Social Accessibility: Issues , Standards and Tools

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Abstract—**nowadays, social accessibility became a science that needs to be studied. There are many standards that are already being in place to enhance people's accessibility to web or any other application. Some of these standards as well as recommendations are already part of the new websites and new applications. The importance of the social accessibility is to provide equal opportunity for everyone to access any published materials including the disabled people. This paper is an introductory survey to the social accessibility issues, standards and tools.**

Keywords—social accessability; issues; tools; web accessability; disability .

I. INTRODUCTION

Web has become part of our daily life activities either for social activities or for professional work. In fact, students and youth are involved more than others in the web activities. Therefore, the term social accessibility becomes an essential term in which some of the elements in websites have to be considered by the developers to satisfy the requirements of user. Not only the web that social accessibility is related to but also to every aspect of our life including business and software applications.

The problem with social accessibility appears clearly with old applications as well as old websites. From the development prospective, developers need to embed accessibility metadata to empower the user interface. One example of accessibility is to use alternative text for images. In addition, color images should be carefully manipulated to fit large number of people including people with color disability. However, making a webpage or application fully accessible by everyone is still an issue. In this paper, we survey some of the current issues of social accessibility, tools, standards and state some of the recommendations.

The paper is structured as follows: section II reviews some of the accessibility issues, section III explores social accessibility tools and section IV provides some of the recommendations for developers and business owners.

II. SOCIAL ACCESSIBILITY ISSUES

Social networks as well as web turned out to be one of the important media in our life since it became part of millions of people's daily activities. For instance, the social media is used in searching for jobs, communicating with students, looking for care givers, and many other examples on the usage of social networks. On the other hand, web accessibility is considered as social responsibility as well. In fact, we consider the slogan "Web for all" is a human right according to the Disability Discrimination Act of 1995 that has been extended by Special Educational Needs and Disability Act 2001. That means, people have the equal right to be trained and their disabilities to be considered during designing and developing a website and/or social media network. However, there are many issues that are faced in web and social media accessibility to satisfy the Special Educational Needs and Disability Act of 2001. In the following paragraphs, we will try to focus on the important issues based on our analysis and understanding.

A. Nature of Web and Social Applications

One of the important issues in web and social accessibility is the nature of the applications. There are many types of web applications; some of them need specific components to be aligned together in the same page; some others might need to contain different media file or any type of script. These different applications might be hard to be adapted to the required standards to fit everybody access. In addition, social media applications can be used on different platforms and hardware such as mobile, PDAs and tablets. Therefore, such platforms might require different design to the social application.

B. Standardization

Recently, there are some efforts towards standardizing web and social networks accessibility such as:1) W3C's Web Content Accessibility Guidelines 2.0 (WCAG) , 2) World Wide Web Consortium (W3C) Web Accessibility Initiative (http://www.w3.org/WAI/), 3)Web AIM (Accessibility In Mind):Introduction to Web Accessibility (http://www.webaim.org/intro/,4)W3C: http://www.w3.org/Consortium/, 5) Web Standards Project (http://www.webstandards.org/) and 6) Web Usability (http://www.usability.com.au/index.cfm). Although the standards are somehow clear, developers need to be trained to implement them. At the same time, testing and/or validating the implementation of the standards is not an easy task with rare testing and/or validation tools. In addition, there are some

restrictions applying the standards with websites including diversity of components. Therefore, in our point of view, the accessibility standards are still in the development phase and they are not mature enough to be taken as a package for perfect web and social network accessibilities.

C. Web Accessibility is Essential for Equal Opportunity

According to the Special Educational Needs and Disability Act 2001, accessibility became one of the challenges and requirements of any web site. In Fact, UN Convention on the Rights of Persons with Disabilities identified that accessing to information and communications technologies, including the internet and Web, as one of the basic human rights. The issue here is that the accessibility becomes an essential for each and every website which is not reasonable. There are some old websites as well as small organization websites that are not easy to modify in order to satisfy the accessibility requirements. Such websites are not possible to be renewed.

D. Types of Disability

There are many types of disabilities that need to be taken into consideration such as:

1) Visual impairments (e.g., blindness, low vision and lack of color perception)

2) Hearing impairments (e.g., hard of hearing, deafness)

3) People with physical and/or cognitive impairments (e.g., limited strength, reach or manipulation, tremor, lack of sensation)

4) People with speech impairments.

5) People with language, learning or cognitive disabilities (e.g., reading disabilities, thinking, remembering, sequencing disabilities)

6) Other disabilities (e.g., epilepsy, short stature)

7) Individuals with any combination of these disabling conditions (e.g., deaf-blindness)

In addition to the previous disabilities, there are other people that might need to be taken into consideration , see Fig(1) , such as older people, people with low literacy and people not fluent in the website language, people with low-bandwidth connections to the Internet and those using older technologies, and new and infrequent web users.

Fig. 1.   Examples on other types of disabilities [14]

Therefore, taking into consideration all of these disabilities is a great challenge especially when some of the requirements might conflict with each other.

E. Development and Technical Issues

There are many languages that are used to develop web and social network website. Each language has its own requirements and capabilities. Some of the web development languages are java , C# and C++. Other scripting languages might also be there such as Javascript and VBscript along with some other tools such as Cascading Style Sheets (CSS). In addition, there are some components that might always need alternatives for better accessibility in which they affect the web developments.

F. Overlapping with Digital Divide

The concept of "Digital Divide" is that the information revolution creates a divide between those having access to information and those without access. We believe that the web accessibility is not the only issue of Digital Divide especially between the disable person and the non-disable person. Therefore, satisfying the web and social accessibility requirements will not solve this problem. Some other parts of the disable person life are needed to be tackled as well. For instance, multifarious political, economic and socio-cultural factors are other dimensions that need to be considered as well.

G. Cost Reduction

Designing an accessible web might be costly; some of the cost comes from web design, development, production, and maintenance. However, this cost could be acceptable if new web or social web is to be produced. For old webs and socials, the cost of redesign, development, and maintenance could not be accessible. So, there is a challenge in reforming the old webs according to the accessibility requirements.

H. Legal Issues

Although there is a Special Educational Needs and Disability Act issued in 2001, there is no legal law to force web accessibility requirements. Therefore, the accessibility will stay optional and volunteer work for new and old web sites till some legislations to be issued.

I. New Technology

Although disability is the important part of the social media which is affecting the way the web is explored, social accessibility is not just affecting the blind, disable persons, and low vision persons [9]. It is in fact affecting nowadays most of the people that are using new social media services like smart mobile phones, Facebook, LinkedIn, Twitter and YouTube. In addition, seniors as well as young generations joining the conversations via mobile devices, tablets, PDAs and PCs [7] might have other factors to be considered in terms of accessibility.

III. SOCIAL ACCESSIBILITY TOOLS

The authors in [11][11] state that products like Bobby, LIFT and the World Wide Web Consortium (W3C) Markup Validation Service are publicly available to validate sites for accessibility problems. The best known of these tools according to [6], the Center for Applied Special Technology's Bobby, will analyze a site for conformance to the World Wide Web Consortium's (W3C) Web Accessibility Initiative (WAI) Web Content Accessibility Guidelines. Other publicly available tools providing a similar service include Accessibility-Prompt, the result of a joint project between the Adaptive Technology Resource Centre at the University of Toronto and the Trace
Center at the University of Wisconsin and NIST's WebSAT. The WebSAT tool set checks conformance to usability guidelines found in the IEEE Std 2001–1999 [1].

Three selected Web accessibility tools, which are Bobby, Tawdis (supported by the Spanish Ministry of Social Affairs) and WebXACT (from the same company of Bobby) are evaluated by authors in [18]. They have chosen these because they are well-known and can be used online for free. We know of no other similar evaluation tools (except Torquemada, which, is no longer available) that provide such final results without human intervention. Additionally, [6] concludes that as a result of this evaluation, they can determine that it is easier to detect accessibility barriers using Bobby or WebXACT than using Taw. However, Bobby and WebXACT do not provide as much coverage as it could be expected. In fact, both tools are far away from having a good automated coverage of WCAG. Note that the tools are trying to achieve as many web and social accessibility guidelines as it could.

IV. SOCIAL ACCESSIBILITY RECOMMENDATIONS

The World Wide Web (WWW) has become crucial recourse for human services and communication media; it has become the most accessible resource to gain accurate information that is related to a specific service. The accessibility to web will be effective when the web sites or web applications are readable and accessible, without any special challenge from user to access them. Therefore, they need to be developed with accessibility in mind; this should lead them to be more popular and common than others. At the same time, they must follow the standard rules and guidelines that make them accessible for internet users [10].

A. Web Accessibility Guidelines

To make web pages more accessible for users and to meet the needs of disabled people, a set of guidelines known as Web Content Accessibility Guidelines (WCAG) is developed by W3C. These guidelines address the requirements for having an accessible web content. It focuses on the accessibility of both natural information (audio, video, text) and the code which defines the structure and presentation of the web page [1]. The guidelines can be categorized under four groups as shown in Figure 2:
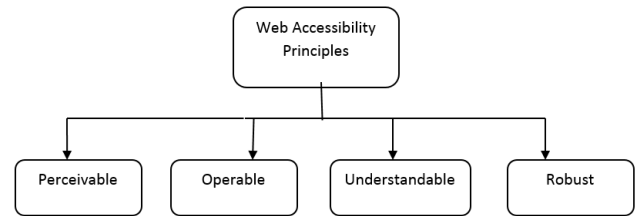

Fig. 2. Web Accessibility Principles

The term *perceivable* refers to the way information and user interface components are presented to the user. All the information/content that is available on the website must be clearly visible. *Operable* principle deals with the steps involved to operate the interface. The *interface* must be designed in a way which is easily to navigate. The term *understandable* means that the user must be able to understand the contents that are presented. However, *robust* means it includes the reliable interpretation and accessibility of content to users even if there are advancements in assistive technology. In order to have an accessible design to meet the needs of disabled people, all these principles must be followed [1].

B. Recommendations For Developing Accessible Web Pages

It is vital to study the level of human accessibility on the websites and their portability on communication devices. It should be portable on any device without any special instructions or special software to open them [10]. It is also recommended for the designers to develop the websites which should be accessible not only by regular internet users but also to people with special needs like those suffering from any physical or cognitive illness. This can be achieved by providing more than one interface for a web site to be accessible by users with different needs [10]. The recommendations can be categorized as given in Figure 3.
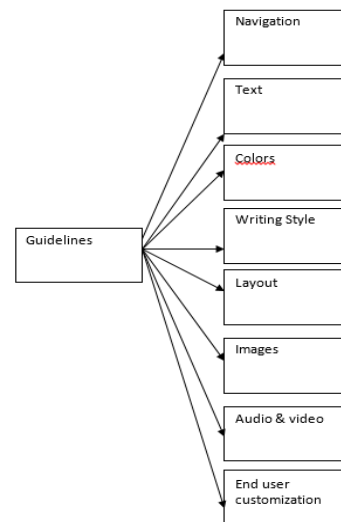

Fig. 3. Categories of Social Accessibility Guidelines

- **Navigation**

Navigation involves the structuring of menus, site maps, index pages, sections and internal searches etc. A good design approach must:
a. Have a consistent navigation style and facilitate the user by listing all the relevant links instead of scrolling pages [2][5][12].
b. Avoid dynamic menus.
c. Provide alternative text and provide a text description for any images in navigation
d. Use hierarchical trees to build the sitemap [2][17][4].
e. Use text size and bold face for highlighting in headers. Additionally, good background color, borders or boxes can be used to capture user's attention.
f. Structure labels in a clear way and keep them simple. To improve reading visited links must be clearly identifiable from unvisited links (by use of a different color or underline).
g. Avoid unordered list while listing the items. It is recommended to use ordered lists which will facilitate people with cognitive disabilities.

- **Colors**

The color refers to the selection of suitable foreground and background colors for the web pages. It is recommended not to use pure white as background color as it may confuse the text for certain people (e.g. dyslexic people). Some of these people are scotopic sensitive (i.e. sensitive to white background) and the text seem to be blurred or moving to them. In addition, it is better not to use patterns and images in the background.

- **Text presentation**

Text presentation involves the way text is presented e.g. the font size, type and alignment etc. Therefore, the recommendation for the text presentation are as follows:
a. It is not recommended to use small font sizes as they may slowdown the reading speed for people having reading difficulties. Use of font size 12-14px is the recommended smaller text size [5] [16].
b. Serif font types are complex and make it difficult to identify letters. So, it is better to use fonts which are mono spaced like Verdana, Arial, Tahoma and Trebuchet etc.
c. Animated or moving text must be avoided as it makes reading difficult and may trigger seizures among people who are photo sensitive.
d. Paragraphs must be properly aligned and a line spacing of 1.5-2 is suggested to be used between lines [15].

- **Writing**

Writing focuses on recommendations regarding the writing style for web content where:

a. Web page contents must be written in simple and easy to understand language with short and simple sentences.
b. Paragraphs must be short and in coherence.
c. Clear and concise sentence structure makes the text decoding process (recognition of printed or written words) easier [12][17].
d. Use of active voice is better instead of using passive voice while addressing the user.
e. Proper punctuation use like comma, semicolon or period to separate the sentences is a good practice to follow as it will help the people who need to use assistive technologies like screen readers for reading purpose [15].

- **Layout**

Layout gives recommendations about the structure of web page layout. The web page must be designed in a simple way and information must be prioritized. Screens with overloaded information are difficult to read and comprehend. Also, make it difficult to find the relevant information.

- **Images and Charts**

Some of the recommendations involve guidelines relevant to the use of charts & images where images and charts can be used to supplement the text. Appropriate description of these images may be helpful for screen readers. However it is suggested to avoid images which blink as they may make the user uncomfortable.

- **End User customization**

End user customization deals with providing flexibility to users for customizing some user interface components which will assist the people with disabilities. It is recommended to facilitate the users by providing them choice to configure UI components like screen colors, font size and type for the sake of improving the reading speed.

- **Videos and Audios**

Videos and audios provide guidelines about the use of multimedia on web pages. It is recommended not to set "autoplay" settings of any audio or video content while the page is loaded. Always seek user's request before playing any such multimedia.

V. CONCLUSION

According to the rule of equal opportunities, the social accessibility became very important. Each application as well as website has to follow some of the social accessibility rules to fit all user requirements. This paper is an introduction to social accessibility issues, tools and recommendations. In the future, we are planning to develop a test tool for Hail University website. In addition, our plan is to develop a software that automatically solve the accessibility issues in any website , if possible, or recommend some of the solutions.

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