ASSESSMENT OF BARRIER-FREE WEB PORTALS OF MUNICIPALITIES WITH EXTENDED COMPETENCES IN THE VYSOČINA REGION

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ABSTRACT:
The work is dedicated to barrier-free assessment of selected Web portals of municipalities with extended competences in the Vysočina Region. The analysis is performed in several aspects, particularly their accessibility for citizens with disabilities as one of the options to interact with citizens and important moment of anti-discrimination measures whose primary purpose is to create equal access to information to people health disadvantaged.

KEYWORDS:
Vysočina Region, public administration, municipalities with extended competences, barrier-free websites, anti-discrimination actions, assistive technology, WCAG 2.0, SEO.

1. Legislative and criterial possibilities of work

1.1. Legislation adjustment of providing and access to information

The fundamental defined rights of the citizens of the Czech Republic, the so-called pillars of the democratic rule of law, are enshrined in the Constitution of the Czech Republic and the Charter of Fundamental Rights and Freedoms, legislation, the highest legal force, i.e. on top of the hierarchy of the Czech legal order. Among the guaranteed rights include the right to free access to information and right to be informed about the activities of public authorities. State bodies and local authorities are required to adequately provide information on its activities. [1] Act No. 365/2000 Coll. On Public Administration Information Systems determines public authorities a duty to publish information relating to the pursuit of their activities in a manner that allows remote access, even in the form accessible to disabled citizens. [2]

1.2. Definition of user accessibility site

A web, which does not put any obstacles to its users, and even in terms of equal opportunities. It means to remove the remaining barriers, in particular the nature of the information in relation to the special needs of disabled and other socially vulnerable groups (e.g. seniors). This is a group of up to 30% of the total number of web environment users. Roughly speaking, the web accessibility equals his wheelchair accessibility. The rules set out in the Appendix to the Decree of accessibility is then a compromise between the technological capabilities that allow the disabled access to information and real possibilities of public authorities. [3]

What are the restrictions, i.e. handicaps, determining the ability of resolution of users?

- Incapacitation - limits sight, hearing, limbs
- Knowledge and education - the ability to understand the text or language
- Technical capabilities - software equipment, technical equipment (to work exclusively with the keyboard, the need to use assistive technology)

Compliance with the rules set out in the Appendix to the Decree of accessibility for the public authority required or conditionally required. Creator of the site does not decide solely by choice, but depending on the condition specified in the rule.

Pillars of user accessibility
- Title aptness
- Logical structuring with headings, lists
- Existence of global navigation, site maps
- Existence of search form
- Graphic elements balanced by the existence of an alternative narrative - textual descriptions
- Switchable graphics styles
- The possibility of enlarging the text regardless of its functionality
- Contrast color
- The tables and forms arranged in a logical sequence
- Sites can be controlled using the keyboard only
- The functionality of assistive technology

Handicapped user evaluates web portal from two angles:
- Easy access - means the possibility of separate and independent work with a web portal without specific technical achievements
- Comprehensive text - clear, comprehensive, objectively perceptible web portal content sorted in a logical sequence

1.3. Evaluation Criteria (metric) of web portals of municipalities with extended competences in the Vysočina Region

Criterion scaling was determined (based on the Decree No. 64/2008) as follows:
- **The existence of a complete version of Web site accessibility-compliant** or **the existence of multiple versions of an easy transition to a modified version of rule-based access**
- **Declaration of accessibility**
- **Autonomy and independence at work with a web portal** - loud and clear global navigation, the ability to control portal exclusively through the keyboard, the independence of the code and content of Web pages on level control device, redirecting pages may be clear only after the confirmation request
- **Objective Perceivable of Web site** - to use assistive technology-reader Increase font size without affecting the functionality of text, graphics and switching to other accessories and styles - need text descriptions of graphics, the color contrasts of the text, the implementation of changes without affecting the functionality of the text, the availability of information without colors
- **Clarity and user friendliness** - the logical structuring of text, lists, clear headings, search form (full-text), clarity, sufficiency timeout to work with portal tree structure of web pages

2. Disability and Access to Information

2.1. The reality in the public accessibility of Web sites for people with disabilities

"In the commercial sector may be profit motive - I will lose a customer according to inaccessible site who goes to the competitor. However, in the service for the general public there is no competition. **Blind Internet user who can't read messages on the municipal notice board or on the electronic copy doesn't have a chance to go to the neighboring town website, and there learn the same information.** The motivation for creating barrier-free web pages may be the only social sentiment or anti-discrimination measures." [4]

The above reasoning relates to the time of the year 2007, when it wasn't obligatory for the public administration institutions to ensure equal opportunities for access to their websites. The significant change occurred in 2008, since when there is in the Czech Republic Decree No. 64/2008 Coll.: Form of disclosure of information related to the performance of public administration through web pages for persons with disabilities (Decree on accessibility). Decree can be categorized as mentioned anti-discrimination measures whose primary purpose is to create equal access to information for physically disadvantaged persons. In practice, therefore, introduced a few years, public authorities follow when disclosing information in a manner allowing remote access (the website) so that information related to the execution of public administration published in a form that enables that people with disabilities can know these information in the necessary extent.

2.2. Methodological and instrumental cover of the websites production for government and public administration

Chapter 1.1 and Chapter 1.2 deal comprehensively with the legislative aspects of and access to information citizens without health restrictions and limitations of disabled citizens in the state sector and in particular public administration. For the relevant authorities, which had their Web sites with information processed is particularly binding Decree No. 64/2008 Coll. This decree provides a good methodology for creating user-friendly information portal, and promoting non-discriminatory implementation of assistive technology. Assistive technology is the so-called technology accessibility. These are the principles and procedures [5] (according to WCAG 2.0), which allow access to certain information and not just disabled (blind and other disabled), but also alternative devices, equipment and programs. The area of assistive technology is very broad. This is not just about the accessibility of Web sites and documents, as well as technical modifications to the information generally, or how the information should be presented from the beginning in the right way. [6]

The above cited decree determines the methods, instruments and properties of editorial systems and programming procedures ("best practice") for creating Web content of state and public administration. [7] It is interesting that the documents prepared by a joint working group comprised of employees of the Methodical Centre of Informatics of the Unified Organization of the Blind and Visually Impaired (SONS), independent consultants and professional staff of the former Ministry of Informatics. It should be further noted that the rules laid down by Decree No. 64/2008 are two types of binding: "P" - mandatory and "PP" - conditionally mandatory (see next Paragraph).

It appears that the sites of state and public administration are usually created in a few editorial systems that respect the concept of "best practice" with exceptions, as the website mentioned in the section usually called "Declaration of Accessibility" (Rule No. 33 Decree. No. 64/2008). If sites are not created in the content management system that generates accessible web pages, the web author usually adds to "Declaration of Accessibility" link to validity of pages by passing some code validator or SEO analyzer.

SEO analyzers and code validators are online web tools that allow a fairly objective programming code validation and compliance and consistency of programming code and developer of methods. Also lists any errors of source code of verified page. SEO analyzers (Search Engine Optimization) are reporting on a number of other useful details associated with the operation and retrieval features rated website. [8]

In subsequent chapters, the work is dedicated to compliance with "best practice" rules for access of people with disabilities in selected sites in the Vysočina Region.

2.3. Assistive tools for people with disabilities

Application of rules declared by Decree No. 64/2008 Coll. may not always be sufficient to make information on the web office or state government services for citizens with physical limitations (disability). In this case, switch to text mode, increasing the font size and increase the display contrast is not sufficient and need to access assistive tools for use in personal computers of handicapped citizens. This understandably expects the necessary technical equipment such as sound card, speakers or headphones, video magnifier and finally installed the appropriate software. [9]

Fortunately, there are currently several commercial entities on the domestic market, who establish themselves in the field of developing and selling software applications and localization of assistive software and hardware tools. [10] As an example company Elvos, Galop, and maybe even Adaptech.cz. Links to their Web pages can be found in the literature section. [11, 12] The problem is that assistive tools are quite expensive (tens of thousands of crowns) and financial support from the state isn't always and under all circumstances available. According to the citizen with a full visual impairment is entitled to the full amount of financial support to purchase a reading device (notebook equipped with the software included about 70 000 CZK) once in a lifetime, the purchase of another (because of post-warranty repair or moral and physical wear and tear) is possible only with financial contributions.

The issue of assistive tools and assistance to citizens with physical limitations are also devoted several web portals and projects implemented within the Open Source project. Their web addresses are also listed in the Appendix.

Reader (usually a PC or laptop with appropriate software) is necessary assistive devices, especially for people with total or severe visual impairment. The principle of operation lies in the fact that voice (speech) synthesizer reads text on the screen where the cursor is, reading a menu or text paragraphs. It is therefore important that the site doesn't contain pictures (graphics turned off) and frameworks, where it must be on the page then they are arranged in a logical order to ensure that the reader is acquainted with the content of a Web document in a logical, continuous sequence. At the same time he is navigated and informed about the position of the mouse cursor on the screen, such as higher or lower tone beep while approaching the top or bottom (left or right) side of the screen. In the implementation of this work was used NVDA used program, which is free and Distributable under license GNU General Public License (Version 2). [13]

2.4. Formulation of theoretical, methodological and instrumental bases for subsequent evaluation of selected websites of municipalities with extended competences of the Vysočina Region

The testing and evaluation were selected websites of these institutions:
- Municipal Office in Havlíčkův Brod, www.muhb.cz
- Municipal Office in Třebíč, www.trebic.cz
- Municipal Office in Pelhřimov, www.mupe.cz

- Municipal Office in Žďár n. Sázavou, www.zdarns.cz
- City Council of Jihlava, www.jihlava.cz
- Regional Office of Vysočina Region, www.kr-vysocina.cz

In accordance with the logical premises expressed especially in Chapters 1.2, 1.3 and 2.3 following objectively measurable parameters will be evaluated from selected sites:

- The existence of site maps
- Main menu, tab-control (keyboard)
- Logical structure, headings, global navigation
- Increase the page size and font
- Switchable graphics – styles
- Styles colors, high luminance contrast
- The functionality of assistive technology, the reader
- The ability to control portal entirely using the keyboard, the road - site map, click the number of TAB:

official	cultural	social
board	action	services

For assessment will be used tool SEO analyzer mentioned in section 2.2 and available from the link http://www.seonastroje.cz/analyza-seo. Site analysis will be performed in graphical mode, and if the evaluation site has the functionality "graphics off" also in the text mode. If possible, record the type of content management system and the possible presence of "Declaration of Accessibility".

The next steps will be carried out remaining parameters tests articulated in the introduction to this chapter, including (according to the WCAG 2.0) test screen reader (assistive technology). The measured and determined results are logged to let the scoreboard in the Appendix.

3. Testing, evaluation

3.1. Municipal Office in Havlíčkův Brod, www.muhb.cz

The website contains the option "Disable graphics," "Site Map" and the "Declaration of Accessibility". The portal of the office is created by CMS Vismo. [14]
Menu can be controlled by Tab, content can grow and operate in high-contrast mode. This is the site where the option is "off art" Focused on the fourth pressing Tab, which is sufficient. Reader of the screen works very well in off mode with graphics and good with graphics turned on.

3.2. Municipal Office in Třebíč, www.trebic.cz

The website doesn't include the option "Turn off graphics", but it contains the "Site Map" and the "Declaration of Accessibility". The portal of the office is created by CMS Vismo.
Menu can be controlled by Tab, control is cumbersome; content can grow and operate in high-contrast mode. Reader of the screen works well with graphics mode enabled.

3.3. Municipal Office in Pelhřimov, www.mupe.cz

The website doesn't include the option "Turn off graphics", but it contains the "Site Map" and the "Declaration of Accessibility". The portal of the office is created by CMS Advice.cz.
Menu can be controlled by Tab, control is cumbersome, however, it can magnify the content

and style and the font color is barely noticeable. Reader of the screen doesn't work very well in the graphics mode enabled.

3.4. Municipal Office in Žďár n. Sázavou, www.zdarns.cz

The website doesn't include the option "Turn off graphics", but it contains the "Site Map" and the "Declaration of Accessibility". The portal of the office isn't created by any CMS.
Menu can be controlled by Tab, control is more cumbersome, content can be magnified by a tool in the tool bar at the top of the screen, style of font color is barely noticeable. Reader of the screen doesn't work very well in the graphics mode enabled.

3.5. City Council of Jihlava, www.jihlava.cz

The website contains the option "Disable graphics," "Site Map" and the "Declaration of Accessibility". The portal of the office is created by CMS Vismo.
Menu can be controlled by Tab, content can be magnified and it is operated in a mode of medium contrast. This is the only site where the option "off art" is focused immediately after pressing Tab, which is very friendly. Reader of the screen works very well in the off mode graphics and also with graphics turned on.

3.6. Regional Office of Vysočina Region, www.kr-vysocina.cz

The Web page contains the option "Disable graphics," "Site Map" and the "Declaration of Accessibility". The portal of the office isn't created by any CMS.
Menu can be controlled by Tab, content can be magnified and it is operated in a mode of contrast medium. This is the site where the option "off art" is focused on the fourth pressing Tab, which is sufficient. Reader of the screen works very well in the off mode graphics and also with turned on graphics.

4. Conclusion

The initial intention of the study was to assess the degree of barrier-free access for citizens with physical limitations to the information disclosed on the websites of public authorities in the municipalities with extended powers in the Vysočina Region. Five "district" towns were selected and legislative, professional and criterial evaluation framework was defined. An analysis of a criteria and professional aspect of future research indicated that the most appropriate approach from a position evaluation is using both web content SEO analyzer (independent, objective, error code and programming techniques revealing consistency) as well as WCAG 2.0 - the "best practice" procedures (more subjective, but taking into account principles such as "blind friendly" web-design methods and procedures). It is this comparison of the two approaches showed that apparently does not matter whether the site was created in a specific content management system and was programmed by the usual methods of web design, but rather on the consistent application of the aforementioned "best practice" methods and rules and empathy with the needs of Web authors and feelings of users - people with various health restrictions.
Another nice finding during work on this study is that there is an affordable alternative reader for free (NVDA), a relatively expensive commercial of the screen readers for visually impaired people. The application is simple to install and has a large number of individual behavior settings, so that covers a wide range of needs of persons with physical handicaps.
It is considered that this work can become a guide for webmasters and web designers to improve the environment of web pages toward the disabled. The existence of textual variants or priority sites focusing on pressing Tab on the link text mode or most frequent references to

achieve a minimum number of pressing Tabs is a thing you can do every site creator if you will follow the rules contained in Decree No. 64/2008 Coll. empathy and common sense.

LITERATURE

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[2] Act No. 365/2000 Coll. On Public Administration Information Systems

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[12] http://www.ok.cz/elvos/index.html [online], [cit. 2012-03-30]

[13] http://www.gnu.org/licenses/old-licenses/gpl-2.0.html [online], [cit. 2012-03-20]

[14] http://vismo.cz/

Appendix 1: Summary table

State authorities	Site map; CMS	Main Menu, Tab control, only the keyboard	Logical structure, headings, global navigation	Increase the page size and font size	Turning off graphics - styles	Styles colors, high luminance contrast	The functionality of assistive technology, the reader	The ability to control portal entirely using the keyboard, the road - site map, click the number of TAB: official cultural social board action services		
Havl.Brod www.muhb.cz	yes; yes Vismo	yes	68% according to SEO in both modes	Yes, magnification 7x while keeping the functionality	yes	yes	Very good	32	no	64
Třebíč www.trebic.cz	yes ; yes Vismo	yes	81% according to SEO only in graphic	Yes, magnification 8x while keeping the func.	no	yes	Good	39	90	93
Pelhřimov www.mupe.cz	yes ; yes Advice	little functional, illogical sort of links	57% according to SEO only in graphic	Yes, magnification 5x, then loss of func.	no	Font color style is flat	Too good	40	27	25
Žďár n.S. www.zdarns.cz	yes ; no	little functional, illogical sort of links	57% according to SEO only in graphic	Yes, magnification 3x in the main bar	no	Font color style is flat	Too good	Malfunction TAB, mouse: 17	Mouse: 49	no
Jihlava (City Council) www.jihlava.cz	yes ; yes Vismo	yes, excellent	57% according to SEO in both modes	Yes, magnification 8x func. in the main bar	yes	Red text contrast, less contrast gray-black	Very good	162	no	no
Regional Office of Vysočina R. www.kr-vysocina.cz	yes ; no	yes	51% according to SEO in both modes	Yes, magnification 8x , func. in the main bar	yes	The blue color of the text less contrast	Very good	5	45	20