group. All the .EU websites self declared to WCAG 1 or 2 however, the average number of testpoints failed was 23.7.

Within the commercial sector there is little difference between certification and declaration among the websites and the results as a whole are worse than for those selected from government and public bodies. Only two of the commercial websites met the criteria for selection for manual testing:

Certified commercial:	19.8
Declared commercial:	20.3
Declared WCAG:	19.0
Declared by statement:	20.8

The results show some national variation, with the best results from the group of self declared government and public body websites in Spain with an average of 10.5 failed testpoints. Six of the

Spanish websites met the criteria for selection for manual testing. The worst performing group were the certified websites in Germany (19.8) and Netherlands (19.4). Just one website from Germany and three from the Netherlands met the criteria to be selected for manual testing.

Table 8 Average number of testpoints failed per country (n/a indicates insufficient data to calculate average)

Country	Average	Certification	Declaration	Total No. of websites tested
Germany	19.8	19.8	n/a	11
Italy	15.8	15.1	16.5	22
NL	17.8	19.3	n/a	13
SPAIN	13.3	14.8	10.5	17
UK	15.4	12.6	16.5	25

Meeting success criteria

The selection criteria for manual testing was set as those passing all automatic tests, or having ten or less failed testpoints. More detailed analysis of the automatic testing to WCAG 2.0 revealed that three websites passed all success criteria at level A, and of these two also succeeded at level AA (Table 9). All three had self declared conformance, one used WCAG1 AA logo and link and the other two provided a strong statement of accessibility policy.

The two stated websites were both national government and were both identified through the MeAC results, of which one was a recent replacement.

Table 9 Pass automatic tests at WCAG 2.0 level A

URL	Country	Type	Conformance claim	Automatic pass WCAG 2.0
http://www.rijks-overheid.nl/	NL	National	Statement	AA
http://www.la-moncloa.es/default.htm	Spain	National	Statement	AA
http://www.hants.gov.uk/local-government	UK	Local government	WCAG 1 AA	A

In total, 23 of the government and public body websites had ten or less failure points and were selected for manual inspection. None of the certified websites passed all elements of the automatic testing but 12 had ten or less failure points. There were 11 self declared websites having ten or less failure points and including three passes. (Table 10)

The results of automatic testing for the Commercial organisations found none that passed automatic testing to WCAG 2.0 level A and just one in each category of claim had 10 or less failures. This included one of the three commercial websites claiming WCAG 2.0 AA. (See Table 10).

Of the worst performing sites, one-third had 21 or more failure points. The worst ten results for the government and public bodies websites were found to have between 27 and 37 failure points, with four of these being certified sites and six being self declared. These self declared websites consisted four of the .EU websites, one of .ORG website and one health body. The worst performing website had a .EU web address and displayed WCAG 1 level A logos.

Of the worst performing commercial websites, half the sample had 21 or more failure points. The worst ten results were found to have between 22 and 37 failure points. Six of these were certified, three had WCAG logos and links and one provided a statement. The worst performing Commercial site was from the UK and declared conformance to WCAG 2.0 level A.

Table 10 Summary results of number of websites passing WCAG 2.0 testpoints

Conformance claim	Government and public body		Commercial	
	Certified	Self declaration	Certified	Self declaration
Pass automatic tests to WCAG 2.0	0	3	0	0
10 or less testpoints failed	12	8	1	1
11-20 testpoints failed	15	12	5	5
21 or more testpoints failed	10	14	6	6

7. Results of manual testing

Five pages were selected for detailed manual inspection at WCAG 2.0, level A from each website which had met the selection criteria from the automatic tests. As shown in Table 11, just two websites passed all manual check points and these were both certified government and public body websites. One of these was certified by PubblAccesso, Italy and the other by Drempeelvrij, Netherlands. The overall average for all 23 manually tested government and public body websites was 4.3 failures per website.

None of the eleven self declared sites passed all checkpoints. The best website had just two failures, and was a national government site from Spain carrying a declaration to WCAG 1 AA. The worst results were for a website that had eight failures and carried a declaration to WCAG 1 AA. Only two websites declared to WCAG 2 A or AA and these were found to have 5 and 4 failures respectively. The declared government and public body websites had an average of 5.0 criteria failed per website.

Of the two Commercial websites tested manually, the certified website was found to have 3 failures, and the self declared website had 7 failures.

Table 11 Summary results of manual tests for Government and public bodies

Certification				Declaration			
Certification	Country	Type	WCAG 2 Fails at level A	Declaration	Country	Type	WCAG 2 Fails at level A
Aenor	Spain	Local government	4	WCAG 2 AA	Italy	Public body - health	4
Aenor	Spain	Local government	7	WCAG 2 A	Spain	Public body - health	5
BITV BIK	Germany	National government	4	WCAG 1 AA	Spain	National	2
Drempeelvrij	Netherlands	National government	0	WCAG 1 AA	.EU	Public body	6
Drempeelvrij	Netherlands	Public body	6	WCAG 1 AA	UK	Local government	7
PubblAccesso	Italy	National government	0	WCAG 1 AA	Italy	Local government	8
PubblAccesso	Italy	Local government	2	Statement	Netherlands	National	4
PubblAccesso	Italy	Local government	6	Statement	Spain	National	4

See it right	UK	Local government	4	Statement	UK	National	4
Shaw Trust	UK	Local government	5	Statement	UK	National	5
Technosite	Spain	National government	1	Statement	UK	National	6
Technosite	Spain	Local government	5				

7.1 Analysis by success criteria

The detailed results of the manual test were further analysed to try and identify differences between certified and self declared websites. Altogether, there were 99 failures identified in relation to 23 checkpoints inspected. Of these, 44 failures were from certified websites and 55 were from self declared websites. The certified websites had failures in relation to 15 criteria and the self declared websites had failures in relation to 18 criteria.

Just five criteria from WCAG 2.0, level A account for around half of all failures. As shown in Table 12, more than half the websites failed Criteria 1.1.1 relating to the provision of text alternatives for non-text content (see Appendix 1 for list of WCAG 2.0 level A criteria.)

Table 12 Top 5 failures of WCAG 2.0 level A criteria

WCAG 2.0 criteria	1.1.1	1.3.1	2.4.4	3.3.2	4.1.2	Total No. of sites
Certified	6	4	3	4	3	12
Self declared	7	5	6	5	5	11
Total	13	9	9	9	8	23

As well the requirement to add text labels to pictures, Criteria 1.1.1 applies to the labelling of buttons and other navigational elements where the designer has chosen to use an image rather than text, as well as search boxes and multimedia elements. In addition purely decorative items should be labelled in a way that allows them to be ignored. A further examination of Criteria 1.1.1 revealed qualitative differences in problems identified.

An analysis of the results in relation to Criteria 1.1.1. found that the top four certified websites had no failures of 1.1.1. However, six websites had potentially serious failures that could cause difficulties affecting navigation or identification of multimedia elements. The remaining seven failures had potentially minor difficulties and may be due to a difference of opinion as to the relevance of a pictorial element or over-enthusiastic labelling of a decorative item, or the result of a single instance of a missing relevant picture label.

The other three most common failures (Criteria 1.3.1 Information and relationship, 2.4.4 link purpose and 3.3.2 labels) all make demands for appropriate text labels where the required information, control function or link cannot be programmatically determined. The fifth criteria (4.1.2 name, role value), on user interface elements was found to particularly relate to form design issues. The expert evaluator noted some inter-relationships apparent between the failures of these elements and the design of search boxes and forms. The certified sites appeared to be less likely to have problems with these elements.

7.2 National variations

Of the top three best performing certified government and public body websites, one was from the Netherlands and one from Italy and one from Spain. The results of the manual tests revealed no clear pattern of national variation. For example, three websites were certified by PubblAccesso Italy, of which one had no failures, one had two failures detected and the other had six. Two websites were certified by Drempelvrij Netherlands, of which one had no failures and the other six failures detected.

Overall, there is some suggestion that the websites selected from Italian PubblAccesso certification register performed better in the combined automatic and manual tests. However there is no clear pattern of websites from one country or one certification scheme having a better or worse result at the manual testing level. The websites selected from Spain were more successful at passing the automatic tests, with two from AENOR and two from Technosite meeting the selection criteria. It is noted, that as a result of the automatic tests, only one of the ten government and commercial websites certified by BIK BITV, Germany met the criteria for selection for manual testing.

Table 13 Individual certified website manual test results per country

Country	Certification scheme	WCAG 2 Manual Fails at A
Germany	BIK BITV	4
Italy	PubbliAccesso	0
Italy	PubbliAccesso	2
Italy	PubbliAccesso	6
Netherlands	Drempelvrij	0
Netherlands	Drempelvrij	6
Spain	Aenor	4
Spain	Aenor	7
Spain	Technosite	1
Spain	Technosite	5
UK	See it right	4
UK	Shaw trust	5

Of the self declared website no national pattern emerges (Table 14). Overall the results from the

three Spanish sites were slightly better and more consistent than those from the four UK sites.

Table 14 Individual self declared website manual test results per country

Country	WCAG claim	WCAG2 Automatic test Fails at A	WCAG 2 Manual test Fails at A
.EU	WCAG 1 AA	3	6
Italy	WCAG 1 AA	8	8
Italy	WCAG 2 AA	8	4
Netherlands	Statement	AA Pass	4
Spain	Statement	AA Pass	4
Spain	WCAG 1 AA	6	2
Spain	WCAG 2 A	9	5
UK	Statement	4	4
UK	Statement	6	5
UK	Statement	4	6
UK	WCAG 1 AA	A Pass	7

8. Discussion

Some websites showed excellent progress towards accessibility, for example, a German government site (BMAS) which was certified by BIK BITV (See Figure 4). The site performed well in automatic testing with only one failure point, and was in the top five following manual testing. As well as meeting most accessibility criteria successfully, it additionally provided some information in multimedia using national sign language.

Figure 4 Screenshot <http://www.bmas.de/portal/16702/startseite.html>



The 23 manually tested websites from government and public bodies and two commercial websites all showed that some effort had been made to meet accessibility guidelines, however over half failed Criteria 1.1.1. Other studies have shown that failures of non-text equivalence are very common at WCAG 1 and WCAG 2.0.

An in-depth analysis of WCAG 2.0 criteria was conducted in order to better distinguish between those sites making significant effort towards accessibility but having failures at the most basic levels affecting perception, specifically text equivalence and operation, specifically keyboard operation.

It is recommended practice that websites should meet WCAG 2.0 level AA and WCAG Conformance guidance further demands that there should be no failed criteria on any page showing the conformance logo. Very few of the manually inspected websites managed to meet all success criteria for level A. For the purposes of this study and to support further comparison of multiple certified and self declared websites we have given special attention to four of the success criteria from level A and drawn from the 10 most commonly failed criteria in order to represent different activities and the types of barrier faced by users with a range of different impairments. These include the most common failed Criteria 1.1.1 and three others that are operationally important to accessing core tasks of navigation, content and form filling:

- Criteria 1.1.1 (text equivalence)
- Criteria 2.1.1 (keyboard operation)
- Criteria 2.4.1 (bypass blocks) which includes the provision of skip navigation and enables the screen reader software to jump to the main content
- Criteria 3.3.2 (labels) which includes labelling the input area of forms correctly.

The proposed ranking scheme for measuring progress towards conformance (see Introduction 1.3) was revised to take account of the results which showed that most of the manually tested websites had taken real effort to make it accessible and to conform to accessibility guidelines but nevertheless had not always implemented everything correctly. We have combined overall results for each website with their success at meeting the four selected criteria above, and used this to modify the proposed ranking scheme:

- A: Fully accessible – for the purposes of this study this category was reserved for small number of websites that passed all WCAG 2.0 success criteria at level A or with only a single minor failure instance.
- B: The website shows a real effort towards accessibility but not always implemented correctly. Minor issues relating to criteria 1.1.1, or no more than one of the task critical criteria 2.1.1, 2.4.1, or 3.3.2 and no more than four fails in total.
- C: As B, the website shows real effort towards accessibility but with significant failures including criteria 1.1.1 and no more than 5 failure points at level A.
- D: The website shows limited accessibility features (eg: text resize widget and a "skip navigation" link on the page and add alt attributes to images), but fails to successfully implement selected and other criteria at level WCAG 2 level A.
- E: The website does not show any evidence of accessibility awareness.

The full details are shown in Table 15. Using these categories reveals some differences between the certified and declared websites by providing a more detailed inspection of selected criteria. Of the government and public body websites, six are in the higher level categories A and B, whereas only 3 of the self declared sites achieve category B only.

In the lower categories, one quarter (3 out of 12) of the certified websites are in category D whereas nearly half (5 out of 11) of the declared websites are in category D. The self declared commercial website is also in category D.

All the manually tested websites showed some evidence of accessibility awareness. The results of the automatic tests showed that the ten websites performing worst in the automatic tests had between 29 and 37 failure points. However, one of the worst performing sites tested automatically included skip links and some images were appropriately labelled indicating there was some understanding of accessibility issues but also some serious misunderstandings.

Table 15 Detailed analysis of individual websites and success category rating

Access Category Rating A = Fully accessible at WCAG 2.0 A, B = Real effort towards accessibility, C = Some accessibility features implemented, D = Some evidence of accessibility awareness, E= No evidence of accessibility awareness

Reference number: cg = certificated government and public body, wg = WCAG logos of conformance, sg = statement of accessibility, COM = commercial.

Ref	Success criteria 1.1.1	Success criteria 2.1.1	Success criteria 2.4.1	Success criteria 3.3.2	No. of criteria failed at level A	Category ranking	Ref	Success criteria 1.1.1	Success criteria 2.1.1	Success criteria 2.4.1	Success criteria 3.3.2	No. of criteria failed at level A	Category ranking
Certified Government and public body							Self declared Government and public body						
cg46					0	A	wg55	f				2	B
cg50					0	A	sg58				f	4	B
cg53					1	A	wg06				f	4	B
cg17				f	2	B	wg04	f				5	C
cg41					4	B	sg57	f		f		4	C
cg22	f				4	B	sg59	f		f		4	C
cg07	f	f		f	4	C	wg71	f				6	D
cg25	f	f			5	C	sg60	f	f		f	5	D
cg26	f		f		5	C	sg62			f		6	D
cg18	f		f		6	D	wg31		f	f	f	7	D
cg64	f			f	6	D	wg29	f			f	8	D
cg09		f	f	f	7	D							
Certified commercial							Self declaration commercial						
Com 9					2	B	com6	f				7	D

9. Conclusions

This study set out to gather evidence of accessibility awareness and success at meeting accessibility guidelines which would enable a distinction to be made between the effectiveness of certification and self declaration. The study examined websites from both the public and commercial sectors.

It is now two years since the introduction of WCAG 2.0, (December 2008) and this standard was adopted as the measure for automatic testing of 100 websites and the manual testing of those passing the automatic tests. Currently the national certification bodies and those making self declaration are mostly still making reference to WCAG 1.0 and may make use of additional guidelines at the national level. Some allowance should be made for websites and test procedures that have not yet transitioned to WCAG 2.0, however many of the basic requirements such as alternative text for images and keyboard access have an important place in both sets of guidelines.

The selected websites making some form of declaration about conformance to web accessibility represent some of the best current practice in trying to meet accessibility guidelines. There is some indication that certified sites performed better within this study, however there was a disappointing level of failed criteria at WCAG 2.0 level A.

What this study demonstrates is the need for a high level of commitment and vigilance, as well as awareness and skills to meet the latest guidelines, techniques and recommendations of best practice. Certification on its own does not guarantee that a website is fully accessible or meets all current guidelines.

Self declaration is by definition an unregulated and voluntary choice. Recognition must be given to those organisations with strong internal policies and commitment that are making good progress, if not always meeting all the latest guidelines on all pages. Those choosing to invest time and effort in developing and maintaining an accessible website are important beacons of good practice. It would be valuable to those with access needs to have better options for discovering an accessible website as well as providing better support for studies monitoring progress towards eAccessibility.

Overall, it may well be that the intention of the website owner and developer to succeed in meeting accessibility requirements and address other quality issues is currently more effective than certification. Both models of conformance declaration are important and currently appear to serve different markets. National government sites appear to be more likely to use either a recognised certification scheme or else to make a strong statement of accessibility. Self declaration is an important alternative for those that have invested in internal or external expertise and marks out an important intention to develop and maintain an accessible website.

It is recommended that the certification bodies should move towards the use of WCAG 2.0 and to encourage the use of this guidance at national level. In either case, the developers who make use of certification or self declaration need to ensure that there is a plan for maintenance and retesting to ensure that the websites remain accessible and provide clear statements of accessibility policy that reflect their current plans and actions to achieve a consistent standard of accessibility. Finally W3C should initiate some levels of quality control on the use of the WCAG labels to ensure that they continue to have value to people with disabilities.

10. References

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Including: Annex II Overview of Accessibility Related Obligations Imposed on Website Owners in Selected Member States & of National Sources of Data on Compliance reported in Study on "Web accessibility in European countries: level of compliance with latest international accessibility specifications, notably WCAG 2.0, and approaches or plans to implement those specifications" available from http://ec.europa.eu/information_society/activities/einclusion/library/studies/docs/access_compl_y_annex2.pdf
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11. APPENDIX

- 1. WCAG 2.0 criteria level A and failed criteria**
- 2. List of government and public body websites**
- 3. List of commercial websites**
- 4. Background to certification schemes**
- 5. Automatic Accessibility tool**
- 6. Methodology for automatic and manual testing of website conformance**

1. WCAG 2.0 criteria level A

Certified	Priority	Description	No of websites failing criteria (n=23)
1.1.1	A	Text alternatives for non-text content like images	13
1.2.1	A	Audio-only and video-only	3
1.2.2	A	Time based media	4
1.2.3	A	Time based media	3
1.3.1	A	Info and relationships can be programmatically determined	9
1.3.2	A	Meaningful sequence	0
1.3.3	A	Low or no background audio	0
1.4.1	A	Information not presented using color alone	0
1.4.2	A	Audio control	1
2.1.1	A	All features operable through keyboard	5
2.1.2	A	No keyboard trap	1
2.2.2	A	Pause, stop, hide	2
2.3.1	A	Three flashes in a second	1
2.4.1	A	Bypass blocks	7
2.4.2	A	Page titled	2
2.4.3	A	Focus order	5
2.4.4	A	Link purpose obvious from link text, or link context	9
3.1.1	A	Language of page	0
3.2.1	A	Receiving focus does not change context	7
3.2.2	A	Changing user-interface settings do not change context	3
3.3.2	A	Labels or instructions for user input	9
4.1.1	A	Parsing - ensure valid mark-up	7
4.1.2	A	Name and role can be programmatically determined	8

2. List of government and public body websites tested automatically

URL	Country	Category	Certification
http://www.gijon.es/	Spain	LG	aenor
http://www.asturias.es/	Spain	LG	aenor
http://www.ayto-siero.es/	Spain	LG	aenor
http://www.bilbao.net	Spain	LG	aenor
www.uke.uni-hamburg.de	Germany	health	BITV
www.bayern.de	Germany	LG	BITV
www.schleswig-holstein.de	Germany	LG	BITV
www.rheinberg.de	Germany	LG	BITV
http://www.bmas.bund.de/	Germany	Nat	BITV
www.bmfsfj.de	Germany	Nat	BITV
http://www.bundesregierung.de	Germany	Nat	BITV
www.foerderpreis-ökologischer-landbau.de/	Germany	Nat	BITV
http://www.emmen.nl/	NL	LG	drempelvrij
http://cms.dordrecht.nl/	NL	LG	drempelvrij
http://www.papendrecht.nl/	NL	LG	drempelvrij
http://overheid.nl/	NL	Nat	drempelvrij
http://www.svb.nl/int/nl/index.jsp	NL	Nat	drempelvrij

URL	Country	Category	Certification
http://www.rijks-overheid.nl/	NL	Nat	Statement
http://www.la-moncloa.es	Spain	Nat	Statement
http://www.direct.gov.uk/en/index.htm	UK	Nat	Statement
http://www.dwp.gov.uk/	UK	Nat	Statement
http://www.dh.gov.uk/	UK	Nat	Statement
http://www.justice.gov.uk/index.htm	UK	Nat	Statement
http://www.istruzione.it/web/hubb	Italy	Nat	Statement
http://www.provincia.ragusa.it/index.php	Italy	LG	WCAG 1 A
http://www.neat-hportalbot.gov.uk/	UK	LG	WCAG 1 A
http://europass.cedefop.europa.eu	.EU	pbp	WCAG 1 A
http://ec.europa.eu/youth/index_en.htm	.EU	pbp	WCAG 1 A
http://ec.europa.eu/education/external-relation-programmes/doc72_en.htm	.EU	pbp	WCAG 1 A
http://www.glosspct.nhs.uk/	UK	health	WCAG 1 AA
http://www.hants.gov.uk/local-government	UK	LG	WCAG 1 AA
http://www.provincia.pisa.it/	Italy	LG	WCAG 1 AA
http://www.southend.gov.uk/local-government	UK	LG	WCAG 1 AA
http://www.provincia.arenzo.it/	Italy	LG	WCAG 1 AA

http://www.tweedekamer.nl/	NL	Nat	drempelvrij
http://www.burg.erlink.nl	NL	pbp	drempelvrij
http://watkanikdoen.nl/	NL	pbp	drempelvrij
http://www.comune.napoli.it/home	Italy	LG	PA
http://www.prefettura.it/laquila/	Italy	LG	PA
http://www.padovanet.it/index.jsp	Italy	LG	PA
http://scilla.asmenet.it/	Italy	LG	PA
http://www.prefettura.it/	Italy	Nat	PA
http://www.camera.it/	Italy	Nat	PA
http://www.lavoro.gov.it/Lavoro	Italy	Nat	PA
www.solidarietasociale.gov.it	Italy	Nat	PA
http://www.thurrock.gov.uk/	UK	LG	See it Right
http://www.eastsussex.gov.uk/default.htm	UK	LG	See it Right
http://www.homeoffice.gov.uk	UK	Nat	See it Right
http://www.aberdeencity.gov.uk	UK	LG	Shaw Trust
http://wales.gov.uk	UK	LG	Shaw Trust
http://www.blaenau-gwent.gov.uk	UK	LG	Shaw Trust
http://www.jcyl.es	Spain	LG	Technosite
http://www.mtin.es/index.htm	Spain	Nat	Technosite

http://www.manchester.gov.uk/localgovernment	UK	LG	WCAG 1 AA
http://www.warham-tc.gov.uk/localgovernment	UK	LG	WCAG 1 AA
https://www.redtrabaja.es	Spain	Nat	WCAG 1 AA
http://www.focusk3d.eu/	.EU	pbp	WCAG 1 AA
http://www.europetition.eu/	.EU	pbp	WCAG 1 AA
http://www.aegis-project.eu/	.EU	pbp	WCAG 1 AA
http://www.fecyt.es/	Spain	pbp	WCAG 1 AA
http://www.enisa.europa.eu/	.EU	pbp	WCAG 1 AA
http://www.ecdl.com/	.EU	pbp	WCAG 1 AA
http://www.epforum.eu/	.EU	pbp	WCAG 1 AA
http://www.junta.deandalucia.es	Spain	health	WCAG 2 A
http://www.salford.nhs.uk/	UK	health	WCAG 2 A
http://www.comune.cesaro.me.it/	Italy	LG	WCAG 2 A
http://www.comunemonterchi.it/	Italy	LG	WCAG 2 A
http://www.sdsvaldichianasene.se.it/	Italy	health	WCAG 2 AA
http://www.comune.trento.it/	Italy	LG	WCAG 2 AA
http://sito.comune.trento.it/	Italy	LG	WCAG 2 AA
http://www.comunemonterchi.it/	Italy	LG	WCAG 2 AA
http://musicproject.eu/ECprojectMUSICC	.EU	pbp	WCAG 2 AA

http://www.msc.es/	Spain	Nat	Technosite
http://www.educacion.es/portada.html	Spain	Nat	Technosite

http://portal.etsi.org/stfs/STF_HomePages/STF354/Default.aspx?Selection=AboutUs	.org	pbp	WCAG 2 AA
http://musicproject.eu/ECprojectMUSICC	UK	pbp	WCAG 2 AA

3 List of commercial websites tested automatically

URL	Country	Category	Certification	URL	Country	Category	Certification
https://www.cajastur.es/particulares/	Spain	finance	AENOR	http://www.travelinescotland.com/	UK	travel	WCAG 1 A
http://www.buecherhallen.de/	Germany	commerce	BITV	http://www.parador.es/	Spain	commerce	WCAG 1 AA
www.einfach-teilhabe.de	Germany	pwd	BITV	http://www.uni-giessen.de	Germany	education	WCAG 1 AA
https://www.snsbank.nl	NL	finance	drempelrij	http://www.aicanet.it/	Italy	education	WCAG 1 AA
http://www.veolia-transport.nl/	NL	travel	drempelrij	http://www.ncbs.co.uk/	UK	finance	WCAG 1 AA
http://www.bartimeus.nl/	NL	pwd	drempelrij	http://www.aftb.org.uk/	UK	pwd	WCAG 1 AA
http://www.unito.it/	Italy	education	PA	http://www.thebestbestbuys.com/	UK	commerce	WCAG 2 A
http://www.uniss.it/php/home.php	Italy	education	PA	http://www.anecop.es/	Spain	commerce	WCAG 2 AA
www.ferroviedellostato.it	Italy	travel	PA	http://www.learningnetworks.org.uk/show.php?id=340	UK	education	WCAG 2 AA
http://www.rnibcollege.ac.uk/	UK	education	See it Right	http://www.deutsche-bank.de	Germany	finance	Statement
https://www.mercadona.es/ns/index.php	Spain	commerce	technosite	http://www.rabobank.nl/	NL	finance	Statement

http://www.aena.es	Spain	travel	technosite
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http://www.nationalrail.co.uk/	UK	travel	Statement
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4. Background to certification schemes

This information is updated from that reported by:

CEN/BT/WG 185 (2008) "eAccessibility" European accessibility requirements for public procurement of products and services in the ICT domain (European Commission Mandate M 376, Phase 1) 2008-09-24

Country	Certification scheme	URL of certification	About the scheme
Italy	PubbliAccesso http://www.PubbliAccesso.gov.it/	http://www.PubbliAccesso.gov.it/logo/elenco.php :	The public agency CNIPA (Centro Nazionale per l'Informatica nella Pubblica Amministrazione - National Centre for IT in Government) designed the implementation rules for the Stanca law, including the general operational and organisational practices for achieving accessibility, the procedures for conformity assessment, and the market surveillance methods. Several organizations recognized by the Italian government and listed by the National Centre for Informatics in Public Administration (CNIPA).
Netherlands	Foundation Quality Mark drempelvrij.nl See:	http://www.drempelvrij.nl/registrer	The drempelvrij.nl quality mark has been set up at the request of and in cooperation with the Dutch government and all stakeholders involved. The Bartiméus Accessibility Foundation led the project, but transferred it to the drempelvrij.nl Quality Mark Foundation in 2005. The drempelvrij.nl Quality Mark Foundation took responsibility from then onwards for guaranteeing the quality and transparency of the Quality Mark and related documents with all stakeholders. Fifteen organizations contributed to the creation of the drempelvrij.nl quality mark. The quality mark includes an inspection service offered by accredited third parties and a resulting logo specifying the achieved accessibility level. This quality mark uses the UWEM evaluation methodology
Spain	AeNOR	http://www.accesible.aenor.es/index.asp?MP=3&MS=0&MN	AENOR is the Spanish Standards Body. AENOR offers a web site accessibility certification scheme, which conforms to EN

Country	Certification scheme	URL of certification	About the scheme
		=1&r=1280*1024	<p>45011:1998 and ISO/IEC Guide 65</p> <p>The certification is based on the Spanish standard UNE 139803:2004. This standard is based on and compatible with WCAG 1.0.</p> <p>AENOR certifies the web site accessibility by inspecting the web pages (both automatically and manually), and also conducts an audit of the processes put into practice to ensure accessibility maintenance and improvement (a web accessibility management system).</p> <p>http://www.accessible.aenor.es/</p>
Spain	Technosite	http://www.technosite.es/auditoria_entidades.asp :	<p>Euracert was a unique example of mutual recognition between conformity assessment bodies in Europe. It is an agreement between three private organizations: AnySurfer in Belgium, Accessiweb in France and Technosite in Spain. They share the same accessibility requirements (WCAG 1.0) and the same method for accessibility evaluation (UWEM).</p> <p>Technosite belongs to the Fundación ONCE's business group, Fundosa, set up in 1989 with the mission of creating jobs for persons with disabilities.</p>
Germany	BITV-Test, BIK (Barrierefrei Informieren und Kommunizieren)	http://testen.bitvtest.de/index.php?a=sl&pid=90	<p>BIK is an acronym of „barrierefrei informieren und kommunizieren“ (accessible information and communication). The aim of the project is to improve the accessibility of web and intranet sites and thereby, increase employment opportunities for people with disabilities.</p> <p>The project is funded by the Bundesministerium für Arbeit und Soziales (the German Federal Ministry for Employment and Social Affairs).</p> <p>http://www.bitvtest.eu/about_us.html</p>
UK	See it right/Surf it right	http://www.rnib.org.uk/professionals/webaccessibility/accessiblewebsitedirectory/Pages/accessible_website_directory.aspx	<p>RNIB is a UK organisation for blind and visually impaired people. The Web Access Centre pages offer information and advice on making your website accessible to everyone. Although you're on RNIB's website, we'd like to flag up from the start that web accessibility is a pan-disability subject.</p>

Country	Certification scheme	URL of certification	About the scheme
			<p>When a website displays an RNIB award logo, it shows that the site has been carefully checked, assessed and independently verified to be sure that it meets a high level of web accessibility.</p> <p>http://www.rnib.org.uk/professionals/webaccessibility/services/siteaudits/Pages/site_audits.aspx</p>
	Shaw Trust	http://www.healthyworklife.org.uk/our_clients1	<p>Shaw Trust Web Accreditation Service can audit and accredit websites in line with W3C guidelines against WCAG 1.0 and WCAG 2.0. They have a test team who are users of assistive technology. Shaw Trust is introducing SortSite™ - an automated accessibility testing tool from PowerMapper Software as part of their web accessibility services.</p> <p>http://www.healthyworklife.org.uk/web_accessibility_accreditation_service1</p>

5 Automatic Accessibility tool

	Tool name	URL	About the tool
	SortSite™ Automatic Accessibility tool	http://www.powermapper.com/products/sortsite/checks/accessibility-checks.htm	<p>SortSite™ checks sites against the W3C WCAG 1.0 and 2.0 accessibility standards, and compliance with Section 508 of the Rehabilitation Act.</p> <p>In relation to accessibility the SortSite™ tool can be set to test:</p> <ul style="list-style-type: none">Section 508 - 34 checkpoints covering 15 guidelinesWCAG 1 Priority A - 31 checkpoints covering 17 guidelinesWCAG 1 Priority AA - 32 checkpoints covering 23 guidelinesWCAG 1 Priority AAA - 11 checkpoints covering 10 guidelinesWCAG 2 - over 100 checkpoints covering A, AA and AAA guidelines

6. Methodology for automatic and manual testing of website conformance

Testing of the selected 100 websites was carried out by Shaw Trust who selected SortSite™ Professional to run automated testing of conformance to WCAG 2.0. The manual inspection was carried out by a Shaw Trust web accessibility expert who conducted a manual test programme supported by a number of additional test tools.

Automatic testing

Sortsite™ Professional version was selected in order to run automatic testing of the selected websites. This tool was selected for its ability to run and report on tests to both WCAG 1.0, 2.0 as well as Section 508, and to provide a detailed report. The Professional version allows the tester to adjust parameters and to download a full report. In carrying this study of 100 websites the registry entry was changed to meet the requirement to check the first 25 pages to be reached from the homepage. The automatic tool used 95 checkpoints at level A, 7 at AA and 11 at AAA derived from the WCAG 2.0 success criteria and the related documentation in Techniques and Failures for Web Content Accessibility Guidelines 2.0 (<http://www.w3.org/TR/WCAG20-TECHS>).

The automatic test results from each website were combined to produce a summary result sheet. These results include the number of SortSite™ checkpoints failed and may include some instances of false negatives and positives, which is common for automated checking tools. These results were subject to minor review to remove duplicated results.

Manual inspection

The results from the initial automatic testing by SortSite™ Professional were used to select websites which passed all automatic tests to priority level A or AA. The criteria for progression to manual testing were adjusted to include those websites having ten or less reported failures at priority level A. This allowed for the possibility of investigating false negatives and those websites that made their declaration to WCAG 1.0 and had not addressed a WCAG 2.0 requirement.

Where the automatic test results showed that problems appeared on specific page location URLs on more than one occasion, those URLs were listed and the top five URL's with the most issues were chosen for manual inspection. Pages were tested in their own language and no English versions were used.

As shown in the report sample [Table 16] the report identified both the WCAG 2.0 success criteria and common failures described in the Techniques and Failures document. In the sample below, the first failure identified relates to "F52: Failure of Success Criterion 3.2.1 and 3.2.5 due to opening a new window as soon as a new page is loaded." Only the success criteria 3.2.1 is a level A criteria. The comment indicates why the web page failed the criteria. Opening new windows without any warning in effect 'breaks' the simple navigational strategy of pressing the 'back' button.

The second failure is an instance of failing success criteria 3.3.2, F82: Visually formatting a set of phone number fields but not including a text label. The results were analysed in relation to the number of different WCAG 2.0 success criteria failed. Some success criteria, in particular success criteria 1.1.1 is subject to a number of different tests and has multiple common failures. The results for this criteria were further reviewed in relation to the specific test applied and potential effect of the failure.

Table 16 Example of report from SortSite Professional

WCAG2 techniques and failures	WCAG 2.0 Success criteria	Priority	Description	Pass/fail	URL	Comment
F52	3.2.1	A	Receiving focus does not change context	Fail	http://www.url	When tabbing through [pagename] a new window opens with each tab
F82	3.3.2	A	Labels or instructions for user input	Fail	http://www.url	Missing fieldset

Browsers

Cross browser testing was performed on:

- Internet Explorer v8
- Mozilla Firefox v3.6

Tools

The following tools were used to identify issues:

- SortSite™ Professional <http://www.powermapper.com/products/sortsite/checks/accessibility-checks.htm>
- WAT 2.0 toolbar for IE <http://www.paciellogroup.com/resources/wat-ie-about.html>
- The Wave toolbar for Firefox <http://wave.webaim.org/toolbar>
- Firefox's own accessibility evaluator <https://addons.mozilla.org/en-US/firefox/addon/accessibility-evaluation-toolb>
- Total Validator add on for Firefox <https://addons.mozilla.org/en-us/firefox/addon/total-validator/>