

COMPARISON AND EVALUATION OF WWW PRESENTATIONS AVIATION FACULTIES AND UNIVERSITIES AT PRESENT

Peter Szabó - Katarína Ištočková

The work includes a comparison and evaluation of web presentations of selected aviation colleges and universities at present. The survey was calculated a total of 14 universities from Slovakia and the Czech Republic, from Europe and around the world. The following main evaluation criteria were proposed: information content, used technologies, clarity and organization website, update methods. In the analysis were applied special technological tools to determine the technological properties of the individual's presentation. Based on the results of the evaluation was designed and implemented a web presentation Faculty of Aeronautics.

1 INTRODUCTION

Around the world, every second, minute, hour, day, or year, everything around us is changing. It is either increasing age, a family foundation, new job, own company, etc. Nowadays, in this internet age the situation is the same. Internet is the most effective and most widely used media worldwide. Ever since its inception, still becomes even more important. Each company, organization or community use the advertising to better visibility in the market. It is promoting created from quality web presentation.

Now it is possible to create a web site through the content management system, where it is not needed knowledge of a programming language.

In this work we will analyze a content management system. The media world has long affected the field of education. It offers many advantages for quality obtaining and thorough processing of information for users. The market offers many ways the most simplified sharing, access and update the information. This is possible by using multiple materials obtained on the Internet. It is important to inform applicants about the present study and provide them the key information about the study. The information helpfull with making decision about study or helpfull in learning.

Every school should have a good quality and quantity processing of the web site content, structure and design to make it interesting for the reader. The school could increase awareness about itself thanks to excellent promote of its web site.

The aim of work is evaluation and comparison web sites of aviation faculties and universities at present. This work describes an open source content management systems because these technologies are most commonly used in creating web sites. In this work the criteria for evaluating the information content of web sites aeronautical faculties and universities were proposed. In the analysis the special technological tools were applied to identify technological properties of individual settlements. We will evaluate 14 faculties from surrounding areas, from Europe and around the world. The results of the analysis and evaluation were used to draft the web site for Faculty of Aeronautics, which was created with content management system.

2 CONTENT MANAGEMENT SYSTEM (CMS)

Content management system, also known as publication system was introduced for the first time in 1990 from when it has been developing.

Content management system is special program characterized by modern and maximum simplicity regarding to managing its contents. It is dedicated to very simple and elementary creating of web presentations and for users with basic computer working skills. This system allows to publish and edit websites and keep them up. You do not need to know script languages (Perl, PHP, ASP, HTML,...) or how to program if you want to edit websites.

Content management system also offers decreasing of expenses for creating subwebsites and increases speed of system upgrade. It was not possible to modify and edit websites this way in the past, because they were made "statically". It was a programmer who could edit websites and had source code access. Though, an user who is less advanced can work with Content management system and his common user's skills are sufficient as well. It is possible to change content and appearance of website in user's interface, edit a text, an images, a music and multimedia. Benefit of each content management system is that it has simple report about web's content which is divided from graphic. There is then possibility of creating a global web's graphical modification, for example when we need to redesign it. So the user can easily change graphic as he likes. There are many accessible free or paid graphic patterns on the internet. Advanced internet user or administrator is able to edit their pattern. It is CMS written by PHP language with MySQL database assistance.

Content management system works on the basis of inserting pictures and text to MySQL database and to FTP server. Nowadays there are many content management systems to choose so each user can make choice according to his needs.

The work deals with content management systems - Joomla!, Wordpress, Drupal a Plone, see [1], [2].

2.1 *Open source CMS vs commercial CMS*

Content management systems were created for an idea that such a people without some programming skills could make websides. These systems are known as CMS (Content management system) or as WCMS (Web Content Management System), but CMS is used more often. Nowadays, there are many options how to use these systems. Open source CMS category includes all content management systems, which are freeware under the license GNU GPL. With this license user has free access to all source codes what allows him to edit freely. Developer who uses these devices has definitely qualitative basis. This also means that user saves a lot of time which he can invest other way. The advantage of open source is zero cost of acquisition instead of commercial systems. This of course saves a lot of finance.

Since the beginning of internet, users found out that easily accessible information could be edited faster. This is the option offered by Content management systems. Today, when there are many content management systems to choose, you can not just say which one is the best. The choice of content management system depends on how great is a project and how important are expectations from the system. In general, all content management systems are performing similiary except they use different methods and web languages. The basic skills are still remaining the same.

So far, the most widely used content management system (CMS) is Wordpress created originally for blogging. Wordpress has also become a tool for creating beautiful personal and corporate websites or small e-commerce. Many colleges and universities are using this open source content management system for their websites. The basic advantage of the content management system Plone is safety. Drupal CMS provides an advanced interface that makes it suitable for advanced users.

After examining different open source content management systems we choose Joomla! for the our web-site production. In these days, all CMS are on very similiar levels. Joomla! system has the most appropriate administrative interface because it, as well as other content management systems, has a lot more user-friendly solutions. However it is up to the developer to choose which CMS he is going to use.

3 ANALYSIS AND EVALUATION WEB SITES

One of the main objectives this work was the analysis and evaluation web sites of aviation faculties and universities at present. Before,will starting to perform evaluation, is necessary to have an idea about evaluation criteria. For the evaluation web sites is essential to have clarity of criteria. These criteria will help in designing and realizing of web site of aviation faculty. Evaluation of web sites we obtain an overview which help us in creating web sites on a similar the theme.

Clarity and orderliness of are an important features for web site, through which the visitor can

navigate intuitive to web site. Distribution of web site into sections is necessary for clarity and orderliness of the page. Is necessary to think about the graphical appearance and layout of graphical elements on the page then so page visually to satisfies the theme. Nice design, clarity and readability helps users more easily, perhaps even subconsciously, to orientate of the websites and for to find relevant information. Conversely poor navigation or graphics, too many items on the menu, slow loading pages discourages readers from the website. Excellent possibility of web design is to use to navigation of horizontal navigation menu. This menu will facilitate faster and more efficiently to review the contents of a website. For correct informative importance website is the importance of focusing on regular updating, supplementing of quality content.

3.1 *Evaluation criteria and analysis of web sites*

In this part of are described the criteria, which serve as a basis for evaluation and review web site and items. Criteria characterize the properties of the individual websites. The web site will be evaluated on the basis of subjective criteria, that are specified instructions of the work, which are:

Criterion 1: The informational content - potential future student

The website contains summary of information for students (applications, admissions, learning opportunities and degree programs, graduate profile, preparatory courses, scholarships opportunities, address and contact admission office, accommodation,free time, catering system, etc.) ?

Criterion 2: The informational content - student

The website contains summary of information for students (study programs, schedule, timetable of study, information system, webmail application - forms, accommodation, scholarships, support for students, library, address and contacts on the teaching staff and academic departments, news, etc.) ?

Criterion 3: The informational content - staff

The website contains summary of information for staff (updates or news from management colleges and universities, invitations to conferences, information system, webmail, catering system, schedules, publications, etc.) ?

Criterion 4: The informational content - public

The website contains summary of information for public (vacancies, addresses and contacts for each department and branch schools, history and present school, publications, etc.) ?

Criterion 5.: Website clarity

The website contains summary of information or links to information (main menu is intuitively categorized to this sections: actual information, contact information, basic information about faculty, search box, hyperlinks, sufficient contrast background and text, access to multiple language versions, calendar of events, webpage map, possibilities of access for visually impaired)?

Criterion 6. : Technology

Does the webpage use this technology? :

CMS – (Content Management Sysem) it is a system that is used for simply management of content (mostly web content) for easy create web presentations. This system allows to control acces through a common interface for various of users without knowledge of a programming language. The first chapter describes the theory of CMS systems and the most used CMS systems.

E - learning – is the most modern way for the training and learning. It is using modern information and communications technology for creating electronic (online) courses throught the internet connection. Every teacher and student can easily communicate together anywhere they are. This method brings quickly accessibility to retrieve multimedia learning materials (texts, presentations, tests, videos etc.) for a students, as well. More and more universities in the world use this multimedia learning method. For example the Moodle is currently the most customary (used) system in the E-learning program.

Charset - is the character set or encoding which is used for support and displaying characters of national alphabets. The most used character sets are:

- iso-8859-1
- iso-8859-2
- windows-1250

Nowadays, the most frequently used global charset is the UTF-8 (unicode).

Update – the information displayed on the website are updated regularly. Are there updated news and information on the website?

An update can be performed by:

- Webmaster - this person have a responsibility for the content of pages. He is the only one administrator with rights. He can complete and update information by using content management system (CMS) or source code.

- CMS systém – it is the modular and dynamic system. The updating content is quick and without programming knowledge.
- External company - can provide this same service but it is more expensive, difficult to finance and can take it more time

Criterion 6. : Design

Does the website have clear individual components on the main menu (page); modern graphic elements (photos, pictures, etc.); color matching; dynamic features; good readable fonts..

For the evaluation of websites is necessary to introduce a system as well as rating scale. If some criterion was found on the webpage we gave it the points from the rating scale. There can be situation when the criterion is not at the webpage. This situation is marked with „N/A“. We didn't evaluate this criterion. There is table which describes the information about overview characteristics of the website. Each webpage will be rate from 0 to 5 points of rating scale. The 5 points is the best rating, while the 1 point is the worst. The 0 is used when the information (criterion) is not exist at the website. We will be using this rating scale:

- excellent (5 points)
- good (4 points)
- satisfactory (3 points)
- poor (2 points)
- unintelligible (1 points)
- not found / unused = N/A (0 points)

After examining and evaluating the web applications follows the comparison and in terms of the evaluation results also the design and implementation of the web location folio for Faculty of Aeronautics. The essence of successful design and implementation of the website, the subjective analysis of the current state of the website is performed.

Analysis of web location folios is the activity focused on monitoring of selected elements in order to improve them. In many cases what happens is that the web presentation does not fulfill its real purpose. In such a case, an analysis is essential for partial or full troubleshooting.

We also investigated, what other technologies are used by individual colleges and universities. We chose our own analysis of the web pages, where we filled out the individual items. We have come to review of the website content in the technical terms according to used technologies. Analysis was carried out through serving online tool Creating Online. This tool checks the keywords, lists some errors in the source code. It also seeks to provide a proposal for improvement, file size and other technical details after URL address of the surveyed site is entered.

The first group of the examined data will be the name of the university or college, its departments (faculty or department or institute), in which the state is the university located and faculty URL. In addition to the mentioned criteria, we examined the following items, which describe the importance and values that can be set:

1. Size of the homepage - total size of all files in web site of the splash page which will be shown in a full range.
2. Size is stated in kB and the smaller the size, the faster the loading of the web site.
3. Page load time is given in seconds (s) - time to load a website, given in seconds at the speed 1024 Kbs.
4. PageSpeed - one of Google Inc. products, which analyzes the structure (speed) of a website, then generates suggestions to make this page load faster.
5. Based on the obtained values the web site is rated on a scale from 0 to 100 points (the better the rating, the higher the number).
6. Unified university system - electronic modular system with various configurations which are suitable to cover all the information technology needs of the university.
7. Public educational materials (integrated courses) - materials (courses) published electronically in one place, accessible to the public or used for pedagogical process of student teaching.
8. Description of the main page – briefly written introductory page overview with a characteristic description of each link and functionalities.
9. Keywords - are the words or the phrases that specify the web site.
10. These words and phrases help to specify the web, and thus, guide the users who with the help of search engines are looking for the specified issue.
11. The percentage incidence of keywords on the main page - the percentage of word usage on the splash page, which were entered as keywords for specified web site.

3.1.1 PageSpeed

PageSpeed is one of Google Inc. products, which analyzes and rates the speed of web pages loading taking into account the structure and optimization of the loading scripts, images and process of the page rendering. It also generates suggestions, usage of which makes the page load faster. In a case, that the pages load slowly (i.e. are not optimized), may affect the user, who is not willing to wait and exits the page. This reduces the number of site visitors, and thus, the opportunity to provide information or services, that is a web location folio focused on. In the case of suggestions is it often suggested to reduce the number of transferred data using compression, adjusting images by size reduction, which is actually also used in parallel script loadings and styles, usage of browser's cache. With these best practices, it can be achieved, that the speed and performance of a website reach its maximum and the waiting time is reduced. Based on the

observed results, PageSpeed rates web location folio on a scale from 0 to 100 points (the better the rating, the higher the number). PageSpeed Insights Browser Extensions is available as an open source browser extension for Firefox and Google Chrome. Developers and programmers have the opportunity rate with this tool the speed of their websites and get suggestions for their improvement. Mod_pagespeed module is able to perform optimizations that allow browsers to load pages faster. There are many filters that automatically make certain optimizations, which are recommended as a best practice. It is an open source Apache Web server module.

3.1.1 Creating Online

Internet offers a variety of free or paid tools available for web pages content analysis. It is up to us what type of tool we choose. We examined the website content analysis using online tool, which is available online at: CreatingOnline. Website content analysis tool checks the keywords and find occurring errors for which it offers solutions to eliminate them. It can also detect page load time when the Internet connection speed is: 56 Kbs, 128 Kbs, 512kbs, 1024 Kbs. In addition to website content analysis, there is a possibility of using other options: free templates, Online editing images, Photo editing, Online tools for web design, Tips and ways to optimize a website, Website monitoring.^[4]

3 OVERALL EVALUATION

The work consists of rating of 14 faculties and universities from Slovakia, Europe and around the world. Web sites were rated on the basis of information content, used technology, clarity, updates, website and design.

According to published results, which are pictured on the Figure 1 in the first three places was placed these web sites:.

1. University Standford, Department of Aeronautics and Astronautics, (USA)
2. University Purdue, School of Aeronautics and Astronautics, (USA)
- Loughborough University, Department of Aeronautical and Automotive Engineering, (UK)
3. Embry-Riddle Aeronautical University, (USA)

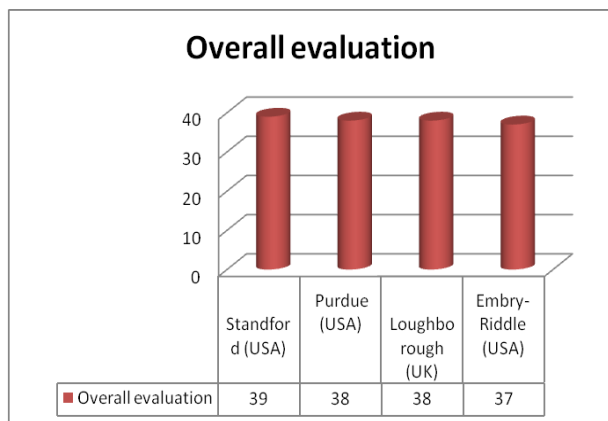


Fig. 1 The highest score

According to published results, which are pictured on the Figure 2 in the last three places were placed these web sites:

9. Czech Technical University in Prague, Department of Aviation (ČR)
10. Technical University Helsinki, Aeronautical Engineering
11. University of defence, Department of Aviation, Brno (ČR)

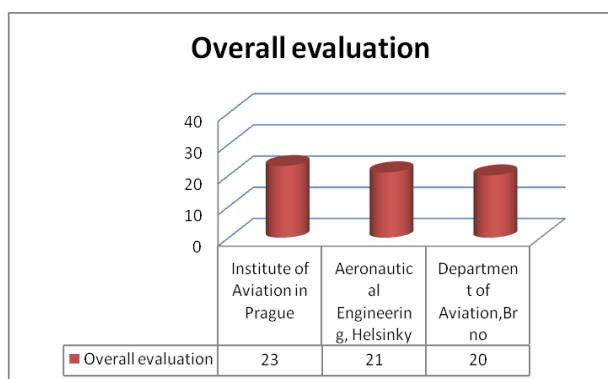


Fig. 2 The lowest score

On Fig.3 are shown results with measured values of the individual web sites of faculties of aeronautics and aviation universities placed in the top five places. It was made by using PageSpeed tool.

| Faculty/ Department | PageSpeed |
|---|-----------|
| 1. Department of Air Transport in Zilina (SR) | 76 |
| 2. Estonian Aviation Academy (EST) | 71 |
| 3. Department of Aeronautical and Automotive Engineering, Loughborough (UK) | 68 |
| 4. School of Aeronautics and Astronautics, Purdue (USA) | 74 |

| | |
|---|----|
| 5. Stanford, Department of Aeronautics and Astronautics, Stanford (USA) | 64 |
| 6. Department of Green Aviation, London (UK) | 64 |

Fig. 3 Measured values by instrument PageSpeed

PageSpeed tool is evaluated on a scale of 0 to 100 points. The values point to optimize the speed of web sites loading. The higher the number, the faster is website loaded. It leads to optimization of the web interface. Top rating achieved website of the Department of Air Transport in Zilina.

4 CONCLUSION

The aim of this work was to evaluation and comparison web sites of aviation faculties and universities at present. In work are rated fourteen aviation faculties and universities from Slovakia, from Europe and around the world. Web sites were rated on the basis of information content, used technology, clarity, updates and website design.

On base of obtained results were among of top ranked sites classified these web sites Stanford University Department of Aviation and Astronautics, Purdue University, Faculty of Aviation and Astronautics, Loughborough University Department of aerospace and automotive engineering, Embry-Riddle Aviation University. With regard to the information content, the aviation faculty in Kosice is on high level. The rating results showed that the best web site has Stanford University, Department of Aviation and Astronautics . It achieved 38 points. Worst rating received the University of Defense in Brno, Department of Air Force with 20 points out of a possible maximum 40 points.

Work was applied also to individual technologies. It was base for own analysis of the content of web pages. The analysis was completed by the individual items, which bring us clearly list of websites on the technical side. Analysis was performed by using Creating Online the on - line tool, which is developed for solving this issue. After entering URL address of surveyed sites will this web application check the keywords, write lists of some errors in the source code and try to give a suggestion for improvement, file size and other technical details. Schools rated by the time to access the main site at using tool Creating Online excel Department of aerospace and automotive industries, Loughborough. Another tool, which was used in the evaluation, is PageSpeed. It analyzes and evaluates the speed of web pages loading in regard to the structure and optimization loading scripts, images. The best rating achieved website of the Department of Air Transport in Žilina with 76 of 100 points.

Work shows overview of the web sites of faculties of aeronautics and aviation universities, which can help with designing different school web sites.

Necessary part of work was to design and implement web site of Faculty of Aeronautics on the basis of the results of the rating. After surveying different open source content management system, which offers the market, for realization of web content was selected open source content management system Joomla. It is a content management system which was most interesting among of the aforementioned CMS. It offers friendly management interface to solving issues of site. Another very important characteristic of the selected CMS is the optimization of the source code, which will load web site in a very short time. In rating of school web sites speed was the best Department of Air Transport in Žilina, which uses just Joomla!. Joomla! It is also possible to further arbitrarily expand according to needs, using a variety of supplements, because it is a modular content management system.

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AUTHORS' ADDRESSES

Katarína Iščoková, Ing., Faculty of Aeronautics - Technical University of Košice, Department of Air Traffic Management, katarina.istockova@tuke.sk

Peter Szabó, RNDr., PhD., Faculty of Aeronautics - Technical University of Košice, Department of Aerodynamics and Simulations, peter.szabo@tuke.sk