

# The Potential of Web Accessibility in China: A Hypothesis on Its Impact on the Global Web Interface

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**Abstract.** This paper is based on a preliminary research conducted in 2005 into the current level of web accessibility in China. We evaluated a few websites which are meant to be information portals for the visually impaired. Results of the evaluations show none of them is compliant with Web Content Accessibility Guidelines 1.0 (WCAG 1) [1] Level A checkpoints and most of them are inaccessible at all. Causes behind this situation may include lack of legislation from the government and lack of accessibility awareness of web designers. However, we found Chinese Web accessibility also faces more of a challenge as a result of the complications of Chinese language itself. We hope this paper could bring the attention of both Chinese government and Chinese web designers on web accessibility and also help international stakeholders to understand the facts in China.

**Keywords:** web accessibility, China, visually impaired, language, universal design, usability, Chinese.

## 1 Introduction

This paper is based on a preliminary research into the current level of web accessibility in China. Web accessibility has been given a priority status in the west as a result of legislation such as Section 508 of the Rehabilitation Act in the United States and the Disability Discrimination Act (DDA) in the United Kingdom. In China, accessibility for people with disabilities in itself is not a well-known concept. Web accessibility is practically an unknown concept except perhaps, for those who use assistive technology such as text readers or browsers to access the web. And even then, it is an extremely limited access; very, very few Chinese websites take web accessibility into consideration in the design.

In this report, we show that even websites which are meant to be information portals for the visually impaired are not compliant with Web Content Accessibility Guidelines 1.0 (WCAG 1) Level A checkpoints. We also look at the barriers of different dialects and languages used in China

This article is a collaboration of Chinese usability specialists from across the globe to report on the current status of web accessibility in China: are there any developments or efforts towards inclusive design? Events such as the recent User Friendly 2006 Conference held in Beijing show that there is awareness that usability

is an important process of web design. Ongoing research is being conducted and this article is a result of the initial findings.

## 2 A Survey on Chinese Web Accessibility

In 2005, we conducted an evaluation of web accessibility situation on the homepages of some websites in Chinese. The objectives of this evaluation are 1) to check if these web pages are WCAG 1.0 compliant; 2) to identify the common accessibility issues in these web pages if there are any; 3) to analyze the findings.

These websites are mainly for disabled people, especially the visually impaired people in China. They are homepages of:

*China Disabled Persons' Federation (CDPF) website;*  
*Blind Online Channel on CDPF website;*  
*CDPF website, English Edition;*  
*China Braille Press (CBP) website;*  
*Yongde Website for the Blind;*  
*China Massotherapy Network;*  
*Huaxia Website for the Blind;*  
*The Hadley School for the Blind in Fuzhou China.*

**Table 1.** A brief description of the organizations that host the websites

Name of Organization and URL	Organization Description
China Disabled Persons' Federation (CDPF) <a href="http://www.cdpf.org.cn">http://www.cdpf.org.cn</a>	CDPF is the unified organization of and for over 60 million persons with various categories of disabilities in China
CDPF - Blind Online Channel <a href="http://www.cdpf.org.cn/mrzx/index.htm">http://www.cdpf.org.cn/mrzx/index.htm</a>	A CDPF website Channel for the blind people
CDPF, English Edition <a href="http://www.cdpf.org.cn/english/index.htm">http://www.cdpf.org.cn/english/index.htm</a>	The English Edition of CDPF website
China Braille Press <a href="http://www.cn-bp.com">http://www.cn-bp.com</a>	China Braille Press (CBP) is a branch organization under CDPF. It is also the only Braille press house in China
Yongde Screen-reader <a href="http://www.wangyongde.com">www.wangyongde.com</a>	The website for Yongde Screen-reader, one of the most popular Chinese screen-reader for the visually impaired. Wang Yongde, himself a blind, produced the software.
China Massotherapy Network for the Blind <a href="http://www.bjanmo.com/">http://www.bjanmo.com/</a>	Massage Therapy is the most common and most possible job that the blind people in China can have. This website is mainly for the blind massage therapist.
Huaxia Website for the Blind <a href="http://www.chinamr.org/">http://www.chinamr.org/</a>	A non-profit website for the blind community in China.
The Hadley School for the Blind in Fuzhou China <a href="http://www.hadley-china.org/index2.htm">http://www.hadley-china.org/index2.htm</a>	The Hadley School for the Blind in Fuzhou, China

These websites are selected because they are mainly for the visually impaired people and they are meant to be compliant with accessibility standard and guidelines. Table 1 depicts what these websites are about.

## 2.1 Methodology

We use the automated Bobby Online Portal [2] combined with manual heuristic evaluation to examine if these web pages are compliant with WCAG 1.0.

First, we use Bobby Online Portal. For each web page, we input the URL into Bobby Online Portal to generate a report. Bobby Online Portal provides reports based on Section 508 and WCAG 1.0 Guidelines. In our evaluation process, we check WCAG 1.0, Priority 1 only. Second, we heuristically and manually check some triggered issues that Bobby cannot determine automatically.

If a web page passed such a Bobby test, it means this web page qualifies as Bobby A Approved, which means it is accessible in the Support Level A of WAI Content Accessibility Guidelines.

We realize that automated testing can detect only some of the accessibility violations identified by WCAG 1.0 Guidelines. It provides an initial assessment of the technical accessibility of a website. However, an automated tool cannot check on color contrast or evaluate the adequacy of the alt text description. For the purpose of this paper, we only consider the homepage. We used Watchfire's Bobby tool rather than others because it is a widely known tool, more so than Cynthia or WAVE, for example. We did not expect to find and nor did we find features such as 'Skip navigation links' nor were there any style sheets associated to separate presentation from content.

## 2.2 Results of Bobby Evaluation

First we use Bobby Online Portal. The summary of the Bobby test results are listed in Table 2 below.

**Table 2.** Results of web accessibility evaluations on the selected websites

Name of Organization and URL	Bobby A Approved?	Major Accessibility Error(s)
China Disabled Persons' Federation (CDPF) <a href="http://www.cdpf.org.cn">http://www.cdpf.org.cn</a>	No	Provide alternative text for all images. (117 errors)
CDPF - Blind Online <a href="http://www.cdpf.org.cn/mrxx/index.htm">http://www.cdpf.org.cn/mrxx/index.htm</a>	No	Provide alternative text for all images. (3 errors)
CDPF, English Edition <a href="http://www.cdpf.org.cn/english/index.htm">http://www.cdpf.org.cn/english/index.htm</a>	No	Provide alternative text for all images. (17 errors)

**Table 2.** (Continued)

China Braille Press <a href="http://www.cn-bp.com">http://www.cn-bp.com</a>	No	Provide alternative text for all images. (1 errors)
Yongde Screen-reader <a href="http://www.wangyongde.com">www.wangyongde.com</a>	No	Provide alternative text for all images. (15 errors)
China Massotherapy Network for the Blind <a href="http://www.bjanmo.com/">http://www.bjanmo.com/</a>	No	Provide alternative text for all images. (5 errors)
Huaxia Website for the Blind <a href="http://www.chinamr.org/">http://www.chinamr.org/</a>		Provide alternative text for all images. (3 errors)
The Hadley School for the Blind in Fuzhou China <a href="http://www.hadley-china.org/index2.htm">http://www.hadley-china.org/index2.htm</a>	No.	Provide alternative text for all images. (3 errors)

No homepage of these 8 websites is qualified as Bobby A Approved. All web pages investigated have one issue in common: they don't provide alternative text for all images.

As the automated Bobby online Portal is not accurate enough to evaluate a web page's accessibility, to compensate this, we do manual heuristic evaluation in the next step.

### 2.3 Results of Manual Heuristic Evaluation

During our manual heuristic evaluation, we notice that some of the 8 investigated homepages, though they are not qualified as A Approved by Bobby, but they are still reasonably web accessible. These websites are:

*China Braille Press*

*The Hadley School for the Blind in Fuzhou China*

We find the images with no alternative text descriptions are not relevant - they contain no information at all. They did not use empty alt tags as is usually recommended by WCAG 1.

The home page of CDPF comes out the worst in this comparison. There are 117 instances of images without alternative text descriptions. If we take a look at the screenshot of that home page, we can also identify some 5 flicker elements that could make accessibility even worse. There is a pop-up window, which is a sheer image with no alternative text description.

The result of evaluation on Yongde Screen-reader software homepage is negative too. Yongde screen-reader is one of the most popular screen-reader in China. Its website should be accessible. But again, many button images that convey important information for visitor to click on have no alternative text descriptions (Figure 3).



**Fig. 1.** CDPF homepage screenshot. There are flickers (framed in black shown in the figure), a pop-up window, and 117 images without alternative text descriptions, which is not accessible for those who rely on screen-readers.



**Fig. 2.** Screenshot of CDPF English edition homepage. Images that convey important information, as framed in red, have no alternative text descriptions.



**Fig. 3.** The important button images on the left (framed in red) that provide navigation function have no alternative text descriptions

To summarize the findings, we rate these 8 websites with ‘Accessible’, ‘Partially Accessible’, and ‘Not Accessible’ as follows (Table 3):

**Table 3.** Evaluation results – Our rating

Name of Organization and URL	Bobby A Approved?	Our Ratings
China Disabled Persons' Federation (CDPF) http://www.cdpf.org.cn	No	Not Accessible
CDPF - Blind Online http://www.cdpf.org.cn/mrxz/index.htm	No	Partially Accessible
CDPF, English Edition http://www.cdpf.org.cn/english/index.htm	No	Not Accessible
China Braille Press http://www.cn-bp.com	No	Accessible
Yongde Screen-reader www.wangyongde.com	No	Not Accessible
China Massotherapy Network for the Blind http://www.bjanmo.com/	No	Partially Accessible
Huaxia Website for the Blind http://www.chinamr.org/		Partially Accessible
The Hadley School for the Blind in Fuzhou China http://www.hadley-china.org/index2.htm	No.	Accessible

## 2.4 Results

As we can see from Table 3, 2 out of 8 homepages are accessible based on our investigation:

*China Braille Press*  
*The Hadley School in Fuzhou, China*

3 of them are rated as 'Not Accessible':

*CDPF website*  
*CDPF English Edition*  
*Yongde Screen Reader website*

The results are revealing in themselves, as websites that serve the blind community are expected to be accessible. But that is the real situation in China. There should be more advocacies for disability awareness and web accessibility.

## 3 Language, Dialects and Other Barriers

Even though a website itself is qualified as accessible, for the visually impaired, technology such as a screen reader is still needed to aid to access it. The screen reader software translates texts to speech so the visually impaired can access web pages.

However, the Chinese language presents special challenges for software including text readers. Chinese language is made of a combination of characters and sounds. Each character is more like a drawing rather than a letter. The Chinese text consists of a string of characters and each character is to be pronounced separately. A Chinese word may contain one or more characters assembled to make another word. A text reader needs to be able to recognize the various permutations of a Chinese text string in the lexical context to produce the correct pronunciation. Because the Chinese language uses a logographic script—one in which one "character" corresponds roughly to one "word" or meaning—there are vastly more characters, or glyphs, than there are keys on a standard computer keyboard. A variety of keyboard input method editors or IMEs have been designed to allow the input of Chinese characters using standard keyboards. This added complication of encoding of the Chinese in websites can prove to be too much of a challenge to the development teams.

There are sophisticated methods for guessing which characters the user intends based on the context of the sentence. For the blind user, there is the added problem that the transfer of Chinese texts into Braille is not 100% accurate. Older Chinese texts might be only about 80% accurate; because the input into Braille uses pinyin. The text reader has also to accommodate English as many of the links, URLs and software are in English.

The language complications that adds to the difficulties of consolidating and working together to form a single text reader that would work across board in China is compounded by the fact that China has as many dialects again. Putonghua or Mandarin is the national language and it is taught in schools but local dialects still prevail. For example Cantonese is still the de facto dialect in Guangzhou and in Hong

Kong and they have their own text readers. A Beijing resident would not be able to understand a Cantonese in his mother tongue but they would have no problem with the written language if they can read it.

## 4 Challenges and Potentials

As we have shown, the Chinese blind user faces more of a challenge as a result of the complications of Chinese language itself. This means whatever few advances and benefits have made accessible the Western world on the World Wide Web cannot be assimilated into the Chinese world. WCAG 2 is apparently going to be less Anglo centric but it still has not much on non-European languages.

On the other hand, those who have been trained and have access to computer equipment are certainly appreciative of being able to communicate electronically and have access to information on the Internet. Wenru Niu shows from her report that the schools seem to on their way to teach their students computer literacy that might eventually offer them better prospects for work other than the traditional massage jobs. At the moment they are struggling with the needs for better curriculum, teacher training to teach the students and up to date computer equipment. The importance of training for the teachers is not to be underrated. As anybody who has used any of the text readers could easily emphasize, learning here is not readily available in a do-it-yourself kit from a manual, especially when you have not learned to read. Students from the Qingdao School for the Blind are adamant that “they need a screen reader that will work in programs that sighted use. They do not need a special program that only works for the blind.” [3]

Given the momentum of the growing web usage in China, web developers have become aware of usability issues and the need to conform to world standards. Some of the new technology can be of benefit to both the blind and the sighted world such as the Tongchuan Blue Sky software from Harbin (of which there is not much information) and CU VOCAL from Hong Kong. Universal design is still the best way forward. Assistive technology always carries a heavy price for those who can least afford it and there is the possibility to work with open source and free ware. However, it is not as prevalent and available as commercial software.

Some of the legislation passed in the previous year shows that China is taking account of the discrepancy and is doing something about it. In the year of 2004 and 2005, we saw twice ‘China Information Accessibility Forum’ conferences held in Beijing China, hosted by CDPF and China Association of the Blind (CAB). This is the first and biggest ever event in China to advocate and promote accessibility issues for the blind. The China Committee of Information-without-Obstacles for the Deaf followed it on November 2005. One aim of those conferences is to advocate the information accessibility from technology aspect and the government.

## 5 Conclusion

We conducted web accessibility evaluation on some selected websites which are dedicated for the people who need accessibility most. We found only 2 out of 8 are



accessible, and none of them passed the WCAG 1.0 Level A checkpoints. Obstacles include lack of legislation and lack of accessibility awareness from web designers. Difficulties from the Chinese language itself exist and should be considered in the future standard or guidelines if Chinese government will have. Japanese guideline can be referred as the Japanese language uses Chinese characters everywhere.

We propose a more extensive survey on web accessibility in China be carried out in future that can cover more websites in a broader range. User testing of disabled people including blind people and partially sighted people can be helpful to understand more.

Why should Chinese web accessibility matter to technical communicators in the international community? Apart from the ethical issues for pursuing inclusive design, Chinese web developers are becoming strong players on the World Wide Web, it is important that the newly developing market should have the essential dimension of technical web accessibility. A commitment to an accessible information architecture that is usable from the initial stages of development seems logical before huge investitures get entrenched in large websites which are not accessible. As the Chinese seem poised to become a major power in the technical market place [4], technical communicators would do well to keep abreast of events there for opportunities. At the moment, technical communicators might want to look at future trends such as the wireless technology that is growing by leaps and bounds there. In the meanwhile, technical communicators who plan to work or have communication with the Chinese should understand the level of web accessibility there and encourage inclusive design because ultimately the international community would benefit in such an exchange. One of the initiatives that facilitates just such an exchange is the uiGarden.net [5], a bilingual webzine which offers an East West interaction and to bridge between the different cultures in the usability field.

## References

1. Web Content Accessibility Guidelines 1.0 <http://www.w3.org/TR/WAI-WEBCONTENT/>
2. Bobby Online Portal <http://bobby.watchfire.com/bobby/html/en/index.jsp>
3. Wenru, N.: CHINA TRIP REPORT October 9-November 9, 2003 part I: unpublished report (2003)
4. St. Aman, K: Considering China. A Perspective for Technical Communicators *Technical Communication* 48(4), 385–388 (2001)
5. UIGarden Website, EastWest Interaction <http://www.uigarden.net>