Information system supporting adjudication on the handicapped

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Abstract. The present time computer technology is helping to lower many barriers which are met by people with disabilities. Among these barriers one can be classified three functional groups of barriers: to reading manual documentation, to supplying computer input and explanation output. This paper is focused on the projecting and implementation computer system supporting the judicature of disabled person.

Keywords. People disability and computer technology, SIWON system

1 Introduction

Current computer systems are developing in the surprising pace. The rapid development of technology which we can observe in recent years causes that information technology reaches out to the growing audience. The new possibilities offered by operating range, universality and availability of the Internet inspires the creation of new systems. However, most of these systems have one serious drawback. The content included in them is not available to all. Constant increase in the number of people with disabilities both in Poland, as well as in world causes that a demand for computer systems adapted both to non-disabled and disabled users. Response to such needs is a system SIWON which name derives from expressions computer system supporting the judicature of disabled persons.

In this paper a matter of internet content availability will be brought up, on example of projected SIWON system. There will be describe the main benefits of user-friendly software, for both non-disabled having full ability of using Internet with all senses and disabled using only a portion of them persons.

2 Web content accessibility

The results gained after testing by the European Union are shocking. They show that only about 3% of tested sites meet the minimum public requirements for accessibility for people with disabilities.

Designers and programmers have very little time to adapt to the needs of services for people with disabilities in accordance with the European Union recommendations. In 2006 EU membership countries signed the Ministerial Declaration which is obliging those countries to adapt sides of the civil service to needs of disabled persons till the end of 2010.

It is worthwhile to take closer look on availability, to determine that creating Internet service tailored to the needs of people with disabilities is not complicated. The availability of Internet content is a "field of knowledge of human interaction with computer dealing problems of creating web sites and services available to widest as possible audience, particularly people with disabilities".

More specifically the availability of internet content is intended to provide the best possible readability of the web sites and services for users, irrespective of whether they are with disabilities in some degree, regardless of what software, hardware, or bandwidth they use. So, availability concerns all customers, particularly the elderly and disabled.

3   The methodology for testing the availability of Internet content

There are two techniques for surveying the availability of online content:
1.   Expert analysis - is carried out by experts for web accessibility, the test usually includes:
   - checking compliance with WCAG 1.0/2.0,
   - checking compliance with W3C i W3C CSS,
   - contrast analysis,
   - site speed test on slow connections,
   - checking the correct work of the service in different browsers and on different devices,
2.   Test with users - is conducted primarily by people with disabilities (mostly visually impaired and visually impaired and deaf). Users with visual impairments using screen readers (Jaws or WindowsEyes) have to perform some tasks previously prepared, and the deaf person check the site in terms of alternative content for any non-textual information.

4   The benefits of creating accessibility – oriented web pages

To answer the question "What benefits can I get by create accessibility-oriented page?" it is worth to read Mark Pilgrim Fri book "Dive Into Accessibility: 30 days to a more accessible web site." [1]

In the book the author gives us five fictitious people who have some common features:
1.   All have certain physical, mental or technological limitations that impede their use of the Internet.
2.   Although the characters are fictional, they represent real people and used the Internet in the way that real people do grappling with similar constraints.

The book is divided into 30 days during which the author shows us the limitations faced by the characters invented by the author, and tips how to remedy them. Additionally, to every tip there is written section "Who benefits?" talking about benefits of their use on your website.

The major benefits include:

- increasing the number of persons being able to use the site
- increasing the speed of loading the site
- possibility of properly preview the page in different browsers and on different devices and using special software
- better positioning of site,
- building a positive image of the creator and the page itself,
- increasing the comfort of viewers,
- enhancement of competitiveness.

5 SIWON system architecture

SIWON system architecture is typical for Web applications. The system has been implemented based on client-server architecture, with preserving the isolation of presentation layer, business logic layer and data integration layer. This solution guarantees high security and high speed.

Separation of business logic and presentation logic (that is business logic layer and presentation layer) is a very difficult matter. In the case of a Web site, this means such organization of system that its designer (designer of the template) was unable to breach of scripts written by the programmer and the programmer does not have to write between the interwoven HTML tags. In addition, exchange of graphics should be relatively simple and does not entail changing a piece of code, providing some functionality of the system. In order to such organizing SIWON system will use the Smarty template system. Smarty is a system of templates written entirely in PHP and for PHP. This is an object scripts collection used to create Web sites using templates. It allows separation of application logic (PHP code) from the presentation layer (HTML).

According to the non-functional requirements SIWON system uses PostgreSQL (open-source database management system) and correctly displays the contents of pages in most browsers. In addition, for easy migration from one database type to another system SIWON uses PDO. PDO is a PHP extension providing an interface to communicate with different databases. PDO task is to replace existing disparate functions by one library. Its main advantage is that using the same interface can be combined with both a MySQL database, and a PostgreSQL database (or otherwise) without changing the entire code. This eliminates developer needs of using their own or external solutions unifying way of operating the database and significantly reduces the time of migration between different types of databases.

SIWON architecture isn't imposing the operating system on which a WWW server is supposed to run (it can be both Linux system, Unix as well as Windows) and type of the Web Server. It can be for example most popular Apache or the

lighter competitor - Lightttpd. In addition, the database server can but don't have to be physically on the same machine as the web server. The only requirement stood to WWW server is handling the file .htaccess.

Figure 1. SIWON system architecture

6 Conclusion

In conclusion it is worthwhile mentioning what was pretended to carry out and what not. Usually in various IT projects are small things that can't manage to finish. In the case of SIWON system all requirements both functional and non-functional have been carried out. The application has a number of forms used to operate on different types of data. In addition, the forms are designed in such a way that their service was quite intuitive. Additionally, the SIWON system has abilities of geolocate entered facility address and the modern way of generating reports.

However it didn't without bugs. Many forms have date field which instead of manual writing down could be taken out from the special calendar. But writing

such calendar in JavaScript could reduce the level of compliance requirements for online content. Therefore, this solution is omitted.

The following accessibility test of web content comes from the http://checkwebsite.erigami.com/accessibility.html. As you can see on it developed system correctly pass all control points and gives a positive outcome.
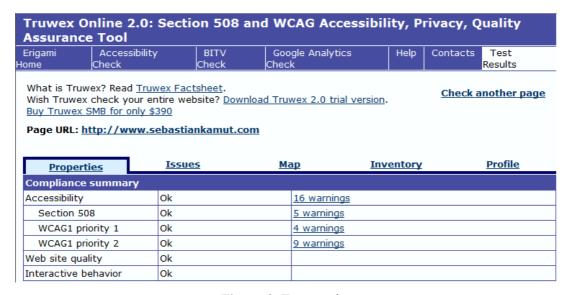

Figure 2. Test results

As can be seen, availability problem begins to be treated seriously by EU members. Still increasing number of people with disabilities makes it necessary to devote much attention to this issue. It is important to promote knowledge about the design of functional and available sites, as well as visualizing to creators fact that during the creation or modification of the website it worth to follow rules and guidelines contained in this work. This has enormous benefits. Do not let that habits occur while creating web sites and services will limit access to certain content to people with disabilities.

References

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