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USER FEEDBACK ON REDESIGNED FACULTY WEBPAGE

ZPĚTNÁ VAZBA UŽIVATELŮ NA PŘEPRACOVANOU WEBOVOU PREZENTACI FAKULTY

Abstract

This contribution describes practical experience from conducting heuristic evaluation and web usability test of a new version of Faculty of Mechanical Engineering, VŠB-TUO Web site. Usability is a quality attribute that assesses how easily visitors can access and use Web sites. The goal of most usability testing is to uncover any problems that users may encounter so those problems can be fixed. Web usability test of the new version of the Faculty of Mechanical Engineering proved that most of the updated structure is clear to users and it has logically constructed information architecture.

Abstrakt

Příspěvek popisuje praktické zkušenosti z heuristického hodnocení použitelnosti a uživatelského testování použitelnosti nové verze webové prezentace Fakulty strojní. Použitelnost webu v obecném smyslu určuje do jaké míry se uživatelé orientují při používání webové stránky. Cílem uživatelského testování použitelnosti je odhalit problémy uživatelů při kontaktu s webovou stránku, tak aby mohly být odstraněny.

1 INTRODUCTION

The first Faculty of Mechanical Engineering website was established in 1998 and it has been redesigned three times during past years [Fig. 1]. The last version of the Faculty of Mechanical Engineering (FME) web site was more than 5 years old and it did not follow the recent web site standards as web accessibility and web usability. The general objectives of the new faculty web site is to provide well-organized, edited, and timely original content set in an attractive, interactive, and consistent format. During preparation of the new faculty web presentation were also considered general university web site presentation guidelines. They are defining set of rules such as obligatory site structure, information architecture and university graphic identity.

Fig. 1 Pictures of main pages of FME websites during years 1998 - 2006

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2 USABILITY ENGINEERING

Usability engineering is a methodical concept to producing a Web site or any user interface. It is a practical and systematic way to deliver a product that works for users. Usability engineering involves several methods, each applied at appropriate times, including gathering requirements, developing and testing prototypes, evaluating design alternatives, analysing usability problems, proposing solutions, and testing a site (or other interface) with users.

Web usability testing is part of the process of usability engineering. Usability testing includes a range of methods for having users try out a website. In a typical usability test, users perform a variety of tasks with a prototype or final version of the website while observers record notes on what each user does and says. Typical tests are conducted with one user at a time. Testing may include collecting data on the paths users take to do tasks, the errors they make, when and where they are confused or frustrated, how fast they do a task, whether they succeed in doing the task, and how satisfied they are with the experience. The goal of most usability testing is to uncover any problems that users may encounter so those problems can be fixed. [CONGRESS ONLINE PROJECT, 2004]

3 TESTING METHODS

Heuristic evaluation

For Web projects with a small budget it is more convenient to use heuristic evaluation because user testing is time-consuming and capital-intensive. This technique uses a small number of trained evaluators (typically 1 to 3) separately inspect a user interface by applying a set of "heuristics", broad guidelines that are generally relevant. They then combine their results and rank the importance of each problem to prioritise fixing each problem. [SMUTNÝ, 2006]

User Testing

A family of methods for evaluating a user interface by collecting data from people actually using the system. A simple user test would be to bring in a small number of potential users of the Web site (4-5 minimum, 8-10 to be thorough) and have each person sit down and use the Web page to perform a series of tasks while an observer takes notes about what difficulties each user encounters. Typically, users are asked to think out loud to help the observers understand how the users think about their problems and how the interface could be improved. More involved user testing may test more users, get as representative a selection of users as possible, try out a variety of tasks, control the testing environment in various ways, use more careful or thorough measurement instruments (recording screen, videotaping, recording keystrokes, etc.), or combine the testing with other methods of data collection, such as interviews of users. [USABILITYFIRST, 2005]

4 USER USABILITY TESTING

Usability testing was used to assure the quality of the new FME web site and to see how people actually use it.

In terms of past experiences 3 basic *target audience* groups were defined:

1. External person interested in a study of the Faculty of Mechanical Engineering.
2. Internal user which search information for own use.
3. Internal user which search information for fulfilling work tasks.

Ideal user profiles for testing were characterized as:

1. **Undergraduate student** - basic technical skills, interested in study matters.
2. **Graduate student** - advanced technical skills, interested in study matters, international exchange programmes, job offers.

3. **Postgraduate students** - advanced technical skills, interested in study matters from teacher's point of view, international exchange programmes, research and development, job offers.
4. **Administrative staff** - basic and routine technical skills, interested in faculty news and internal information (templates, instructions, etc.).
5. **Assistant professor** - advanced technical skills, interested in study matters from teacher's point of view, research and development, conferences, international exchange programmes.
6. **General public** - minimum secondary education level, an external interest in the faculty, searching information for possible cooperation or future study.

The objectives of users needs are different for each target audience. The basic objectives are:

1. Information for future decision.
2. Information for planning study duties, connection with a faculty life.
3. Information as supply to fulfil work tasks, comparison with colleges, supportive informational system.

In accordance with defined users groups and their needs several parts of the web site for testing were set apart:

- Main page
- Process of data mining
- Printing web pages
- Data structure
- Navigation
- Discussion board

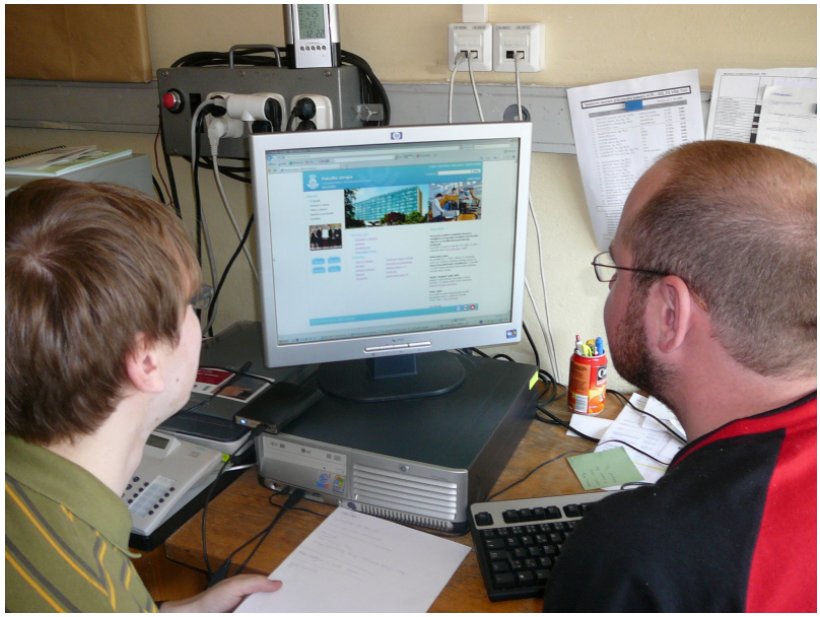

Fig. 2 Moderator and user during usability test session

A prepared task scenario is part of a quality assurance system: it helps ensure that observer follow procedures, and that he is asking each user to do the same task [Fig. 2]. Items on the scenario:

- **Introduction**
- **Blank map** – testing users' idea about information architecture on blur picture of main page
- **First impression**
    - Understanding the objectives of web page
    - Identification of faculty
    - Identification of news section
    - Identification of navigation
    - Identification of full-text search
- **Data mining**
    - Starting points
    - Scenarios for searching information (using navigation vs. full-text search)
    - The accuracy and completeness with which users achieve specified goals
- **Completion**
    - User tries to recognize and draw important parts of main page [Fig. 3]

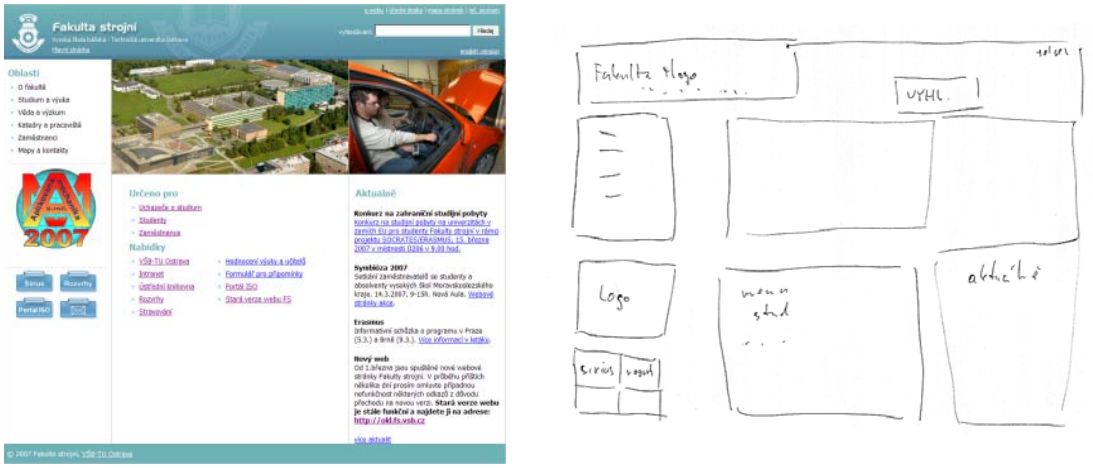

Fig. 3 Example of faculty main page and user's recall drawing of it

5 WEB USABILITY TESTING RESULTS

Users were asked to complete 17 tasks connected with faculty website and 6 tasks focused on discussion board. Results could be divided into three groups – error-free, ambiguous and critical.

Critical parts of the new faculty website are:

- **Technical navigation menu** – part of every page and contain links to sections about web, notice board, site map, phonebook. Most of the users haven't notice this shortcut navigation possibility.
- **Site map** – is tool to visualize the structure of the information space and to help users understand where they can go. According to Site map usability research [NIELSEN, 2002]

one third of web users are unaware of the site maps on sites they visited on their own. This fact was confirmed during testing of faculty web site also.

Ambiguous parts involve:

- Generally, users had problems to clearly identified adequate sections for discussion board, employees' contacts and international university cooperation. Section about studies need clarification of used terms with help of short description.
- For discussion board the open-source web application phpBB is used [PHPBB GROUP, 2006]. Posting new topics and replying was not clear for users who are not familiar generally with discussion boards. The goal of faculty discussion board is to be simple to use for all users, no matter to their technical skills.

6 CZECH WEB ACCESSIBILITY GUIDELINES

The list of the Czech web accessibility guidelines have been created according to the Act No. 365/2000 on information systems of government bodies. These guidelines describe the minimum level of web accessibility that every public institution must fulfil [ŠPINAR, 2006]. In the second column of Table 1 is described achievement of FME website to this matter with brief comments in issues for improving. Using these accessibility guidelines helped to do heuristic evaluation of the FME website [Tab. 1].

The Web Accessibility Toolbar [VISION AUSTRALIA, 2005] for Microsoft's Internet Explorer has been used to aid manual examination of web pages for a variety of aspects of accessibility. It consists of a range of functions that: [Fig. 4]

- identify components of a web page
- facilitate the use of 3rd party online applications
- simulate user experiences
- provide links to references and additional resources

Fig. 4 The Web Accessibility Toolbar helps for manual examination of web pages

Tab 1. Application of Czech web accessibility guidelines to FME website

The website content is accessible and legible		Notes
Each non-text element carrying information has its text alternative.	**accomplished**	Website is valid XHTML 1.0 Strict.
Information conveyed using scripts, objects, applets, cascade style scripts, images and plug-ins are available to the user also without any of these accessories.	**accomplished**	Website can be viewed without cascade style sheets, is fully operable, have each WWW page available and all the links are functional.
Information conveyed using colours is accessible even when viewed without colours.	**accomplished**	
There is sufficient contrast between backgrounds and foregrounds. There are no designs on backgrounds which impede legibility.	**issue for improving**	There is sufficient contrast between white backgrounds and colour of text or links. The difference in brightness between the heading colour and background is not sufficient. The threshold is 125, and the result of the foreground and background colours is 98.
Attributes for font size do not use absolute units.	**accomplished**	See cascade style sheets file *fsweb.css*.
Attributes determining the type of font contain a general font family.	**accomplished**	See cascade style sheets file *fsweb.css*.

Work with the website is managed by the user		
The web page content may change only when a user activates elements.	**accomplished**	
Web pages do not manipulate the user environment without the user's direct instruction.	**accomplished**	
New windows open only in valid cases and users are warned in advance.	**accomplished**	
Nothing flashes on a web page quicker than once a second.	**accomplished**	There are no animation.
Web pages do not prevent users from moving the frame content.	**accomplished**	There are no frames.
Web page content or code does not anticipate or require a specific method of use or specific output or control devices.	**issue for improving**	Functionality of the web page was tested at: Firefox 2.0, Internet Explorer 6.0, Internet Explorer 7.0
Information is clear and understandable		
Websites present information using simple language and understandable formats.	**accomplished**	
Homepages clearly describe the purpose and substance of a website. The name of the website or its operator is clear.	**accomplished**	
Websites and each individual text content element present the key message at the beginning.	**accomplished**	
More extensive content blocks are always divided into smaller, concisely titled units.	**accomplished**	
Information published pursuant to the law is available as text content on web pages.	**issue for improving**	Documents at official notice board are in PDF format only.
A separate web page includes contact details of the technical administrator and a clear declaration of the defined accessibility level of the site and its sections. All other pages include links to this page.	**issue for improving**	There is a page with contact details of the technical administrator; there is no page with defined accessibility level.
Website navigation is simple and comprehensible		
Each web page has a meaningful title which reflects its content.	**accomplished**	Website is valid XHTML 1.0 Strict, every <title> tag is filled with name of faculty and name of category.
Navigation and content information on web pages are clearly separated.	**accomplished**	Main navigation is separated from text and it different visually also.
Navigation is understandable and consistent throughout all the web pages.	**accomplished**	Website is using these types of navigation: o global navigation o local navigation o supplementary navigation ▪ site map ▪ full text search o courtesy navigation
Each web page (except the homepage) contains a link to the higher level in the website hierarchy and a link to the homepage.	**accomplished**	Every page contains breadcrumb navigation.
All the web pages of more extensive websites contain links to a clear map of the website.	**accomplished**	Every page contains link to sitemap in technical menu at the top of the page.
The content or code of web pages must not anticipate that a user has already visited another page.	**accomplished**	
Each element of a form has a descriptive label assigned to it.	**accomplished**	The forms are used only in administration section and all are using labels.
Each frame has a suitable name and description which expresses its meaning and function.	**accomplished**	There are no frames.

Links are clear and provide guidance for users		
The labelling of each link clearly describes its target without relying on the surrounding context.	**accomplished**	All anchors of links are unique.
Links with the same label have the same targets.	**accomplished**	
Links are distinguished from other text, not just by using different colours.	**accomplished**	Links are distinguished from other text with underline.
Serve-side image maps are used only when it is not possible to define areas in image maps using available geometric shapes. In other cases client-side image maps are used. Server-side image maps are always accompanied by alternative text links.	**accomplished**	There are not image maps.
Users are clearly warned in advance when a link leads to other types of content than that of the web page. Such links are supplemented with notices of the type and size of the target file.	**issue for improving**	Users are informed about type of file, there are no information about size of the file.
Code is technically competent and structured		
Web page code corresponds to a published final HTML or XHTML specification. It does not contain syntax errors which the web page administrator is able to eliminate.	**accomplished**	Website is valid XHTML 1.0 Strict.
The character set used in the document is mentioned in the meta-tags.	**accomplished**	
Elements which make up headings and lists are correctly denoted in the source code. Elements which do not make up headings or lists are conversely not denoted in the source code.	**accomplished**	
Stylesheet attributes are given priority when describing the appearance of web pages.	**accomplished**	Website is using valid CSS.
If a table is used for laying out the content of web pages it does not contain headers of rows or columns. All tables which display table data however contain row and/or column headers.	**accomplished**	Tables are not used.
All tables make sense when read from left to right by rows.	**accomplished**	Tables are not used.

7 SERVER LOG FILES FOR USABILITY ANALYSIS

Since 2002, the faculty web server collects data that can be used to perform log analysis and generate web stats. The goal of the log analysis and web stats is to measure web site performance, but it can be also useful for identifying usability issues and successes. Performing log analysis and to create before and after web stats can also help to measure the success of a usability fix, or compare solutions. The log analysis was conducted in two steps – comparing data from period 1.2.2006 till 28.2.2007 (old website) and from 1.3.2007 till 1.11.2007 when a new website was in operation. With the new website the number of visitors almost doubled [Fig. 5].

Collected stats will show a couple of basic measurements that are great for determining site performance: page views and visits. Page views measure the number of times a particular page has been accessed by a user. Visits measure the number of times a person has visited the site and viewed one or more pages. [ABOUT, INC., 2007]

Log analysis and web stats are also effective for identifying usability issues, particularly with a site's navigation. Broken links, timeouts, and other errors are basic problems that impact the usability of a site. With complete redesign of faculty webpage and new structure there was an issue to inform users about changes of the website and point them to updated part of the website. Custom 404 page was created and log analysis used for identifying most popular pages of previous web site which could be redirected to the new structure of the faculty website.

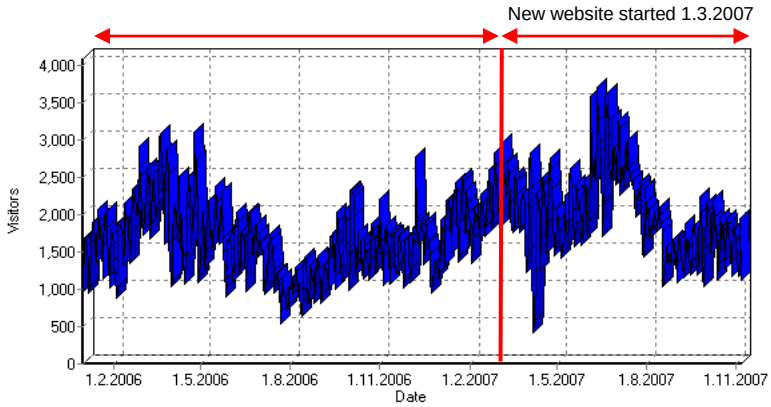

Fig. 5 Log analysis and web stats proved increased number of visitors

8 CONCLUSIONS

The goal of most usability testing is to uncover any problems that users may encounter so those problems can be fixed. Web usability test of the new version of the Faculty of Mechanical Engineering, using web accessibility guidelines and log analysis proved that most of the updated structure is clear to users and it has logically constructed information architecture. It also pointed to several weak spots, which should be more clarified to support users' smooth move through the site.

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