

# E-INCLUSION AND DISABLED-PEOPLE-FRIENDLY WEB

Stanislava Šimonová

Institute of System Engineering and Informatics,  
Faculty of Economics and Administration, University of Pardubice

## **Abstract**

*E-inclusion represents a set of conditions for effective inclusion of all population groups in the information society. Public administration services must be user-friendly and available to all that is also to the handicapped or otherwise disadvantaged population groups. The contribution results from the project 4530/20/FG452013 e-Government and the specific target population groups.*

## **Key words**

e-government, e-inclusion, user-friendly approaches, disadvantaged population groups

## **1. Introduction**

e-Inclusion is an important part of e-Government, that represents various issues of electronic public administration. Most of these issues are about bringing public administration closer to a citizen, both by providing required public information of public administration, and by a two-way flow of information, it means by solving cases, when a citizen requires a particular act from the public administration authority, or when a citizen becomes by means of electronic communication a participant in the administrative procedure [1]. The internet and the world wide web are becoming important information resources also in the area of public administration. But there are few disabilities that do not moderately or severely limit a person's ability to either obtain or process information.

## **2. E-Inclusion as a Priority of e-Government**

The target of social inclusion policies is to remove and stop creating barriers of any kind of the involvement of individuals or group of population in the active life of the society [2]. Analogously, the term of e-inclusion means a set of conditions for effective inclusion of all population groups in the information society. It is necessary to prevent further extension of the so-called digital divide, i.e. divide within population groups between the included and the excluded.

The capacity to communicate with and collect information from almost any point on the globe in the comfort of home has not only been a revolution for the general public but has also tremendously expanded the opportunities of people with disabilities to participate in our information-oriented society more effectively than ever before. However, if the design and development of our information infrastructure does not accommodate the technical requirements needed to provide universal access, then information acquisition and utilization by people with a variety of disabilities will be set back to the days before the development of computers [3]. At present, even without the development of a co-ordinated infrastructure, people with disabilities are shopping on-line, providing information services to others, all from their workplace or home. In the office setting, via electronic document processing, visually impaired and blind employees have access to vital information equal, in most cases,

to their sighted colleagues. For most severely disabled people, specialized software/hardware is needed to interpret electronic information into a form that is usable.

## **2.1 The Web Accessibility**

First some characterizations of Web Accessibility [4]:

- Chuck Letourneau: Web accessibility means that anyone using any kind of Web browsing technology must be able to visit any site and get a full and complete understanding of the information (it contains) as well as have the full and complete ability to interact with the site - if that is necessary.
- Tim Berners-Lee: Access by everyone regardless of disability, is an essential aspect of the Web.
- Vinton Cerf: Give the disabled net access, and you give them opportunity.

There is necessary to make web content accessible to user with specific needs. We can classify this user as disabled; it means a person who has some disability.

## **2.2 Disabled Users of e-Government**

Disabled users are growing in number, especially as assistive technology continues to improve and become more affordable. The problem is, many borderline search optimization techniques cause pages to appear as gibberish or can even set off alarm bells when viewed using assistive technology. Assistive technology can help by giving users an alternate means of viewing online information. The present guidelines contain a detailed description of rules for making web sites accessible to users with severe visual impairment – those who are blind or have only residual sight. But disabled users are not only the blind. Electronic information has to be more accessible to people with disabilities including but not limited to: blindness, low vision, hearing, or motor impairments. Also older users are disabled, because they have not enough knowledge in information technologies and it is difficult for them to find relevant information.

The Web represents a resource of paramount importance for disabled people. More in general, the electronic format of documents is particularly interesting for persons having difficulty in accessing the traditional printed paper [5]. Especially for visual and motor disabled people, the alternative presentation or interaction modalities offer a good potential solution to the problem of access to information.

## **2.3 Blind and Partially Sighted Users**

Blind or partially sighted users are not able to receive visual information, but also visually impaired users – users with narrowed visual angle, severe short-sightedness, tunnel vision or colour-blindness. Blind users receive web site information via tactile or voice outputs thanks to which either a voice reads the text published on the web site or the text appears in Braille on a Braille terminal. Information about what will be read or displayed is transferred to voice synthesis or Braille terminal by a screen reader. The voice or tactile output is not a browser but it processes the website read by a common browser (mostly Microsoft Internet Explorer, which has the best accessibility thanks to support technologies). Partially sighted users use software magnifiers in order to magnify the web content. Sometimes the magnification is not sufficient and it is necessary to modify colour scheme or contrast. Partially sighted people use in addition to Microsoft Internet Explorer also other browsers (e.g. Mozilla or Opera), since these browsers have functions to make browsing the web site accessible to partially sighted. When designing or modifying web sites with regard to visually impaired users it is important to bear in mind the following [6]:

- blind users are able to obtain only textual information,
- blind users learn the information on the web sites in a linear form, i.e. they do not have a global view of the information displayed,
- blind users work with the computer and all programmes via the keyboard by key orders,
- partially sighted users due to the use of software magnifier which provides for large magnification are able to see only a small part of the web at one moment.

### **3. Methods, Projects and Tools**

Systems and tools that help persons with disabilities overcome the barriers to accessibility are also constantly being refined and enhanced. Examples include Braille displays, speech synthesisers, software to show sounds, or voice input processors.

In order to navigate through the world wide web, retrieve information and be able to interpret or read the information, three things must be properly adapted to the user. These are the browser, the html document and the alternative access system. Documents served on the web are constructed using a standard mark-up html language so that they are so called display system independent. Thus the documents can be viewed on various platforms (DOS, Windows, OS/2, MAC, Unix etc.), using various browsers or system dependent software programs. The documents can contain or provide links to: colour graphics, digital sound, music, digital videos, interactive maps or other representation formats. Frequently, critical components of a document have graphics only labels. Hypertext links can occur anywhere in a document and are identified by purely graphical characteristics such as colour, bolding or graphic images with coloured outlines. With the exception of Lynx and other text based browsers, most Web browsers have graphical user interfaces. Web documents are created with the assumption that the browser will display graphics, video and audio. The Web contains an endless variety of information including up-to-the-minute weather maps or traffic reports, on-line publications, language lessons with sample pronunciations, movie memorabilia, simulations, and resource information on almost every topic. Making the web accessible or usable by people with disabilities involves all these components.

#### **3.1 Software Tool Supernova**

The Faculty of Economics and Administration has a product Supernova – Dolphin Computer Access [7]. This software enables people who are blind or partially sighted to use computers independently.

Supernova allows you to use Windows applications, the Internet and email easily. Supernova recognizes the text and graphics which make up Windows including dialog boxes, icons, buttons, menus and other controls. From the moment you insert the CD, Supernova speaks through your computer's soundcard and talks you smoothly through the user friendly installation. The computer display is magnified so that you can see small detail more clearly and information is also presented in Braille for users of the many supported Braille devices. Comprehensive online help and interactive audio tutorials ensure that you get up and running quickly and easily.

Supernova's control panel makes all of the most common controls easy to find and more advanced features no more than two mouse clicks or key presses away. There are three choices of control panel – full view mode, menu mode or from the system tray so whether you are a new or experienced computer user, partially sighted or blind, you can find a style that suits your needs. There is no need to buy a separate screen reader and magnifier. Supernova includes full screen reading in speech and Braille with integrated magnification and works on any of the supported Windows platforms. Supernova meets the needs of both blind and

partially sighted computer users. You need install and learn just one piece of software, making Supernova ideal for larger institutions, libraries and businesses.

Chosen characteristics of magnification:

- Increase the size of everything on screen from 1.2 up to 32 times.
- Fractional magnification allows users to select magnification levels below 2 times in small increments such as 1.2x, 1.33x, 1.5x and 1.8x.
- Magnified text is smooth and clear in any colour.
- Choose from 20 high contrast colour schemes or build your own.
- Replace problem colours anywhere on screen.
- Choice of high visibility mouse pointers.
- Smooth scrolling for browsing long documents.
- Choice of screen magnification styles: whole screen; split screen; window; lens; auto lens; hooked areas.

Chosen characteristics of speech:

- Talks as you type, by character, by word or both.
- Read word, line, web page, document or entire Window at a single key-press.
- Listen to Windows - spoken prompts allow easy navigation through menus, dialogs, file systems and other Windows controls.
- Reads or spells out any text on screen: documents, menus, web pages, emails.
- Choose low, medium or high verbosity, or create verbosity schemes.
- Enhanced document reading.
- Easy browsing of Internet pages and other applications with the Dolphin Virtual Focus even where there is little or no keyboard access.
- Reading of PDF documents is easy and accurate.
- Create your own PowerPoint slides and presentations with full speech support for the slide content.
- Reads icons and Internet graphics labels and announces font and style information.
- Internet Updater for fast, automatic updates.
- Intuitive hot keys for easy operation.
- Works with any font, including accented characters and symbols.
- Choice of software speech synthesisers including Dolphin Orpheus (multilingual) and Microsoft Text-to-Speech.
- Orpheus' intelligent pronunciation recognises similar words by context.
- Orpheus voice editing facility allows customisation of voices. Orpheus is one of the most clear and responsive synthesisers available and is designed for high listening speeds. The skim reading option allows users to quickly review key words within long documents. It also comes with an exceptions dictionary, which can be personalised, allowing users to adjust pronunciation or add new words and acronyms.

## Conclusion

The explosion of the information technology requires the special approaches to ensure a substantial accessibility. It is necessary to create equal conditions and opportunities to include all population groups in the information society.

Institute of System Engineering and Informatics deals with this current task. Members of Institute work in The Golden Crest Commission. The Golden Crest Award is dedicated to the best of the web and electronic services of towns and municipalities. The aim of the competition is to reward excellence and promote the exchange of the best practices and experiences in using information society technologies to improve public online local government services – one of criterion is web accessibility. The purpose is creation and

evaluation of criteria for reduction of barriers at accession to web-pages of public administration. The Project 4530/20/FG452013 “e-Government and the specific target population groups” confirms this interest. The Project is focused to web presentations of municipalities and important viewpoint is the web accessibility for disabled end-users.

## References

- [1] Ministry of Informatics of the Czech Republic: State Information and Communications Policy. Prague: Ministry of Informatics, 2004.
- [2] Ministry of Interior of the Czech Republic: Public Administration in the Czech Republic. Prague: Ministry of Interior, 2004.
- [3] Ekberg, J: Inclusion of Disabled and Elderly people in telematics. Telematics project 1109. <<http://www.stakes.fi/include/>>.
- [4] White, B., McDunn, R. Are Your Web Pages Legally Accessible? <<http://www-group.slac.stanford.edu/wim/accessibility/>>
- [5] Graziani, P. Recommendations for Web Accessibility: current status and future developments. <http://www.stakes.fi/cost219/procgraziani2.doc>
- [6] Pavláček, R. Blind Friendly Web. Documentation on Accessible Web Design Guidelines for Severely Visually Impaired Users (Methodology Guidelines for Web Designers). <<http://www.blindfriendly.cz>>.
- [7] Dolphin Computer Access. <<http://www.dolphincomputeraccess.com/>>.

## Kontaktní adresa

Ing. Stanislava Šimonová, Ph.D.

Institute of System Engineering and Informatics, Faculty of Economics and Administration,  
University of Pardubice, Studentská 84, 53210 Pardubice  
tel.: 466036009, e-mail: Stanislava.Simonova@upce.cz