INFORMATION PORTAL OF FACULTY OF AERONAUTICS BASED ON CMS SYSTEMS

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The article describes the use of Content management systems in developing of information portal of Faculty of Aeronautics based on faculty's requirements.Its content focuses mainly on application design and implementation of the portal. In addition, article provides a brief look at activities of CMS systems and an overview of available systems.

K e y w o r d s. preparing a document, formal outline of a page, sort of fonts and style, text composition, illustrations and figures

1 INTRODUCTION

All Slovak universities and colleges are faced with the need to publish and update the information and documents on their own information portals.To get information to the addressee, the author has to contact administrator of the website and deliver it to him. Administrator then, according to time and sometimes to the mood, modifies the code of page as soon as he can, and publishes that information on the official bulletin board or the relevant part of the site. Using a content management system as university portal, this lengthy procedure can be eliminated and if necessary, the user can publish this information by himself. The creation of portal content can be handled by a number of users in user groups with different responsibilities, ensuring that all of information will be actual and available at any time.

2 CONTENT MANAGEMENT SYSTEM

Content management system (CMS) is used for creating, editing and storing internet content in dynamic form. This content management eases communication between users and also allows access to stored data. Its basic functions are text publishing, handling photographs, documents archiving, user account management, login statistic, etc. Unlike common web documents, added by changing source code, CMS allows in user friendly environment edit and administer content without knowledge of creating web pages and using CMS. There are many users involved in site development. Designer creates the visible part of website; he codes templates according to owners needs. When the structure and design of page is complete, administrator determines which users can contribute witch their own content. These users are called contributors or redactors. Their roles are limited strictly to adding, editing or deleting their own posts. Next user type is moderator. They have similar competences like redactors, but moderators can also manage content published by redactors. On the top of this hierarchy is administrator, who has unlimited competence, and manage operation of whole CMS system. In that moment, when a change happens in system, whether it is publishing a content, deign change or actualization of CMS system, these changes are send to server, where system execute them. At the end of this chain is visitor of website, who can through web browser view published content. Visitor, unlike redactors and administrator, doesn't have access or right to publish, edit or delete content in CMS system.

There is large number of good and poor-quality CMS systems. Our attention was drawn to Open Source CMS systems Drupal, Joomla!, Plone and WordPress, because they are systems used for developing of many university, government and company websites and of course personal web pages. Further they are free and have very good user support.

3 WEB PORTAL OF FACULTY OF AERONAUTICS

3.1 Reasons for change

Web portal of Faculty of Aeronautics represents static page, where every task is held by administrator. This solution is stable, but administrator can be overloaded by the number of

tasks and this causes the whole process of publishing content slow down. Communication on actual portal is oriented mostly on general public, and it is missing part for communication between employees. That is handled by e-mails, telephones and meetings. Using CMS system, we want to create possibilities for communication between faculty employees and also make publishing of announcements for students and public faster and more transparent.

Together with improving sites functionality and structure, is good to make its appearance better. Layout and type of menus on actual site is quite unpractical. The important menus are placed on the right side, out of visitor's view that can miss them. The rolling menu seems also unpractical, because it slows visitor down and in case of users inattention it can roll back, which doesn't increase website attractiveness.

Fig. 1 Web portal of Faculty of Aeronautics

Current website is regularly updated and provides all necessary information, which however needs to be dug and found. This reason together with change of design and method of publishing content led to decision, that website needs to be remade and it should be proper presentation for Faculty of Aeronautics.

3.2 Requirements of Faculty of Aeronautics on information portal

There are several requirements on information portal relating to user profiles management, content, content categorization, website structure, design and modules.

System should allow user registration or at least creating user accounts in system by administrator. These user accounts should be divided into user groups, to which we assign competence for publishing and editing content and

for managing parts of system, like e-shop etc. This specification is important, because every faculty department must have opportunity to publish internal or public announcements. As we mentioned before, user should be able to create and publish content, which will be displayed to general public or only for logged in users. This specification can be achieved with content categorization. Content added by user should be possible to divide into basic categories using tags and display only in sections, where we want it to be.

Based on published content, the webpage can be divided into sections providing information about faculty, departments, information for applicants, students and graduates, information about scientific activities and presentation content. These sections can be divided further into subsections for better transparency of published content. The visual of website should be designed for quick and easy editing by using templates. Generally, the CMS system should have nice, user-friendly and well-arranged administration environment.

In addition to basic webpage, Faculty of Aeronautics requires electronic shop for selling publications. Software should be Open Source, it should have lowest requirements on system resource and it should match server configuration. From view of functionality we will need only basic properties, such as payment, transportation, cart and orders and product management.

4 APPLICATION NEW WEB PORTAL

Based on Faculty of Aeronautics needs, we created application of structure of website, graphic design, content and user management, content and user categorization, user competences and e-shop application.

4.1 Graphic design

Graphic design will consist of three column conception, which is made from header, left and right sidebar, main column, place for horizontal menu and footer. Header will serve for presentation of website, displaying name of portal, logo and search box. Under the header will be horizontal menu with links to sections with

information about faculty, departments, for applicants, students and graduates and presentation about faculty. Left sidebar consists of navigation menu, which will serve for better orientation on website. When user log in into system, he will also see menu for employees right under the navigation menu. In right column we placed menu with different external links, application like calendar, polls etc. or link to friendly web pages. Middle column is used for displaying published content. This whole structure will be closed with footer. Footer will finish visual concept of page and will carry only information about page design and contact to administrator.
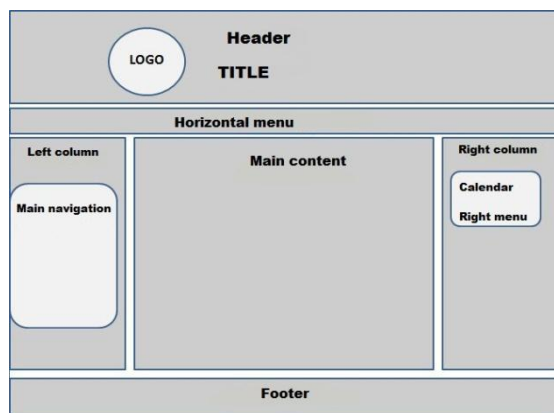
Fig.2 Suggestion of visual structure

4.2 Page structure

Structure will be divided into several important parts. Whole structuring will reflect in navigation menu. Main menu will be divided into nine main sections providing information about faculty in these menu items: *O fakulte, Katedry, Veda a výskum a Prezentujemesa*, information for applicants, students and graduates in: *Pre uchádzačov, Pre študentov, Pre absolventov*, and link to *Úradnávýveska* and *Aktuality* for official and informal announcements. With this main menu will be connected horizontal menu, which will carry links to important parts of main menu. In right menu will be placed frequently used external links and also information about meal ordering, policy of quality and legislation and policies. Last menu on site will be menu *Pre zamestnancov.* This menu will be invisible for ordinary visitor, because of its private content. Menu should display information necessary for employees of Faculty of

Aeronautics, information about publication activities, resolutions, legislation and policies, but mostly announcements from heading departments etc. Thisinformation should be categorized as needed. Example of structuring main menu and menu for employees can be seen in Fig. 3.

Fig. 3Main menu

We wouldn't be able to create structure as shown before, if it wasn't Drupal's function for content categorization and filtering.

4.2 Users and content categorization

Content categorization was one of the faculty's requirements on new portal. Reason for this specification is creating, editing and publishing content by competent users and dividing this content into public and private content according to websites structure. Drupal has in its core a module called Taxonomy, which is used for managing tags for content categorization.

Publishing content on information portal of Faculty of Aeronautics is handled by almost all of her employees. User categories will be created according to organization structure of faculty to these: dekanát; študijnýreferát; referát pre vedu, výskum a zahraničnéstyky; referát pre rozvoj a informatizáciu; katedry; vedeckúradu; akademickýsenát; pedagogickíporadcovia; sekretariáty; odborovékomisie; vedúcikatedier; disciplinárnakomisia and many more. Together with user categories, we suggested user competences. Users in user categories will have rights to create general announcements to students or employees, official announcements and news. Then we give them competences to edit content on pages and every category will have section, where they can post articles and other news.

Fig. 4 User categories

5 IMPLEMENTATION OF PORTAL

The process of realization begins with installation of CMS Drupal and necessary modules. During installation, we needed to set database name, access to this database and setting about web page, like title, administration account and server settings.

Drupal is system, which functions can be extended installing modules. During our development of information portal, we needed to install some modules, to acquire some more functionality. The most used module is Views3. This module allows us displaying list of articles according to specific filter like day of issue, author, content type or categories etc. To ease the content creating and editing, we needed a visual editor with which we could edit content without knowledge of HTML. This specification was handled by TinyMCE module, which has very good rating in user community. We used module Profile2 to edit and expand user profiles by adding some new fields like name, e-mail, CV. In case of need, these fields can be also expanded. To ensure the requirement that users may contribute only to predefined categories, we had to assign tags and competencies to specific user groups with module Taxonomy Access Control. For electronic shop we decided to use Ubercart. Because Faculty of Aeronautics won't sell large amount of products, we used only Ubercarts basic functions.

When creating content, users have four content types to choose from:

- Basic Page
- Article
- Product
- ActaAvionica

We are using Basic Page for static pages where content was changed only little or never.

Second type is often used to publish announcements. Announcements are specific, because we need to categorize them with tags. These tags are created in administration section Taxonomy.

Electronic shop was ready as soon as we turned on module Ubercart. Then we created products offered by Faculty of Aeronautics and also created new types of payments and transportation using Slovak Post. Whole e-shop administration was given into competence of user group Predajskrípt a publikácií.

In last step we connected new portal with social networks like Facebook and Twitter, to display news and tweets on our front page.

Final look of new information portal is shown in Fig. 5.

Fig.5 Final appearance of portal of FoA

6 CONCLUSIONS

Our main objective was to suggest and create new information portal of Faculty of Aeronautics based on CMS system. This goal was completed by analysing requirements of faculty on new portal, analysing properties of CMS systems for faculty's needs and choosing the best possible CMS system. We also had to reconsider and create suggestion and later implement this new portal according specifications. Throughout this process we've stumbled upon several problems, but which did not affect the future function of this portal. These problems concerned about way of

displaying added information. But after considering fair solutions, we have always found a way, how to fix it.

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