Bridging the Accessibility Divide to Digital Information

Tore Hoel, Oslo University College, P.O. Box 4, St. Olavspl, 0130 Oslo, Norway, +47 48 18 90 05, tore.hoel@hio.no
Erlend Øverby, HyPATIA AS, erlend.øverby@hypatia.no

Abstract—The importance of accessibility to digital resources is widely acknowledged. Many countries now amend their legislation to ensure accessible digital services to all their citizens. This paper warns that this approach is not guaranteed to close the accessibility dimension of the digital divide. Until now there has been a focus on the obligation of the content providers to design digital content to comply with guidelines. Single Object Design will not give accessible content and services. To ensure accessibility for all we need to move towards Multi Object Design, leaving the sender's perspective on accessibility, changing to a receiver's perspective, where the contextual, cultural, political and social aspects of accessibility are met.

Index Terms—Accessibility, Access for All, Digital Divide, Social, Ethical and Legal Aspects of ICT

I. INTRODUCTION

Today, the physical access to digital information is improving at an astonishing pace throughout the world. New visitors to countries where you expect to find a digital divide, like Morocco, are often surprised by the penetration of satellite discs, mobile phones and also the Internet. Even in remote villages 100+ TV channels are beamed to households that struggle to make both ends meet. However, connectivity alone is not going to close the digital divide. Connectivity gives the senders the opportunity to give their message a voice. It cannot guarantee an audience in general, and in particular not the attention of people with special needs. For example, adding an educational channel to the variety of offerings on the television screen of the suburban family of Marrakech is not empowering in itself. Only if the new offering is situated in the daily practice of the users, there is a chance for a good match between the sender's intentions and the user's needs.

This observation holds up, also when we talk about accessibility to web content and services. Web Accessibility has up till now been biased with a sender's perspective about access to digital information. By ensuring that the syntactical aspects of the transmission of web pages are conforming to standards, the hope has been that new user groups (e.g. people with different kind of disabilities) will pick up the information as it turns up in the tools used for browsing. However, this is like adding the 110th channel to your TV guide: there is no guarantee that your needs are met. Even if physical access is important, other aspects of contextual nature have to be considered to close the accessibility divide to digital information.

This paper will report on some of the trends and challenges in the domain of accessibility, based on the work in the European Union funded Learning Interoperability Framework for Europe (LIFE) project [1]. The project was set up to explore practice in e-learning interoperability, to identify the current state or art, trends and challenges in a number of areas relevant to learning, teaching and training.

II. USER REQUIREMENTS FOR ACCESSIBLE SERVICES

Discussions on accessibility to ICT systems have often been focusing on the needs of people with defined disabilities. Users may have problems with visual or auditory information; with perceiving existence and location of actionable components, status of controls and indicators and feedback from operations; they may be unable to invoke and carry out all actions including maintenance and set-up of systems, completing actions and tasks within the time allowed etc.; and they may have problems with security and privacy, not causing personal risk (e.g. seizure, etc.); and overall having problems with how to efficiently operate a product and understanding how it is used. Users may also experience problems operating assistive technology to control the product at hand. These, and other issues have been compiled by a Special Workgroup on Accessibility set up by the ISO/ICE JTC1 standardisation committee [2].

The importance of universal accessibility to Web resources is widely acknowledged. W3C’s Web Accessibility Initiative (WAI) has since 1997 developed guidelines which help to ensure that Web resources can be accessed by people with disabilities [3]. WAI has been highly successful in raising awareness of the importance of Web accessibility. However, the success comes with some adverse effects. The WAI guidelines play an important role in national legislation. This has raised the concerns of accessibility experts who see the danger of premature standardisation, and that complex issues are met with inappropriate actions.

III. THE NEED TO MOVE BEYOND SINGLE OBJECT DESIGN

The current focus has been on what we call Single Object Design. The sender of information has been challenged with
the task to encode every piece of information in such a way that the test of compliance to the WAI Guidelines is passed. This emphasis on what we would call **Syntactical Accessibility** is what drives different initiatives that deliver automatic testing. Often we see that these services are assigning a number of “stars” to sites indicating how “accessible” they are.

Automatic testing of sites does not necessary ensure accessibility. The sites are often designed to satisfy the tests, not necessarily the needs of the users. One example: Many Web sites use images to control the layout and design of pages. One of the recommendations in the WAI Web Content Accessibility Guidelines is that all images should have an alternative text representation, in our case: `<IMG src="empty.gif" alt="image used for design"/>`. The question to ask in this case is if the information presented in the ALT attribute is of any meaning to the blind user? The ALT text is there to support screen readers, and the intention is to help the blind user to navigate and understand the content of the page.

To design for accessible digital resources and accessible digital technology, we also need to look at Semantical and Procedural Accessibility.

**IV. UNDERSTANDING THE MEANING OF CONTENT**

**Semantical Accessibility** is about the ability to understand the meaning of a piece of content, e.g. what are the consequences of the words used in a text. The content should ideally be adjusted to the reader's skills, and his or her level of knowledge. This kind of accessibility is hard to test automatically. The best way to test a site for semantical accessibility is with real users from targeted audiences. This is time-consuming and does probably cost too much to most providers. However, it is important to have this aspect in mind when developing content.

For some content one should consider moving towards a Multi Object Design, where alternatives are provided. For example, this may be to give access to a thesaurus when publishing texts with difficult words; or to provide a cartoon, a movie or other alternative media to text to illustrate complex matters.

**Procedural Accessibility** is about how different tasks are sequenced and how content elements are organised. Predictability plays an important role in the user’s ability to find information and navigate efficiently. When the user goes from one service to another there should be no need to learn a new interaction design, and use energy on pondering the logic behind new navigation patterns and unexpected location of information on the screen.

This is illustrated by a quick visit to the Web sites of three international organisations, the United Nations, the World Bank and UNESCO (see screen shots).
In these sites common elements like Language, "Contact us", navigation bar are all placed in different corners of the page. Imagine the problems a blind user would have finding the language choice links, having to read the text sequentially line after line starting at the top left corner. The more consistent the content is structured between different digital services the more accessible it will be.

In a great number of domains it has emerged a consensus on the design on “everyday things” [4]. Cars, airports, banking services, houses, etc. are designed in a way the give people the possibility to find their way around, without preventing the design of new and unexpected solutions. Better procedural accessibility of Web resources will eventually emerge. To close the digital divide, this process has to be speeded up.

V. FROM DESIGN FOR DISABILITIES TO DESIGN FOR ALL

The current accessibility paradigm places emphasis on total online access, or if materials cannot be made accessible, then providing an equivalent online experience [5]. The focus has been on Design for Disabilities, benchmarked by the WAI Guidelines. This approach could have adverse effects, resulting in less accessible information (ref. "designing to test"), and preventing the development of more holistic approaches. In the domain of education a holistic approach means emphasis on providing accessible learning experiences, and not necessarily an accessible e-learning experience (ref. the concept of blended learning versus strict online delivery of e-learning).

In the Design for All paradigm we move from the sender's perspective to the receiver's perspective, and our focus is on the individual needs and local cultural, political and social factors. In our different roles as learners, professionals, recreational users, pensioners, etc. we have all different needs that we should like to have accommodated.

This shift of paradigm calls for new specifications, standards and guidelines to improve accessibility and interoperability of ICT systems. We will highlight one international standard that is ready to be published by the International Standards Organisation in the domain of learning, education and training [6]. This standard is an example of this approach.

VI. A NEW E-LEARNING STANDARD

The forthcoming Individualised Adaptability and Accessibility in e-learning, Education and Training standard (ISO 24751) is a multi-part standard that “provides a common framework to describe and specify learner needs and preferences on the one hand and the corresponding description of the digital learning resources on the other hand so that individual learner preferences and needs can be matched with the appropriate user interface tools and digital learning resources”.

Based on this work Dublin Core have proposed a new Core element “Adaptability” for addressing the alternative representation of resources 1.

What is new with this work is that content providers should bring forth an alternative representation of the resource to facilitate the different needs of the user.

VII. CONCLUSIONS

This paper argues that accessibility to ICT systems and digital content should be considered an important aspect of the global challenge to close the digital divide. With the proliferation of ICT applications and services, and the increase in global connectivity new constituencies get access to digital content. If the content providers only design for shallow transformation of their Web content to pass automatic Web Accessibility tests that only are concerned with Syntactical Accessibility, neither old nor new users of the Internet will be fully served. This challenge calls for a new and more holistic approach to accessibility that is premised upon the needs of the individual user. New accessibility standards in the domain of learning, education and training are now soon to be published that could allow individuals to state their preferences on a number of variables; and let the content providers tag their resources accordingly, so that a better match of targeted content and services could be made. If these standards will have an impact upon the delivery of e-learning is still to early to tell. However, we would claim that the evolving practice in this field should be followed closely, to tell if we here could find an approach to accessibility that could have an impact on Web accessibility in general.

REFERENCES


1 http://dublincore.org/accessibilitywiki/