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# Developing Countries; Developing Experiences: Approaches to Accessibility for the Real World

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## ABSTRACT

The need for developing countries to consider appropriate strategies for enhancing access to networked resources by disabled people provides an opportunity to assess the merits and limitations of the approaches which have been taken in western countries. This paper reviews the limitations of dependence on a constrained technical definition of accessibility, and builds on previous work which developed a holistic approach to Web accessibility and a generic model to assist policy makers in understanding the complexities of addressing Web accessibility. We explore how such approaches can be deployed by practitioners and developers with responsibilities for the deployment of Web services within the context of limited resources, flawed technologies, conflicting priorities and debates within disability studies on the nature of disability.

A pragmatic framework is presented which supports promotion of digital accessibility within a wider social inclusion context. It learns from past difficulties and aims to assist policy makers and practitioners across the world in decision-making when seeking to deploy accessible Web-based services within the context of limited resources, conflicting priorities and the limitations of technical accessibility guidelines.

## Categories and Subject Descriptors

H.5.2 [User Interfaces – Evaluation/methodology]; K.4.2 [Social Issues - Assistive technologies for persons with disabilities]

## General Terms

Measurement, Documentation, Human Factors.

## Keywords

Web accessibility, disabled people, policy, social inclusion, guidelines, disability studies

## 1. INTRODUCTION

Policy and initiatives to improve social inclusion through the use of technology typically refer to technical definitions of accessibility. Of most prominence is the output of the W3C's Web Accessibility Initiative (WAI), which has developed a model of accessibility based on the premise that the goal of universal Web

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accessibility can be achieved through full conformance with each of three sets of guidelines. Of particular relevance to Web authors is the Web Content Accessibility Guidelines (WCAG). In the WAI model WCAG are coupled with accessibility guidelines for browsing and access technologies (User Agent Accessibility Guidelines, UAAG) and tools to support creation of Web content (Authoring Tools Accessibility Guidelines, ATAG).

WAI is widely recognised as having provided influential and valuable guidelines which have been very successful in enhancing the accessibility of Web resources. However, the nature of guidelines that deal with the Web in isolation does mean that there are challenges when effectively integrating them into a wider inclusion context. This paper reviews the limitation of approaches to accessibility which rely on technical guideline conformance; it provides case studies on alternative approaches and describes pragmatic approaches which providers of Web services can use to enhance the accessibility of their services.

## 2. LIMITATIONS OF TECHNICAL ACCESSIBILITY GUIDELINES

Shortcomings of WCAG 1.0 have been documented elsewhere [1]. In theory, these shortcomings should be of limited impact since the release of WCAG 2.0. It is true that WCAG 2.0 represents a significant change from the approach to accessibility taken in the original WCAG 1.0; in comparison to the HTML-focused WCAG 1.0, WCAG 2.0 is technology-neutral. Its core principles (POUR: perceivable, operable, understandable, robust) and related 'success criteria' aim to be applicable to the widest possible range of present and future technologies used to deliver content on the Web – including non-W3C technologies. The normative guidelines are meant to be complemented by non-normative, technology-specific 'techniques' documents, detailing specific implementation examples and best practices.

However as with WCAG 1.0, WCAG 2.0 has been developed using a top-down approach, and its newness means that evidence has yet to be gathered on the relevance and effectiveness of the guidelines in a diverse range of use cases. In the lack of such evidence it would be inappropriate for such guidelines to be mandated in isolation without an understanding of the context and relevance of the guidelines, the implementation challenges and the resource implications of adopting such guidelines.

In addition to specific concerns related to use of WCAG, there are also concerns regarding the dependencies of the guidelines on deployment of ATAG and UAAG. The WAI model relies on conformance with each of the three sets of guidelines – WCAG for content, ATAG for the tools used to create the content, and UAAG for the tools used to access that content.

Although Web authors may have control over how well they conform to WCAG, they normally have no control over the browser technologies used to access Web resources. Unlike the advocacy work used to promote WCAG conformance, encouragement towards the creation and take-up of UAAG-conformant browsers has been less successful. Indeed, in Germany and France recent guidance that users should replace Internet Explorer version 6 with more modern browsers has been motivated by IE 6's security limitations, and not its failure to implement many UAAG features [2].

WCAG conformance, while helpful, cannot, on its own, guarantee universal accessibility as might be mandated by policy and/or legislation. Yet conversely the use of Web content that is not WCAG conformant can increase inclusion to significantly excluded groups by providing access to information and experience. For example, the provision of uncaptioned animation and video may not be accessible to people with hearing or visual impairments but can greatly improve the accessibility of information and experiences to people with low levels of literacy.

There are therefore external factors that limit an organisation's ability to follow a policy or law that mandates technical guideline conformance and at the same time allows them to meet other business objectives; including widening inclusion.

### 3. DIGITAL ACCESSIBILITY AND SOCIAL INCLUSION

The relationship between digital accessibility for disabled people and wider moves towards social inclusion is not straightforward. In the UK, policies relating to disability and technology are largely separate. There have been claims that disability is under-represented within the British digital inclusion agenda (for example [3]), and similarly the move to unite different socially excluded groups under an umbrella 'equality' movement has been criticized as failing to benefit disability rights advocacy [4]. In this sense, Disability is in danger of becoming 'the Other' of 'the Other' [5] within the digital inclusion agenda, as disabled people are marginalised by a discourse which instead foregrounds socio-economic status, gender, ethnicity and age.

Accessibility is arguably the default discourse on the Internet and disability amongst developer communities. However, accessibility can mobilise a limited understanding of the origin of disability, neglecting the interpersonal and social facets that constitute disability as a socially ascribed identity. This is particularly relevant given the increasingly social nature of the Web.

To understand this social ascription, a stronger engagement with the social sciences is useful, encouraging a holistic and critically informed understanding of both accessibility and participation. In this section we provide two examples from Disability Studies which illustrate the value of critical theories supporting expanded approaches to Web accessibility.

#### 3.1 Aversive Disablism

Blatant forms of discrimination and prejudice towards disabled people appear to be declining in the UK and elsewhere. As such, it is not always clear how or why inequality persists, particularly online where disability could become a matter of relevance, rather than definition.

To understand this phenomenon, it is useful to consider Mark Deal's concept of *Aversive Disablism*: 'Aversive disablism recognises disablism is bad but do not recognize that they

themselves are prejudiced' [6]. Where aversive racists are not anti-black, but pro-white [7], aversive disablism may not be anti-disabled, but rather pro-non-disabled. This disablism, is often unintentional.

Deal makes two vital observations; first, that this in-group favouritism can be as damaging to disabled people as more overtly prejudiced behaviours; second, that people who believe that they themselves hold a liberal attitude towards disabled people may support behaviours and policies that exclude disabled people.

In this context we can apply Young's observation that "*the conscious actions of many individuals daily contribute to the maintaining and reproducing of oppression, but those people are usually simply doing their jobs...and do not understand themselves as agents of oppression*" [8].

In terms of Web development, significant inroads are being made through legislation, education and advocacy, but aversive disablism can and does persist at many levels. Importantly, since Web 2.0 thrives upon user-generated content and social interactions which are propagated and remixed across media, there are a multitude of levels and opportunities for aversive disablism to become integrated within systems.

For example, just as builders might fit doorways too narrow for a wheelchair user, CAPTCHA has become a staple part of registration for Web services. CAPTCHAs can be insurmountable for those using screen readers when accessible alternatives are not available. In both these cases, builders and developers would not see their work as 'oppressive', however, their actions create disabling barriers. In terms of achieving accessibility, recognising aversive disablism in mainstream development and commissioning practices may allow this form of subtle, but material, prejudice to be addressed.

#### 3.2 Hierarchies of Impairment

Within accessibility practice (as in other spheres) research and resources frequently prioritise certain communities and their requirements above others for a nexus of reasons. Hierarchical views of disability and impairment have been researched since the 1970s, but in 2003 Deal expanded the focus of disablism to explore potential inter-group discrimination amongst disabled people [9].

Deal delivers a thorough review of hierarchic understandings of impairment by both disabled and non-disabled people. Such hierarchies are culturally dependent, and must be understood in terms of specific local and national culture and policy. He concludes with a call for research:

*"... it is important that, whilst disabled people fight a common cause in seeking equality within society and the removal of discriminatory practices, strategies for attitude change are targeted in a manner that makes them most effective. This may include focusing attention on impairment groups that face the most discrimination in society (i.e. those ranked lowest in the hierarchy of impairments), rather than viewing disabled people as a homogenous group."* (p 907)

When relating these sociological frameworks to Web accessibility, it is clear that, in pro-disabled accessibility discourse, certain groups are privileged above others. Whilst there is increasing sensitivity to this, the reasons for this iterative divide in research and resources are under-theorised.

Much accessibility research focuses strongly on achieving accessibility for people with mobility, sensory and some text impairments – this is important work, however, it does not represent the totality of necessary action. For example, Kelly *et al* [10] cite limits to the W3C's Web Accessibility Initiative, upholding Joe Clark's observation that the WCAG development process lacked adequate provision for users with cognitive disabilities and learning difficulties [11]. Kelly *et al.* also cite Lisa Seeman's formal objection to WCAG 2.0, requesting that implicit claims that the guidelines did cover cognitive disabilities be omitted from the guidelines' abstract altogether [12].

It could be argued that these examples show instances where the low status of cognitive and learning disabilities in accessibility and standards discourse has resulted in averse outcomes. Critical research into accessibility for such groups is therefore recommended before standards can be invested.

## 4. OBSERVING PATTERNS

An alternative approach to a guideline-focused approach to digital accessibility is to observe successful, effective patterns of best practices and for standards to be developed from such patterns. Here we give two case studies which illustrate such an approach.

### 4.1 Multimedia Resources

A recent thread on a mailing list used by providers of institutional Web services in UK universities discussed approaches to the accessibility of videos [13]. The initial discussion focused on tools and services which could be used for captioning videos, but the costs of such captioning were also identified as a barrier to the use of such tools. At a time of economic stringencies across the UK HE sector there are increased pressures to be able to justify significant expenditure. Would it be appropriate to spend this amount of money if hundreds of hours of resources need to be captioned?

Paul Boag described an alternative approach for podcasts he publishes [14]. He concludes that *"in order to be accessible the content of your video or audio do not need to be available in text form word for word. In fact doing so can in some cases damage accessibility. Video, audio and text are different mediums and should be treated as such."* His approach was to provide a roughly equivalent alternative to the podcast, typically in a blog post.

### 4.2 Amplified Events

The term 'amplified events' was coined to describe ways in which networks and related technologies are being used to enhance the impact of, and access to, discussions and learning at events such as scholarly conferences. Amplified events may make use of Twitter (as an event 'back channel'), Slideshare, live video streaming and an event tag to allow content to be easily found.

The W4A conference series began to make use of Slideshare in 2007 and has used 'hashtags' to facilitate access to the slides, event-related Twitter posts and other online resources. In addition a number of talks at the conferences, such as W4A 2008 which was held in China, were presented by speakers who were not physically present at the conference using technologies such as pre-recorded videos or screen-casts.

It should be noted that the use of such tools to support remote users or remote speakers does not necessarily make use of WCAG: videos are not necessarily captioned and slides do not necessarily provide an equivalent text alternative. This may be due to the effort in implementing such recommendations, but also

reflects approaches taken in the physical conference, where there may not be expectations that speakers' slides will implement WCAG.

Perhaps more importantly, however, is the view that providing amplification can enhance accessibility for those who may not, or cannot be present at the event. This might include those with physical disabilities who wish to participate but for whom international travel may be difficult, and those from developing countries for whom there may be financial or political barriers to international travel.

## 5. A FRAMEWORK FOR POLICYMAKERS

### 5.1 The Challenges

Challenges for policymakers to consider in developing a policy that firstly recognises the potential of technology to reduce social exclusion for disabled people by avoiding averse disability, and secondly acknowledges constraints of current technologies and the resources available to implement them, will include:

**Complex Use Cases:** Web developers and content providers, are often required to develop Web applications which are much more complex than the informational Web services which were the norm when the WAI model was initially developed. Such complex use cases might include e-learning services (which may embrace a variety of underlying pedagogical models), highly interactive services, data repositories and use of innovative technologies for which best practices are not yet established.

**Dealing with Existing Publishing Technologies and Workflows:** Content providers will often have to develop solutions based on existing publishing tools such as Content Management Systems. These will often have existing well-embedded workflow processes for which it may be costly to deploy new tools, processes and provide training and support.

**Limitations of Browsers:** Existing technologies also include legacy browsers. Reasons for the widespread continuing usage of legacy browsers may be well-understood but such understanding is of no use to content authors and developers who have a need to develop solutions which will work in this flawed environment.

**Conflicting Priorities:** There are conflicting priorities for resources to enhance accessibility. Such conflicts can divert effort and finances from other areas aimed at users with disabilities.

**Complexities of Authoring Environments:** Whilst there are limited numbers of browsers which are widely used, there is a huge diversity in the ways in which Web content can be published. Content providers do not use just HTML authoring tools, but will use tools such as blogs, wikis, social networking services and devices such as digital cameras and mobile phones to create Web content with other services, such as word processing applications, email, etc. also being widely used to create content which may be made available on the Web.

### 5.2 Real World Approaches

Faced with such challenges, a simple inclusion policy that mandates Web content conformance with WCAG is unlikely to be achievable in many cases. Since WAI promotes use of its guidelines, it is left to the user community to decide how WAI's aspirations can be implemented in a wider context of information provision or service delivery. Some pragmatic approaches for content providers are given below.

**Reasonable Measures:** Rather than regarding WCAG conformance as a mandatory requirement, WCAG should be regarded as guidelines, which may be ignored if their use conflicts with other requirements – so long as steps are taken to address the potential exclusion that may result. It should be noted that UK legislation that requires use of ‘reasonable measures’ to ensure that users with disabilities are not discriminated against unfairly, provides a legislative context for this approach. A policy based on ‘seeking to make use of WCAG’ will provide the flexibility needed. This would not be possible with a policy which states that all resources must conform to WCAG.

**Justification of Costs:** ‘Reasonable measures’ should include identification of costs of conforming with accessibility guidelines. There should be consideration of the trade-off between financial savings and usability issues. For example the attraction of promoting open source, free assistive technology in developing countries may be tempered by the challenges of moving users away from familiar, currently-used commercial alternatives – which may in reality have been illegally obtained at low cost.

**Provision of Alternatives:** If it is too costly or difficult to conform with accessibility guidelines, the provision of alternatives that are as equivalent as possible may be an appropriate solution. As described in [10] the alternative need not be Web-based.

**Just-in-time Accessibility:** A requirement that all resources conform to WCAG is a ‘just-in-case’ solution. This may be an appropriate resource for widely accessed informational resources, but may be inappropriate if resources are expected to be little used. There may be advantages in delaying provision of accessibility solutions to allow development of technologies which can enable more cost-effective solutions to be devised.

**Advocacy, Education and Training:** Those involved in supporting content providers and other stakeholders should ensure that education and training on best practices is provided, together with advocacy on the needs for such best practices.

**Sharing and Learning:** With an emphasis on a community-based approach to the development of appropriate solutions it is important that best practices are widely shared.

**Engagement of Users with Disabilities:** The need to ensure that disabled people are included in the design and development of Web solutions must be emphasised.

**Focus on ‘Accessibility’ rather than ‘Web Accessibility’:** The benefits of Web/IT solutions to real world accessibility difficulties needs to be considered. As described above, amplified events can address difficulties in travel and access, even though the technologies used may not conform with accessibility guidelines.

## 6. CONCLUSIONS

This paper describes debates within Disability Studies and the limitations of a technical model of addressing Web accessibility. It argues for a reappraisal of mainstream approaches to Web accessibility policy work to ensure a more effective and workable approach to promoting technology as a way of globally reducing social exclusion for disabled people. A framework for policymakers which aims to avoid difficulties experienced in the developed world seeks to help to influence development of a more practical and pragmatic approach for the developing world.

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