Prejudices, memories, expectations and confidence influence experienced accessibility on the Web

Amaia Aizpurua [a,b,*], Myriam Arrue [a], Markel Vigo [b]

[a] School of Computer Science, University of the Basque Country, UPV/EHU, Donostia-San Sebastián, Spain
[b] School of Computer Science, University of Manchester, Manchester, United Kingdom

ARTICLE INFO

ABSTRACT

Evidence suggests that compliance with accessibility standards does not always guarantee a satisfying user experience on the Web. The literature indicates that addressing the expectations users have about online content and functionalities is crucial to bridge this gap. We examine the role played by subjectiveness, experience and, particularly, expectations on how users experience the accessibility on the Web. To do so, 11 blind participants were enquired through interviews and questionnaires about 12 tasks they completed in four websites. Thematic analysis on the transcriptions reveals that expectations are often built up on previous experiences and preconceived ideas. Particularly, the content which is explicitly labelled as accessible arises the curiosity and creates high expectations about the accessibility of the website. We also find that, in addition to unmet expectations, prejudices on branding issues and the memories evoked by past experiences or emotional bonds does not only affect the way in which users perceive and experience accessibility, but also the overall user experience. Identifying the nature of expectations is key (i) to formalise more exhaustive user testing protocols and (ii) to complement and complete existing accessibility guidelines.

1. Introduction

The Web Content Accessibility Guidelines (WCAG) are the internationally recognised standard for Web accessibility (Caldwell, Cooper, Reid, & Vanderheiden, 2008; Chisholm, Vanderheiden, & Jacobs, 1999). However, evidence suggests that compliance to these accessibility standards does not necessarily guarantee a satisfying user experience on the Web. Studies that corroborate such evidence state that guidelines compliant websites can be inaccessible for specific users in specific situations. The other way around also applies: non-compliant websites do not necessarily have to pose a challenge to users. For instance, Petrie, Hamilton, and King (2004) conducted a user study with 51 participants with disabilities, where the authors observed, identified and classified the difficulties that users encountered. They found that 45% of the observed problems were not related to any violation of WCAG 1.0 checkpoints (Chisholm et al., 1999). The second version of guidelines, namely WCAG 2.0 (Caldwell et al., 2008) was released to address the weaknesses exhibited by the previous versions and to cater for the technological updates that occurred hitherto. Power, Freire, Petrie, and Swallow (2012) conducted an empirical

study about the problems identified by 32 screen reader users on the Web. Results revealed that only 50.4% of the problems encountered by participants were covered by WCAG 2.0 success criteria (henceforth SC). Consistent coverage figures—measured in terms of the percentage of actual problems addressed by guidelines—were reported by Rømen and Svanæs (2012). Among those problems not covered by these SC, the 13.5% of all user problems are related to unmet expectations in terms of unexpected content (Power et al., 2012).

Even if guidelines are an invaluable starting point for building accessible sites, the above-mentioned findings indicate that there is a need to explore complementary ways of building accessible websites beyond conformance to guidelines. In this regard, we claim that understanding how users experience and perceive Web accessibility is vital to bridge this gap (see Section 2). We expand on this by exploring how subjective dimensions and especially how user expectations influence on the perception and experience of accessibility. Inspired by the work of McCarthy and Wright (2004), who identified that previous experiences, prejudices and branding are the key dimensions that shape user expectations, we analyse how these dimensions influence the perception of blind users about Web accessibility. To do so, we conducted an exploratory study in which 11 blind participants were enquired about the tasks they had to accomplish in four websites (see

* Corresponding author at: School of Computer Science, University of the Basque Country, UPV/EHU, Donostia-San Sebastián, Spain.

Section 3). These websites contained different accessibility problems, aesthetic properties and experiential values. The study included semi-structured interviews, user observation and questionnaires that participants filled out.

Our analysis (see Section 4) reveals that expectations are built up on previous experiences (either in the physical world or in the Web) and on preconceived ideas. We found that unmet expectations are often related to participants' uncertainty. We also learned that if a Web page is explicitly labelled as accessible and the participant notices it, this does not only spark interest, but also creates expectations that are not always satisfied. As a consequence, if high expectations are not met deception and frustration can be more severe. We also find that memories, past experiences and emotional bonds do also influence the perception of website accessibility. Prejudices towards a brand can influence this perception too. We conclude that all the above does not only affect user perception about the accessibility of a given website, but also the user experience.

The main outcome of this work suggests that users' perceived accessibility, is not only determined by conformance to guidelines, but also by other experiential and more subjective dimensions, as discussed in Section 5. Specifically, we reach this conclusion by examining the following axes:

 – We explore how the dimensions that build user expectations including past experiences and preconceptions reflect on the navigation of blind users on the Web.
 – We uncover how these dimensions and their consequences determine how blind users perceive the accessibility of a website.
 – We explore the association between real life experiences and Web experiences.
 – We discuss how a website is actually perceived when it contains an 'accessible' version.

2. Background

In recent years efforts on Web accessibility have been devoted to defining guidelines, comparing evaluation methods and metrics or providing tool support for intelligent browsing. The publication of the WCAG guidelines has not only led to the implementation of worldwide policies,[1] but also to a wide range of automated evaluation tools,[2] supporting developers building accessible websites. Most efforts have been directed to evaluate and measure Web accessibility according to standards with the aim of improving websites (Lazar, Dudley-Sponaugle, & Greenidge, 2004). Even if those efforts are necessary in order to advance towards having a better understanding of accessibility problems on the Web, they do not seem to be enough. A website may have an adequate level of accessibility, but still not be sufficient for users. Even if a developer or evaluator considers a website to be accessible, users may have a different perception about its accessibility. A website designed to be compliant to accessibility standards fails if users cannot experience that accessibility. Since compliance to accessibility standards does not necessarily guarantee a satisfying experience, we pose that the actual perception and experience of accessibility barriers have to be examined, beyond guidelines.

Users' perceived accessibility does not always match to that represented in terms of compliance to guidelines. There are several factors that play a key role in this regard: for instance, some users have a repertoire of skills which allow them to overcome barriers by employing workarounds, namely coping tactics or strategies (Vigo & Harper, 2013). In other cases, users do not notice barriers

if these do not prevent them from accomplishing their tasks.

Nevertheless, individuals find the Web a mean, not only for working or achieving informational goals, but also for different purposes like communication, entertainment, social networking or contributing to building the Web, to name a few. In order to establish the scope of this study, and suggest its generalisability to similar website types we use the classification proposed by De Marsico and Levialdi (2004). They proposed a taxonomy which establishes different categories of websites based on a three-dimensional space, derived from Aristotle's rhetorical triangle (*ethos, logos, pathos*). The three axes of the taxonomy represent different communication features of websites: 1. *personal/social*, which refers to the different target audiences; 2. *site/info* is the type of information provided by the website; 3. *communication style* refers to the effort made by the designer to address the users' affective sphere.

Considering the wide range of websites that exist and thus, the variety of possibilities offered by the Web, non-instrumental information merits attention too. The ISO 9241-11 (1998) standard supports this claim by establishing that subjective qualities such as learnability can also contribute to the usability of a product. Beyond traditional evaluation techniques in Human–Computer Interaction, which have emphasised more on the instrumental aspects that characterise user interaction (such as error rates and task completion times), the User Experience (UX) is intended to provide a more holistic approach to understand how users experience the interaction. With the aim of bridging the HCI and UX research, Bargas-Avila and Hornbæk (2011) conducted a systematic survey on how previous UX studies address issues like situation, context of use, dimensions, *when* is UX assessed and *how* UX data is collected. Since UX takes into account the user interaction from a broader perspective, it brings a wider range of possibilities to our research context by considering subjective aspects related to users' perceptions and expectations.

Little attention has been paid to how blind users experience the accessibility barriers on websites. Generally, as blind users are not specially trained on Web accessibility, their perception of Web accessibility can be very subjective and may not match to that of experts. Initial findings (Aizpurua, Arrue, & Vigo, 2013) indicate that expectations play an important role when it comes to how blind users perceive accessibility barriers. This perception is not only about the website and its accessibility, but about what they expect from their engagement with a website. Also, users may assess the accessibility of website based on UX qualities, which at first sight might have little to do with the website's actual accessibility. Our research builds upon this work and based on a more in-depth analysis, adds new evidence to the relatively unexplored research corpus about the intersection of user experience and Web accessibility.

3. Method

The unexplored and subjective nature of the experienced accessibility calls for a preliminary qualitative approach (Adams, Lunt, & Cairns, 2008) that will inform subsequent stages of our research. An exploratory study was conducted to collect the data that was analysed using qualitative research methods. The following sections describe our methodological approach in order to uncover the interplay between experienced Web accessibility and other experiential and subjective aspects.

3.1. Participants

Eleven legally blind participants—four female participants, who were representative of the user group being studied (Sears & Hanson, 2011), were recruited in partnership with the National

---

[1] Web Accessibility Policy Resources: http://www.w3.org/WAI/policy-res.
[2] A complete list of Web accessibility evaluation tools: http://www.w3.org/WAI/ER/tools/complete.