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An overview of Web Accessibility in Greece: A Comparative Study 2004-2008

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Abstract

This communication reports on the results of a web accessibility audit of public Websites in Greece. The audit was conducted in 2008 by the Human Computer Interaction Laboratory of the Institute of Computer Science of FORTH, in its capacity as the Greek National Contact Centre of the European Design for All e-Accessibility Network.

In an earlier eAccessibility study in 2004, that evaluated approximately 250 public and commercial web sites in Greece, 73 per cent of the sample failed to meet the most basic requirements for web accessibility [1]. Four years later, in the context of a re-audit, a similar sample was examined for compliance with the same web accessibility standard (WCAG 1.0), as set by the Web Accessibility Initiative of the World Wide Web Consortium. The accessibility checks were conducted during the period March-September 2008.

A comparison of the results indicates that although new web development technologies may have been employed, instead of improving the overall status of e-accessibility, this has resulted in a serious deterioration in overall accessibility levels. Such findings --85 percent of sites failed to comply with Level A--suggest that Greek websites are likely to present even more significant access barriers to people with disability than in the past. As Web Accessibility is poorly understood and, until today, new platforms have failed to deliver products that conform to WCAG, the need emerges for a concrete legislative framework to set accessibility specifications for all public websites in Greece.

Author Keywords

Web accessibility, benchmarking, accessibility evaluation.

1. Introduction

From its foundation, the World Wide Web was conceived and implemented as a device-independent multi-platform means of information delivery. One of its initial endeavours was to improve the quality of life of all citizens, the efficiency of social and economic organisation, and to reinforce cohesion avoiding discrimination. Consequently, making digital content available and accessible for all through the Web is a fundamental requirement. However, as with all major technological changes, the introduction of the Web established new "digital barriers" for people with disability, since most of the content has been made available in inaccessible forms.

In its early years, when the Web was primarily text-based, it was easier for a blind person to access information utilizing a screen reader. Since then, new technologies have emerged offering sophisticated WYSIWYG solutions, which rely more on the artistic skills of the web designer/developer rather than his/hers web accessibility knowhow. Recently, the European Commission has recognised the importance of eAccessibility [4, 5, 15], and, in the spirit of the recent i2010 strategy [7], has placed major importance on eInclusion, legislation and accessibility certification.

To investigate the current status in the EU, a number of studies have been undertaken [11, 12], targeted mainly to "public web sites" (i.e., government, health, online libraries). In order to follow the evolution of web accessibility in Greece, the Human Computer Interaction Laboratory of the Institute of Computer Science of FORTH (ICS-FORTH), in its capacity as the Greek National Contact Centre of the European Design for All e-Accessibility Network (EDeAN), conducts periodical audits regarding the current status of eAccessibility. This communication reports on the findings of an audit conducted in 2008, using an appropriate combination of automatic and manual testing techniques. The key goal of this audit was to see if indeed there was any measurable improvement or decline in the accessibility level of websites in Greece since the last audit (2004).

2. Legal framework for eAccessibility in Greece

Currently, there is no mandatory legislation regarding eAccessibility at the European level. There is, however, an explicit political commitment reflected in several communications [2, 5, 6, 15] and in the i2010 Action Plan [7]. In Greece, although there is no direct law regarding the accessibility of public websites [3, 4], general accessibility provisions already exist, as the revised (2001) Hellenic Constitution states that "*everyone has the right to participation in [the] Information Society*" (Article 5A, Section I). Consequently, the facilitation of access to electronic information, as well as the production, exchange and dissemination of this information, is an obligation of the State for public Web sites. However, Web Content Accessibility Guidelines 1.0 (WCAG 1.0) are used as a web accessibility standard only in a small number of National funded projects, and no direct attention to accessibility has been paid yet for privately owned web sites.

3. Methodology

In 2004, in the context of a study conducted by the University of Crete [1], a total of 256 websites of public and commercial nature were selected to be evaluated for accessibility. As the study was mainly targeted to public web sites, the initial sample selection was based on the Alexa Traffic Rankings of 17 October 2003, and enriched with major governmental services, hospitals, educational institutes, as well as industry related e-services as a representative sample of the Greek Web, to ensure that important websites for citizens were included. Web sites were classified into two main domains: governmental websites (public sector), including for example all national Ministries such as Social Affairs, Health, Education, Employment, and private / sectoral websites (private sector), including the websites of national retail banks, the main telecommunication services and e-shops. They were evaluated for their conformance to WCAG 1.0 (levels A and AA).

The results of the automatic testing conducted across this sample, supported by manual testing by experts to ensure the accuracy of the results of the automated assessment, found relatively few sites that achieved even Limited Pass Level A conformance with WCAG 1.0. The analysis of the results obtained illustrated that 73 per cent of the websites checked failed to meet the most basic requirements for web accessibility. Since then, most of these sites have been redesigned or updated. In addition, new e-services (e.g., e-health, e-banking) have been made available. As a consequence, this sample had to be re-examined, updated and enriched in order to remain representative.

Taking place in the second quarter of 2008, a follow-up study of the new sample was conducted by ICS- FORTH. This follow-up examined the eAccessibility levels of three pages from each website regarding the website's adherence to the WCAG 1.0 levels A and AA (minus subjective 14.1), as well as the validity of the used markup language. The testing methodology again employed a combination of manual and automated techniques used to evaluate the homepage and two other selected key pages from each website. For this purpose, the study utilized the Bobby software[1] of the Center for Applied Technology, the W3C's Markup Validation Service[2], the Colour Contrast Analyser[3], the WAVE Toolbar[4], as well as the judgment of accessibility experts in cases were manual input was required (i.e., manual checks, rendering without style sheets, scripting on-off, alternatives to JavaScript, use of placeholder images without alternative text, accuracy of alternative text description, markup validity pseudo errors, presence of frames, animation, image-maps, non-Greek language in content, pop-ups, utilization of keyboard, depreciated techniques for text alignment, use of , etc). For the purposes of this study the following assumptions were made:

- a public sector web site is a site provided by the Greek government or organizations of social ownership that are funded directly by the government, and
- a private sector web site is a privately owned website of a company or commercial organization of any kind.

Figure 1 presents a graphic illustration of the sample composition.

[1] Bobby: http://www.cast.org/products/Bobby/index.html
[2] Markup Validation Service: http://validator.w3.org/
[3] Colour Contrast Analyser: https://addons.mozilla.org/en-US/firefox/addon/7313
[4] WAVE Toolbar: https://addons.mozilla.org/en-US/firefox/addon/6720

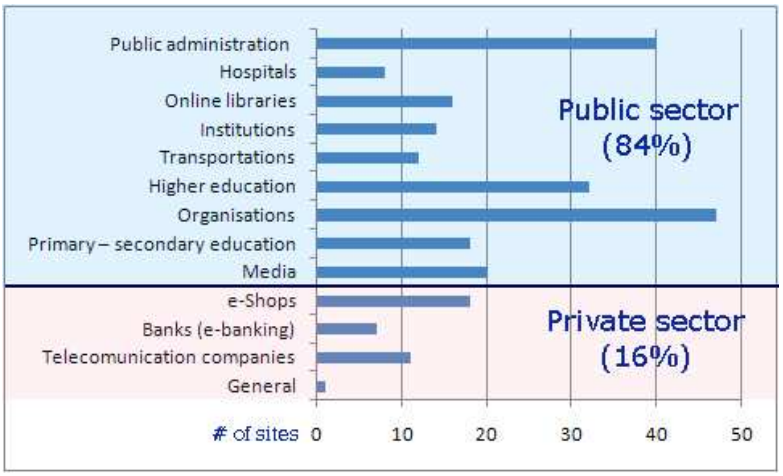

Figure 1: Composition of website sample

The evaluation was carried out between March and May 2008. Each page was given:

1. A rating for conformance with each of the Priority 1 checkpoints. The ratings were:
    a. "passed", if the specific element passed the criteria set out by the checkpoint, or the page did not contain the type of element, or specific error caused minor accessibility problems, and
    b. "failed" if the specific element did not meet the criteria set out by the checkpoint.

Manual checks indicated by Booby software were performed by experts.

2. A secondary rating of markup validity: creation in accordance with HTML, or XHTML, specifications (Guideline 3 - checkpoint 3.2 of WCAG 1.0 , Guideline 4.1 - checkpoint 4.1.1 of WCAG 2.0 require a valid HTML as a prerequisite for e-accessibility).

In accordance with the previous ratings and due to the fact that "Level A" of WCAG 1.0 indicates the most basic level of accessibility, the following labeling was given:

- Totally inaccessible (TI): Website fails multiple Priority 1 checkpoints and validity tests.
- Partially accessible (PA): Website passes the test for all Priority 1 checkpoints, including a range of checkpoints to be assessed manually. Failure instances of Priority 1 checkpoints are below specific quantitative thresholds or can be ignored.
- Highly accessible (HA): Website passes the test for all Priority 1 and 2 checkpoints that can be tested automatically and manually and passes validity test as well.

4. Results

The results show that, as in 2004, only a small number of websites provide a basic level of e-accessibility. Of the entire sample, only about 1 per cent of the websites can be acknowledged as "fully accessible", and 14 per cent as "partially accessible". The overall level of basic accessibility has worsened since the 2004 study, as 85 per cent of the websites failed in the new audit. The following figure illustrates the results regarding the overall accessibility level (*Figure 2*). In this graph, it is evident that 85% of web sites, compared to 79% in 2004, have serious accessibility problems, which make them practically inaccessible. A small group of 14% (compared to 20% in 2004) exhibit a number of minor accessibility problems but are highly usable, whereas only 1% (compared to 1% in 2004) do not have any accessibility problems at all. From these data, it can be argued that website accessibility in Greece has actually deteriorated from 2003 to 2008.

When looking separately at the categories of the sample, results from the category "public" are somewhat improved, but still cannot be characterised as satisfactory in absolute terms. For public sector websites, only 1% is fully accessible, while a 17% passes Priority 1 checkpoints. Consequently, the majority of websites (83%) are inaccessible as is the case for all websites in the category "private sector" (100%) (*Table 1*).

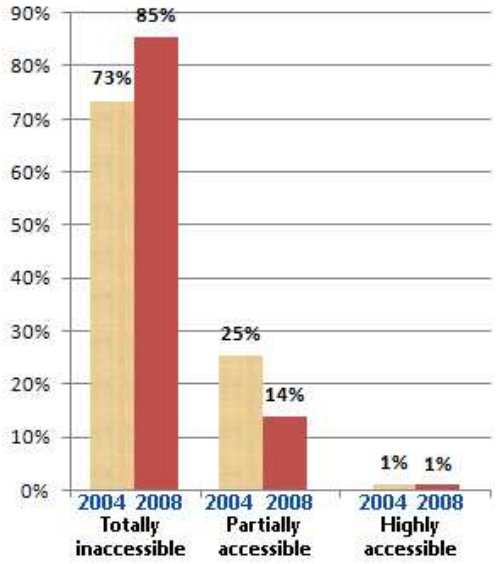

Figure 2: Overall accessibility level of websites checked

These findings seem to indicate that the situation has deteriorated slightly, when compared to the results obtained from the web accessibility test carried out in 2004. As for markup validity, 99,3% of the sample contained invalid markup.

With regards to specific WCAG Priority errors, it can be seen that the majority of websites (~90%) failed either one or two checkpoints (CPs), while none failed more than four. These results are illustrated in Figures 3 and 4.

Table 1: Website accessibility levels per sector (2004-2008)

	2004			2008		
	TI	**PA**	**HA**	**TI**	**PA**	**HA**
Public administration	63%	38%	0%	73%	25%	3%
Hospitals	75%	25%	0%	100%	0%	0%
Online libraries	81%	19%	0%	100%	0%	0%
Institutions	43%	43%	14%	79%	21%	0%
Transportations	83%	17%	0%	92%	8%	0%
Higher education	53%	47%	0%	69%	31%	0%
Organizations	87%	11%	2%	80%	17%	2%
Primary-secondary education	67%	33%	0%	94%	6%	0%
Media	85%	15%	0%	95%	5%	0%
Sub-total (public sector)	**71%**	**28%**	**1%**	**83%**	**17%**	**1%**
e-Shops	100%	0%	0%	100%	0%	0%
Banks (e-banking)	100%	0%	0%	100%	0%	0%
Telecomunication companies	100%	0%	0%	100%	0%	0%
General	100%	0%	0%	100%	0%	0%
Sub-total (private sector)	**100%**	**0%**	**0%**	**100%**	**0%**	**0%**
Totals	**73%**	**25%**	**1%**	**85%**	**14%**	**1%**

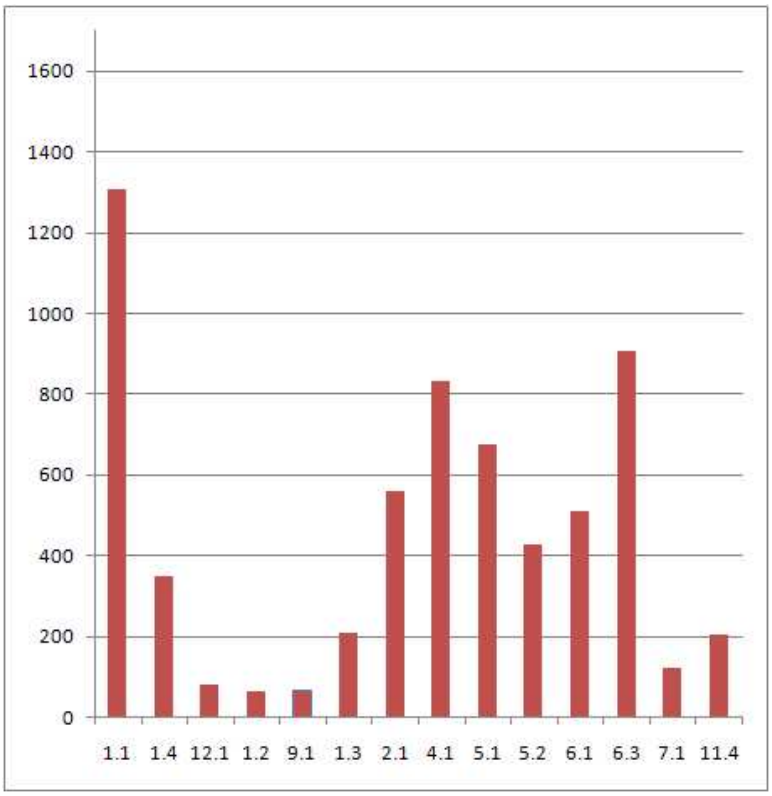

Figure 3: WCAG Priority 1 errors

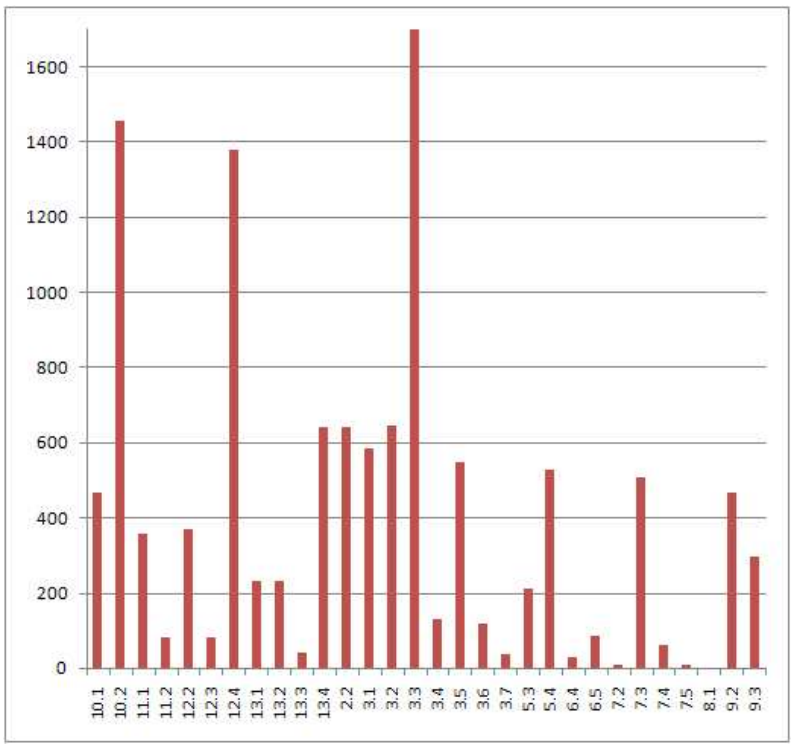

Figure 4: WCAG Priority 2 errors

In the “government” domain, more than half of the websites failed just one checkpoint, compared to about 30% in the “private sector” domain. The share of websites failing 3 or 4 checkpoints is quite low, varying between 10% and below

1%. This could indicate that some of the websites included in this test may only be a relatively short distance away from reaching at least basic accessibility levels. This step could be achieved if all instances of a single checkpoint failure were remedied for a given website.

The three most frequent checkpoints failed are 1.1, 6.3 and 4.1 (in order of frequency of occurrence), with CP 1.1 being by far the most frequent. Checkpoint 1.1 refers to the use of text equivalents for all non-textual content elements (such as images), a rule essential for blind users. This includes, among others, the so-called alt-tags. Almost all of the sites examined have widespread instances of CP 1.1 problems. However, the findings seem to indicate that apart from accessibility issues raised by images and other non-text elements, another main reason for the inaccessibility of a website is to be found in its interactive features (caused by client-side scripting). Client-side scripts of course can be use wisely, but older versions of popular browsers do not support client-side scripting, and newer versions allow users to turn off script support (i.e., due to annoying pop-up adds). Most of the scripts are utilized for navigation purposes, which causes serious problems. Lastly, the mixed use of non-Greek text can affect access through screen readers, as Greek language support is still relatively incomplete for screen readers. As for Priority 3 CPs, the bad use of CSS for layout (3.3), and the inappropriate labeling of forms controls (10.2 & 12.4) are issues that could easily confuse users of assistive technology.

5. Discussion and Conclusions

From the results obtained from this audit, it seems that the lack of content control is even more prominent with respect to the past, and the use of new scripting technologies for the development of e-services and content did not necessarily improve the quality of the final product. The tests confirm that:

- At present more sites than in the past fail to comply with basic accessibility guidelines
- Automatic content generation fails in the provision of valid content
- Deprecated (outdated) HTML features are still in use
- (Almost) all of the sites contained invalid markup
- As scripting is utilized for navigation purposes, this can cause serious problems even for those that use portable/mobile devices.

These findings indicate that the level of eAccessibility has actually decreased over the last four years. As even more complex e-services are now present than in the past, the progress made is not encouraging.

It can be argued that online public services in Greece have a long way to go before they can be considered fully accessible and inclusive, as the websites analyzed are ranked lower in terms of eAccessibility compared to four years ago, despite the progress made with regards to the availability of web accessibility resources. With the exception of some organizations and departments targeted specifically to people with disability, it seems that accessibility concerns are not part of the design - development prerequisites.

It could be argued that this non-conformance to accessibility standards by the developers/providers may be due to a number of reasons. These include not only limited knowledge, but also unwillingness to comply for financial reasons. In that respect, although the deployment of accessibility and usability standards during the design and development phase of a software service/product could actually prove cost effective, introducing such standards after the product has been launched, can prove to be a costly procedure. However, providers still have low awareness of these benefits and of the alternative approaches that they can follow to achieve eAccessibility [13].

The absence of a coherent legislative/regulatory framework for e-accessibility in Greece is another major drawback. The absence of policy initiatives in Europe directly influencing national legislation up to now does not promote the development of accessible web services. It is expected that specific e-Accessibility legislation in national and/or in all EU member states will play a crucial role in that respect.

Another factor leading to inaccessible content is the lack of training and the use of platforms that fail to help web developers build accessibility into their sites at the early stages of design. Follow-up evaluation is not always efficient, and results can be confusing. More training needs to be given to designers, developers, and webmasters, in order to raise awareness of many important aspects of accessibility.

From the results presented above, it can be seen that although Greece has undertaken a number of postitive actions towards the adoption of international accessibility standards and guidelines, as well as towards the implementation of National Actions for an Information Society for All, an effective strategy to address the accessibility of websites, products and services still remains to be devised.

The purpose of this study has been more to provide an overview of the current status of e-accessibility in Greece rather than to suggest how this situation can be improved. It must be emphasized, however, that the creation of an institutional framework that will clearly set specific technical requirements for websites of public and commercial nature in Greece can

effectively contribute to improve the level of accessibility, and consequently the overall usability and quality of web content and services.

A combination of technical requirements/standards and guidelines, legislative/regulatory measures and financial incentives for public and private stakeholders alike, could be used to promote the development and provision of accessible content and services through a variety of media, including the Internet, mobile telephony networks, etc.

Towards this objective, the adoption of the criterion of accessibility and the principle of non-discrimination as a pre-requisite for pre-selection and funding in all implementation stages for projects funded under the National Strategic Reference Framework (ESPA) 2007 – 2013 can be considered as a major positive step. The extent to which such measures will actually prove to be effective in improving the level of accessibility of ICT products and services, including web applications and content, remains to be seen.

The HCI Laboratory of ICS-FORTH will continue to be actively involved in accessibility initiatives, both at the national and European levels. In that respect, and as National Contact Centre for EDeAN in Greece, monitoring the status of e-accessibility in the country is considered as a key activity.

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