A preliminary feedback for the WCAG 2.0 : WCAG 1.0 Vs WCAG 2.0 evaluation study

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ABSTRACT

This paper aims at giving some feedback about the usability of the very recently released second version of the Web Content Accessibility Guidelines (WCAG 2.0). This is done by examining a Web page and evaluating it with both WCAG 1.0 and WCAG 2.0 and commenting upon the results obtained and noting how this reflects upon the content and usability of WCAG 2.0. The outcome of this exercise offers a preliminary indication of the difficulties inherent in the content and the use of the guidelines, both in respect to the old and latest version.

Categories and Subject Descriptors

H.5.2 [INFORMATION INTERFACES AND PRESENTATION]: User Interfaces

General Terms

Design, Human Factors, Standardization.

Keywords

Web accessibility evaluation, W3C, WCAG 1.0, WCAG 2.0

1. INTRODUCTION

The theme of web accessibility evaluation has been investigated thoroughly during the last decade, since the foundation of the Web Accessibility Initiative (February 1997) and the first release of the Web Content Accessibility Guidelines (WCAG 1.0). On the 11th of December 2008, the second version of WCAG was released after a seven-year effort -the first working public draft have been released in 2001.

WCAG is part of a series of accessibility standards and guidelines developed by WAI (others refer to authoring[1] and user agents[2]).

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[1] ATAG - http://www.w3.org/WAI/intro/atag.php

[2] UAAG- http://www.w3.org/WAI/intro/uaag.html

With regard to guidelines for accessible content, two major versions have been published. The documents accompanying WCAG 1.0 & 2.0 explain how to make Web content accessible to people with disabilities. Web "content" generally refers to the information in a Web page or Web application, including text, images, forms, sounds, and such.

WCAG 1.0 presented weaknesses due the fact that they were based on technologies of past decade, specifically HTML. This meant that WCAG 1.0 became obsolete and required updating. [1]. This was also a chance for those involved in redrafting to address other issues that had arisen with regard to the content and usability of the first set of guidelines. Calls for simplification meant that the 14 guidelines were reduced to 4 guiding principles in WCAG 2.0. These are: 1) the Information and user interface components must be presentable to users in ways they can perceive; 2) the user interface components and navigation must be operable; 3) the information and the operation of user interface must be understandable and 4) the content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

The seven-year effort of the WCAG 2.0 authors has resulted in solving some of the problems of WCAG 1.0., nevertheless the new version still presents problems. According to several researchers in the field ([2], [3]), they are described at very abstract level using general and vague terms; they are characterized by low usability level since they use obscure terminology (even more than WCAG 1.0!) and they need much explanatory text in order to be comprehensible. Until very recently, web designers and commissionaires were faced with a dilemma: which of the versions of WCAG to use as the first one was well out of date but stable and the second one up to date but still only in draft. Now that WCAG 2.0 is a W3C recommendation it worth evaluating its applicability by a use case study.

Aiming at investigating the applicability of WCAG 2.0 and contributing to helping designers and evaluators make the move from the earlier version, a comparative study of a single web page took place as part of a final year student project at the Department of Product and Systems Design Engineering. (DPSDE) of the University of the Aegean. The evaluators were final year students, whose profile seemed a good choice in order to represent an average user of WCAG. The actual subject of the evaluation was the home page of the DPSDE web site (http://www.syros.aegean.gr/gr.aspx). Of course such a restricted evaluation is not capable of raising all the possible use and content issues as it does not even cover all the guidelines; however it is capable of sketching a first picture and providing guidance for further work on usability of the guidelines.
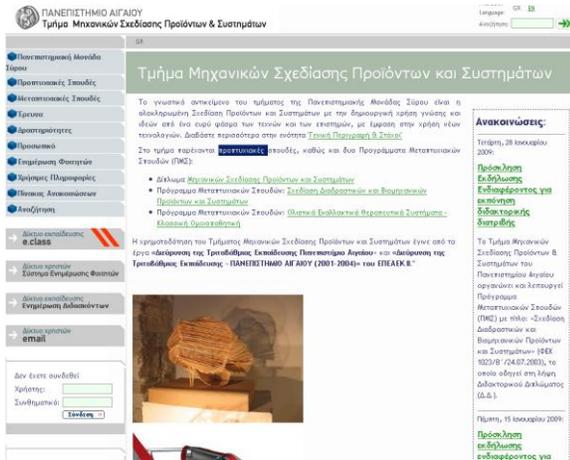

Figure 1: DPSDE home page

For reporting the results of the evaluation, a template based on the Evaluation and Report Language (EARL) specification [4] was been used. EARL is designed to describe the evaluation results in a machine readable (XML-RDF) format. Using EARL facilitates the comparison of test results; and allows the aggregation of test results. The main components of an EARL report are: 1) Who (or which tool) runs a test; 2) The resource tested; 3) The result(s) of the test and 4) The tested criterion (-a). However, for this paper the authors choose to present the evaluation results in a tabular form for better readability. Based on these reports, some preliminary conclusions have been drawn.

2. Evaluating with WCAG 1.0

During the evaluation phase of the DPSD home page with WCAG 1.0, several failures/comments were raised. More specifically, there were 18 non applicable checkpoints, 33 failures and 15 passes. The evaluation report can be studied in Table I below.

Table I: WCAG 1.0 Evaluation Report

Check Point	Comments
1.1	Most of the images do not have alternative text. Specifically, images that are used as bullets should be coded as lists and images in animation must have alternative text
1.4	Animation images need captions
2.1	By disabling colors the content is readable
2.2	The color of the name of the department that is located on top of the page does not have sufficient background / foreground contrast. Also, the color of the hyperlinks in the content does not appear to have sufficient contrast with the white background color. Finally, on top right of the page, the color used for search and for language selection has low contrast.
3.1	Use of images for presenting information for critical hyperlinks (e-class platform, web email). Same for title of web page (department name)
3.2	Not valid page (-//w3c//dtd xhtml 1.0 strict//en!)
3.3	Uses images instead of CSS for the presentations and layout.
3.4	Use of absolute units for attribute values
3.5	Pass
3.6	No list for navigation
4.1	No language change (xml:lang)
4.2	No use of abbreviation markup (as "ΕΠΕΑΕΚ II")
4.3	The main language is not identified
5.3	Use of tables instead of CSS for the page layout The use of table makes no sense
5.4	Pass
6.1	Pass when disabling CSS.
6.2	No NOSCRIPT
6.3	Search not operable when disabling script
6.5	Slideshow script not accessible. Al least need captions
7.1	Pass
7.2	Pass
7.3	Need on/off for animation
8.1	Script not accessible
9.3	Pass
9.4	Pass
9.5	No accesskey (e.g. "search" and "home")
10.1	Pop up windows without alerting
10.2	Labels not used appropriately in form
10.3	No linearized version provided
10.4	Form items should not be null.
10.5	No grouping of same kind of hyperlinks
11.1	Pass (XHTML and CSS)
11.2	Pass
11.3	Aural styles omitted
12.4	No labels used in form
13.1	Ok except for GR & EN for language selection and for going "home"
13.2	Very simple search – no helping / correcting features
13.3	Pass
13.4	Pass
13.5	Pass
13.6	No grouping of same kind of hyperlinks
13.7	No more than one type of search
14.1	Pass
14.2	It is not obvious that the images are students' projects. Need some text description in text above.
14.3	Pass

It should be borne in mind that on that specific page there were several checkpoints that were not applicable. However, in purely quantitative terms, the checkpoints that were applicable raised a sufficient number of issues to make a worthwhile comparison between the two sets of guidelines, and to reach some overall conclusions regarding their content and use.

During the design of a web page it is of primary importance to determine the desirable page structure / layout. By disassociating the structure from the presentation of the content, a number of advantages appear including accessibility improvement, manageability and portability.

The failures of the current page mostly concern the layout of the page, where tables have been used in order to set the position of each element block of the page. The other major problem of the page concerns the use of images for building up presentational effects instead of using Cascading Stylesheets (CSS). These failures set barriers for the users that use assistive technologies for navigating into the web page.

Regarding the use of guidelines, it was easy enough to understand their structure as there are not many hierarchy levels. However, a lot of terminology is being used which makes documents less comprehensible for non-experts. The examples in techniques' document are not always sufficiently illustrative for the reader to understand how to apply the specific techniques.

3. Evaluating with WCAG 2.0

During the evaluation phase of the DPSDE home page with WCAG 2.0, several failures / comments were raised. More specifically, there were 21 non applicable checkpoints, 30 failures and 10 passes. The evaluation report can be studied in Table II below.

Table II: WCAG 2.0 Evaluation Report

Success Criteria	Comments
1.1.1	No alternative text is provided. Buttons "search" and "login" need to have alt text. Decorative images are not in CSS, so assistive technologies do not ignore them
1.3.1	Semantic elements are not used in structure. Presentation issues of images and tables are adjacent in HTML instead of CSS. Explicit labels are not used. Should use DOM functions.
1.3.2	No letter-spacing specified
1.3.3	For actions (eg search, login) there is only presentational information ,i.e. no textual information
1.4.1	For main heading there is not sufficient contrast (2:1 instead of at least 3:1)

Success Criteria	Comments
1.4.3	Insufficient contrast between text on top right and background. Text must be at least 14p bold or 18 p. Insufficient contrast for breadcrumb links. Must be at least 14p bold or 18p. Text "more" in news area has no sufficient contrast. Should be at least 14p black or 18p. No sufficient contrast for hyperlink in main text. should be at least 14p black or 18p
1.4.4	No use of em units or percent for font sizes. Page does not provide mechanism for zoom in or out. However zooming with browser does not cause information distortion
1.4.5	Use of images instead of text to communicate textual information
1.4.6	Insufficient contrast top right area (page controls)- Insufficient contrast menu items (at least 18p)- breadcrumb links -Not sufficient contrast Insufficient contrast for news heading Text "more" in news area does not have sufficient contrast. Insufficient contrast for hyperlink in main text.
1.4.8	Width is more than 80 characters. No mechanism for text and background color changing Text should not be aligned as justified and the paragraph distance is not appropriately adjacent.
1.4.9	Use images for textual information
2.1.1	Not all the functionality of the content is operable through a keyboard interface (search)
2.1.2	Pass
2.1.3	Pass
2.2.2	There is no pause, stop, hide mechanism for animation
2.2.3	Pass
2.3.1	Pass
2.3.2	Pass
2.4.1	No skip to main content using tab. No grouping of same kind of links (main menu) so that they can be skiped
2.4.2	Pass
2.4.4	No description in link context. No alternative text for hyperlink images
2.4.5	Pass
2.4.6	Some headings used for visual effect
2.4.7	Pass
2.4.8	Pass
2.4.9	No alternative text for hyperlink images.
2.4.10	Section headings are not used to organize the content
3.1.1	No main language specified
3.1.2	For language changes no main language has been specified
3.1.4	No explanation of acronyms ("ΕΠΕΑΕΚ", "GR", "EN")
3.1.5	Should provide an explanation of the subject of the images.
3.2.3	Pass

3.2.4	No alternative text. Search and Login image buttons do not have alternative text. Decorative images not in CSS so that assistive technologies can ignore them. Form controls are not used according to HTML specification (labels)
3.2.5	No pop up window alert
3.3.1	No error message for not filled or not valid input in fields. No error message
3.3.2	No labels used for fields
3.3.3	No error message for not filled or not valid input in fields. No error message (e.g. caps lock)
3.3.5	No help for filling the form
4.1.1	Some ids not unique
4.1.2	Form controls are not used according to HTML specification (labels)

Evaluating the specific page there were several non applicable checkpoints including 1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.5, 1.2.6, 1.2.7, 1.2.8, 1.2.9, 1.4.2, 1.4.7, 2.2.1, 2.2.4, 2.2.5, 2.4.3, 3.1.3, 3.1.6, 3.2.1, 3.2.2, 3.3.4 and 3.3.6. Again these 21 check points are still less than the combined failures and passes (40) and enough to give feedback on the use and content of WCAG 2.0

Generally, most of the failures raised by evaluating with WCAG 2.0 are on a par with WCAG 1.0 evaluation. However, in the case of background / foreground contrast issues, WCAG 2.0 provide more specific information and thus allow the evaluator to provide the designer with more effective feedback and redesign guidance. The same occurs with the width of block text. Another point to mention is the specific guidance WCAG 2.0 provides for error messages and help in forms.

In addition, regarding the use of images, comments are similar with a major difference that WCAG 2.0 set the contrast ratio for the images. This is a difference from WCAG 1.0 where the contrast for images was considered as adequate if an image could be "read" on black and white screens. Also, in WCAG 2.0 the frame borders of an animation are specified, something that does not happen in WCAG 1.0. Finally,, WCAG 2.0 set the images' alternation speed for animations to 5 flashes/second, instead of 3 flashes/second which are found in WCAG 1.0.

The first contact with WCAG 2.0 causes a very negative perception regarding their usability as the document structure and organization seems difficult to understand. It is time consuming to get used to these and thus difficult to practice efficiently When the WCAG reader is at the level of principles or even at the level of guidelines it seems difficult to ground the meaning of each of them. However, this becomes much clearer when the reader reaches the techniques level, something that does not happen with WCAG 1.0. Furthermore, the reader tends to look for a correspondence between principles / guidelines and Checkpoints / Success Criteria but it finally makes more sense to correspond the WCAG 1.0 checkpoints with WCAG 2.0 techniques, which is not also absolutely correct.

The "Techniques for WCAG 2.0" document, which replaces the previous techniques document, provides a list of common failure examples, a subset of which could be found in the previous version but spread within the techniques sections. It can be also mentioned that a major difference between the examples used in WCAG 1.0 and 2.0 techniques documents is that the latest one provides many more real life examples and several useful design hints.

Finally, it is probably unavoidable but also disappointing that both WCAG 1.0 and 2.0 versions make extensive use of their own terminology and thus use of "jargon" makes comprehension for a non-expert user very difficult. Trying to make WCAG 2.0 more comprehensible, their documents became much more extensive textually, leading to a need for much reading to be able to make sense of them.

4. Conclusions for the use of WCAG

This conclusion aims at giving a preliminary feedback from the comparison between WCAG 2.0 and WCAG 1.0 when applied to the same webpage.

In general, it seems that the new version of WCAG is an improvement of the previous document and that it has managed to overcome its major pitfall of being technology dependent. The newest WCAG version provides a technology neutral accessibility framework that could push the research further by distinguishing human studies from technological research. However, in general, this means that WCAG 2.0 is characterized by an exponential learning curve. In other words, for a novice reader, it will require time and study to be able to manage to use them. However, given this caveat, the guidelines can be rewarding.

A major critique for WCAG 1.0 was the fact that it was hard for the reader to locate specific guidance and answers. It has to be said that this situation appears to persist on into WCAG 2.0 Probably the major reasons for this are both the use of complex language with frequent use of special terminology that the reader is required to learn; the document structure itself which is rather complex, and finally the length of the documents.

5. REFERENCES

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