**UNITED NATIONS STATISTICAL COMMISSION and
ECONOMIC COMMISSION FOR EUROPE
CONFERENCE OF EUROPEAN STATISTICIANS**

UNECE Work Session on Statistical Dissemination and Communication
(12-14 September 2006, Washington D.C., United States of America)

Topic (i) Communicating effectively on the Web

BLIND FRIENDLY WEB

Supporting Paper

Submitted by the Czech Statistical Office[1]

I.   INTRODUCTION

1.   The issue of web pages accessibility to the persons with special needs is the crucial challenge for webmasters and web designers these days. Czech Statistical Office is one of the first public state offices who have tried to adjust its web presentation for the people who are seriously visually impaired – to those, who can not see at all, or see only a little.

2.   This contribution describes the rules for web pages accessibility for users who are seriously visually impaired. Not only blind people (it is impossible for them to obtain the information visually) belong to this user group, but also the users with other visual handicap: users with narrowed visual field, with very serious short-sightedness, tunnel vision or colorblindness (trouble with color sense, more than 15 % of population), errors of refraction (myopia, astigmatism), cataracts, aphakia, glaucoma, retinopathy, etc. Attention is also drawn to other handicapped groups: to aurally handicapped, locomotive handicapped and also to the persons with concentration problems and others.

II.   PURBLIND AND BLIND PERSONS

A.   Basic information on web pages accessibility for purblind and blind users

3.   According to estimates, there are 60 000 to 150 000 people with severe visual handicap in the Czech Republic (CR) – that means approx. 1% of the CR population. In general, it is supposed that 0.6 and 1.5 % of population has some severe visual handicap. For many of them, the web can be a big help and often the only way to perform certain activities independently – whether it be reading news from a news server, ordering wares from an e-shop, or downloading a book form a digital library. Visually impaired users use a special technology for reading the web page content; the technology makes the content accessible for them.

4.   Blind people use voice or tactile output to get web page content – with its help, the content of a web page is either read to them, audialised in a synthetic voice, or the text is displayed on a special peripheral in Braille (braille display). A screen reader sends information on what shall be read or displayed to the voice synthesis unit or braille display. The voice or tactile output is not a web page browser, but rather processes a web page loaded form a standard browser (usually Microsoft Internet Explorer, which is the best accessible browser with these technologies).

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4.	Purblind users use a 'software magnifier' that can magnify the web page content. Sometimes the magnification itself is not enough, and a change of color scheme or contrast is necessary. With purblind users it is possible to see the use of not only Microsoft Internet Explorer, but also other browsers (e.g. Mozilla or Opera), because they have features that make the web page browsing easier for purblind users.

5.	In developing or upgrading pages with respect to visually impaired users, it is necessary to keep in mind the following facts:

- a blind person is able to obtain the **information in the form of text only**
- the way, the blind user perceives the information on the web page is **linear** – it lacks the global view of displayed information
- a blind user controls a personal computer, and all applications, solely with the use of a keyboard and **keyboard commands**
- a purblind user, using the software magnifier, can see only a **small portion of web page** at the same time

6.	Upholding these rules does not only help the visually impaired, but also users with other types of handicap – e.g. motorial handicap of upper extremities (not able to control the computer with a mouse) or with minor concentration disorders (slow reaction on visual stimuli). Adhering to these rules also enables users with a monochrome monitor, users with disabled active components (Java, ActiveX, JavaScript), or users who do not use major browsers, to visit the web page and hence increase the visit rate.

## B.	High priority rules for the www creation for purblind and blind users

- Graphical objects that are used for the control of a web page should have their textual alternative defined.
- Information communicated through scripts, objects, applets, cascade style sheets, images, and other user side supplements, are accessible even without these supplements.
- All tables make sense being read across rows.
- Image maps are created in such a way that they are accessible to visually impaired users.
- Web page content only changes through a control element activated by the user.
- Frames are created in such a way that they are accessible to visually impaired users (at best, use of frames should be avoided).
- Hyperlinks describe their target, even without the surrounding context.
- Information conveyed by color is accessible even without the color depth.
- Colors of the foreground and background have adequate contrast. A pattern is not used for the background as it reduces readability.
- Rules for font size should not use absolute measures.
- Web page code can be validated according to some final HTML or XHTML specification. It does not contain syntactic errors that the web page administrator is not able to remove.
- Nothing is blinking on a web page quicker than once per second.
- Elements of headings and lists are correctly marked in the source code. Elements that are not part of headings or lists are, on the other hand, not marked in the source code in this way.
- Each form element has a descriptive heading attached to it.

## C.	Web page accessibility control

7.	Web page authors can independently validate accordance with the above rules and recommendations to reveal possible breaches. In this final section, there is a brief description of some validation processes.

8.	For web page accessibility verification it is possible to use 'Accessibility Toolbars', containing many features for accessibility testing – for example toggling on/off the style sheets, display of the web page in different screen resolution etc. Toolbars can be downloaded from:

- http://chrispederick.myacen.com/work/firebird/webdeveloper/ - Web Developer Extension for Mozilla browser
- http://www.nils.org.au/ais/web/resources/toolbar/ - Accessibility Toolbar for MSIE 5.0 and higher with enabled JavaScript support

9.   Other possibility is to follow these directions:
- Turn off the images in the browser.
- Turn of the processing of other elements than HTML (JavaScript, Java, CSS etc.)
- Load the web page in a text mode browser (e.g. LYNX).
- Copy the textual content of a web page and paste it to a simple text editor.
- Try to navigate solely with the help of a keyboard.
- Try to change the size of the browser window and screen resolution in different ways.
- Set a non-standard combination of colors and font size in the OS and the browser.

III.   OTHER HANDICAPPED USER GROUPS

D.   Aurally handicapped

10.   Aurally handicapped Internet users do not tend to have problems using most web pages. This is caused by the fact that the web still depends on visual presentation. The current state is a result of low occurrence of audio technology in computers and low transfer speed, thus is likely to change. We can expect improvements in both mentioned areas. Therefore, the dependence on sound in conveying important content provides an overwhelming obstacle for the auditory impaired user group, and the web page owner should always provide adequate textual alternatives.

E.   Physically handicapped

11.   The basic obstacle for these users is that they are not able to use a mouse. It is important to note, that these users comprise those whose handicap is permanent, and so they cannot use their upper extremities at all, or users whose handicap is temporary. For example, they have a plaster on their arms as a result of an injury, etc.

12.   Both these groups need to control the content of a web page in another way than using a mouse. So the keyboard is what remains. The web page owners should keep the needs of this group in mind and try to navigate their pages using the keyboard.

F.   Users with displaying problems

a. Alternative browser users
We often hear a simplified statement, that the use of a browser is simply a question of choice. There is, however, a large user group, that does not have the choice and have to use a certain browser. Those are e.g. Linux programmers, where the MS Internet Explorer does not work etc. To satisfy these users does not mean to provide them with the same usability in all browsers – according to the functionality of some browsers, it is often impossible (e.g. some browsers display only text – Lynx, Links). It is vital, however, that the main functionality and use is possible in all of the browsers. Responsible www author is therefore thoroughly testing the functionality in different browsers on different operating systems.

b. Users with other displaying appliances
The number of users of different computer types is constantly growing. The differentiation of computers is quite high – big desktop computers, classical notebooks, small minibooks, cellular phones or pocket computers (PDA). The range of display hardware is broad and correctly designed web pages should work properly on all these appliances.

G.   Users with learning and concentration disorders

13.   Although there is a large group of users with learning and concentration disorders, they are usually not taken into account during the web page creation process. These users can see, hear and use the mouse normally, but they can have the same overwhelming problems with some of the web pages, as the blind users do have. How is this possible?

14.   For the users suffering from dyslexia, concentration disorders and similarly impaired users, the web pages with chaotic navigation, large portions of compact text and small font size, are unacceptable. From all the accessible web rules, the techniques for this group of impaired people are the least elaborate. The scope and form of the disorder varies greatly in this user group.

15.   Users with learning and concentration disorders need web pages that are well arranged, structured and easily comprehensible, with structured content and well-designed navigation. Increased font size, short paragraphs, a lot of headings, more visual 'gaps', and more pictorial symbols instead of words, etc.

H.   Search engines crawlers

16.   Thanks to crawlers, new visitors can discover our web pages through search engines. It is therefore strange, that most pages are not optimized for these 'robots'. Inaccessible web pages can render the work of a robot very difficult – in some cases the robot is not allowed to enter other pages, than the homepage.

17.   How do these robots work? Simply put – the robot comes to the web page and starts to 'read' the contents. The movement from page to page is done via hyperlinks. It cannot see colors, hear sounds, does not recognize the content of images, and cannot use JavaScript or Flash properly. The core content is thus in text and links and therefore, it is necessary to offer the robot a well-structured content (using headings, paragraphs, lists, font type etc.), to rely on pure text, and not to restrain the navigation to images, JavaScript or Flash. It is thus very useful to test how the crawler sees your web page, whether you are not hiding any important content or navigation links by using an inappropriate technique.

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