

CONTENT MANAGEMENT SYSTEMS (CMS) OPEN SOURCE WEBSITES

Marinela Lăzărică¹
Florin Dediu²

Abstract: *Firms need flexible software applications, which may be adaptable to dynamic changes of the modern business environment; they also need more control over their software costs, security and trust in purchased and implemented software. Moreover, they need to be free of individual software vendors and license costs for the software, etc. The solution of this problem consisted in open source applications and the open source technology has proven that it can often provide high-quality software, being a challenge for old models of software development and maintenance.*

The first content management system was announced in the late 90s. The offer of such software systems is varied and each of them has its own characteristics. This requires a comparative analysis of viable open-source systems in order to choose the most appropriate imposed goals.

In this context, the paper illustrates the use of an open source content management system, like WordPress, to develop a content site in design of websites and analyze its characteristics.

Keywords: *software open source, content management system - CMS*

JEL classification: L17, L86

1. Open source software: CMS – content management systems

Not long time ago, open source software in the enterprise was a controversial topic. Conference panels and industry experts questioned the integrity of mixing open source with commercial and proprietary code.

The need of firms for greater agility and flexibility, and more control over their software costs, coupled with their fear of technology obsolescence, is driving them to loosen the ties to individual software vendors and traditional software licensing models.

Companies need flexible software applications, and adaptable to dynamic changes of the modern business environment, they need more control over their software costs, security and trust in purchased and implemented software, they need to be independently of individual software vendors and traditional software licensing models, etc. The solution of this problem consisted of open source applications and the open source technology has proven that it can often provide high-quality software and this is a challenge for old models of software development and maintenance.

Reference Foundation of open source community is FSF - Free Software Foundation was founded in 1984 (<http://www.fsf.org/about/>). Richard Stallman, founding president, states that software should be open source software, only this way can it develop the software world in particular and the society in general: through free access to previous research. Stallman also clearly distinguishes between free access to source code (source available for copying, using, redistributing and modifying the code parts to resolve the errors or its growth potential) and the free software (which costs nothing) but is not open source software because it does not allow the access of its source code (http://en.wikipedia.org/wiki/Open_source_software). Starting from the famous example of Richard Stallman “Think of Free Software as free speech, not free beer”, one has become accustomed to the practice of referring to the two meanings of the English word “free” as in “free as in speech” or “free as in beer”.

¹ PhD Lecturer, “Constantin Brâncoveanu” University of Pitesti, Faculty of Management Marketing in Economic Affairs - Brăila, mlazarica@yahoo.com

² Bachelor of Science - Economics, Economist, “Constantin Brâncoveanu” University of Pitesti, Faculty of Management Marketing in Economic Affairs - Brăila

Open source software promotes innovative work and also creative work.

A web presence is critical for almost any website, but its development process can be discouraging. It can be discouraging because it involves significant financial and human resources, technical knowledge and the end-product must be obtained in a very short period of time. Nevertheless, after the website's running, it still needs to keep up with the maintenance, updates and desirable new features. This is where an open source Content Management System (CMS) demonstrates that it is useful.

A CMS is a software package that allow the development of websites that can be quickly and easily updated by non-technical staff members (Quinn, Gardner-Madras, 2010). These open source systems are created and supported by a community of developers and can be downloaded without costs. Both their feature sets make open source systems particularly attractive to nonprofits.

Currently, there are several viable open source systems but which are not as widely used worldwide. Therefore, it requires a comparative analysis of the existing CMS packages on the market to order to be able to chosen that package that will enable the development of website according to customer requirements.

As comparison criteria it includes: technical resources (web hosting and installation), use of CMS, flexibility, detailed structure of software package helps to find certain lines of code which can be modified to adapt the package to customer requirements, using short lines of code helps to customize the website without excessive waste of time for understanding the source code, the database must have an organized and compact structure, a hosting control panel (cPanel) with an easy-to-use interface, the range of add-on modules (free or not) which helps to customize the content of the website, the simplicity of coding a custom theme and its implementation on the website, safety and security of data, community of people who offer support.

The chart below (chart no.1) shows the market share of the most popular applications in the category CMS based on the number of installations detected by Wappalyzer in the previous 90 days.

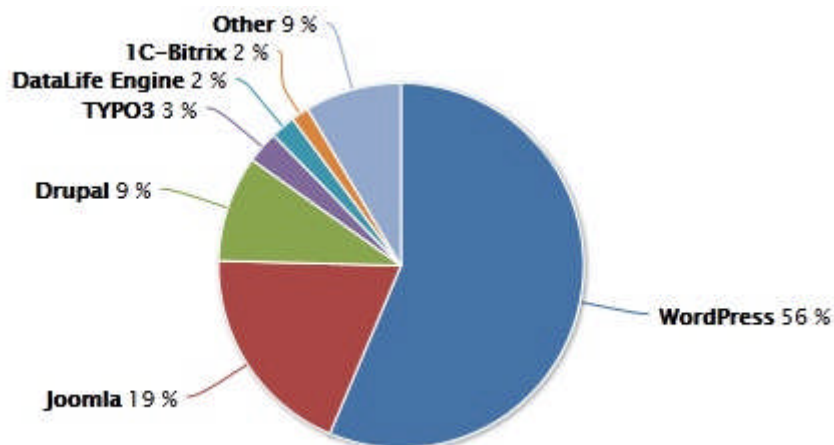


Chart no. 1. Most popular CMS packages (<http://wappalyzer.com/categories/cms>)

2. Implementing websites using WordPress tool

After analyzing the characteristics of the most popular CMS tools (<http://www.comentum.com/drupal-vs-joomla-cms-comparison.html>), WordPress was chosen for the development of the proposed site.

To download the WordPress package, we access the official website (<http://wordpress.org>), "Download" section. Using the hosting control panel (cPanel), we upload the package archive (.zip) to the hosting account.

After purchasing the Web domain (<http://e-prodesign.net/>) and hosting account, we log into the hosting control panel (cPanel) with the information provided by the host company, we check the Web domain, we create a database using the database management system MySQL, we create a new user with rights related to the changes of the database.

The WordPress installation is running. First, the Web domain is accessed, after that we complete and confirm the required data (user and password for logging into the control panel of the site, e-mail of site administrator and indexing in Google and Tehnorati search engines), if all the information is correct, the installation is finished.

After that, we access the hosting control panel by entering username – admin and password. WordPress interface can be seen in the figure below (figure no. 1). The site content (Web pages, articles, files, etc) can also be seen in the control panel.

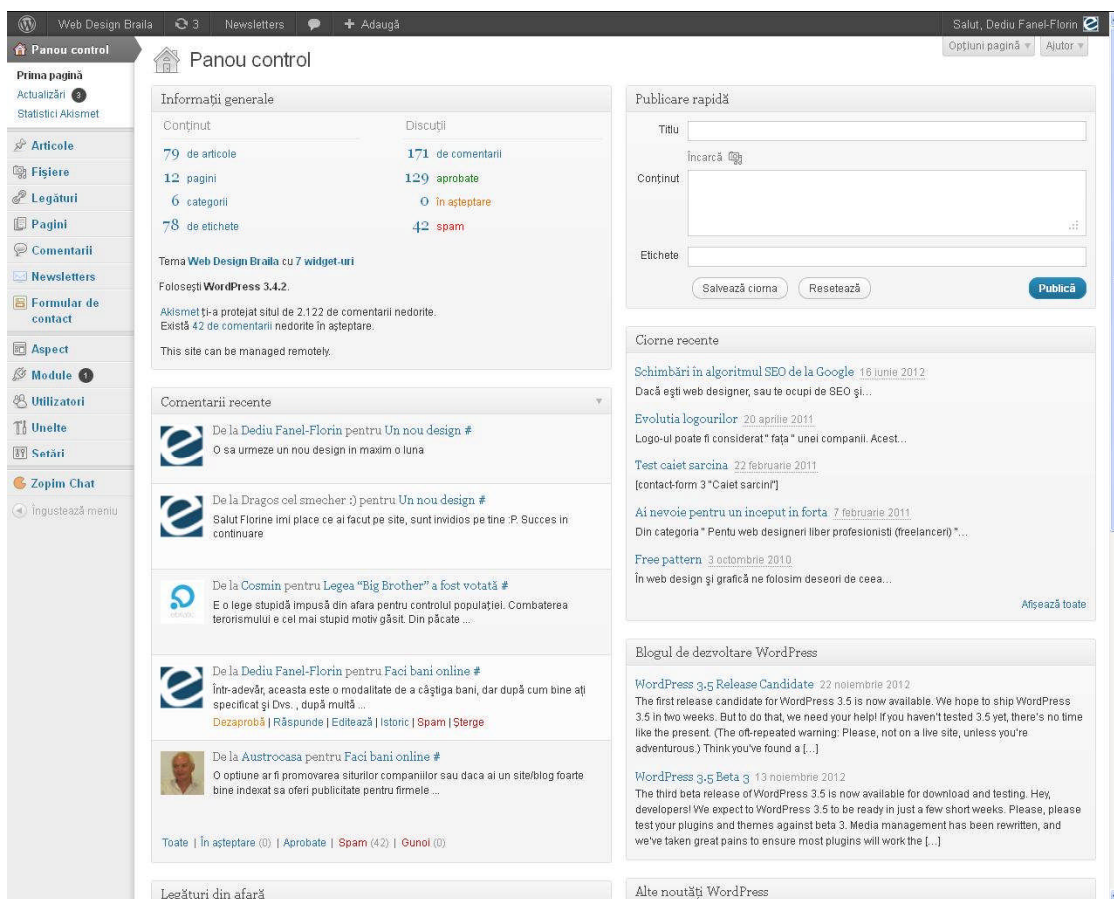


Figure no. 1. cPanel of WordPress.

If the WordPress features are not right for meeting the requirements identified in the design of the website, the source code of the created object can be adapted and modified. Further on, we will present such a case.

After several researches on websites specialised in graphic themes for WordPress and customer requirements, we chose the theme of Redemption. This graphic theme responds to Web 2.0 trend and predominant colors of blue and grey. Nevertheless, it does not fully comply with the requirements of the web page structure. To adapt the theme of these requirements, one modifies the php file of theme and short codes WordPress will be used.

After creating the website content by following the structure established in the design process, it is necessary to display in the header the categories of items. In the original form the Redemption theme displays only pages (figure no. 2) and not the categories of items.

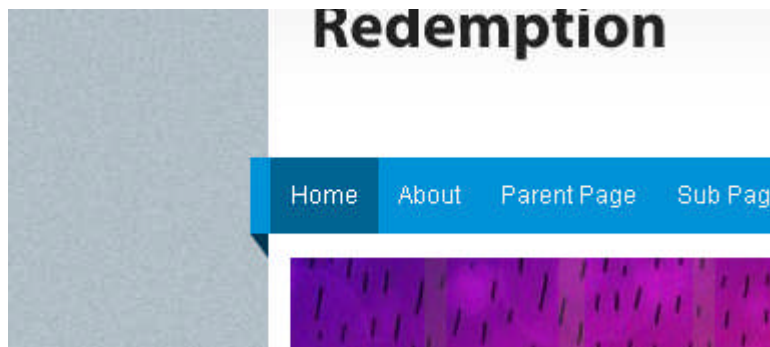


Figure no. 2. Original form of the Redemption theme

To identify the php code which displays the pages, first we inspect the code of the HTML element displayed (figure no. 3).

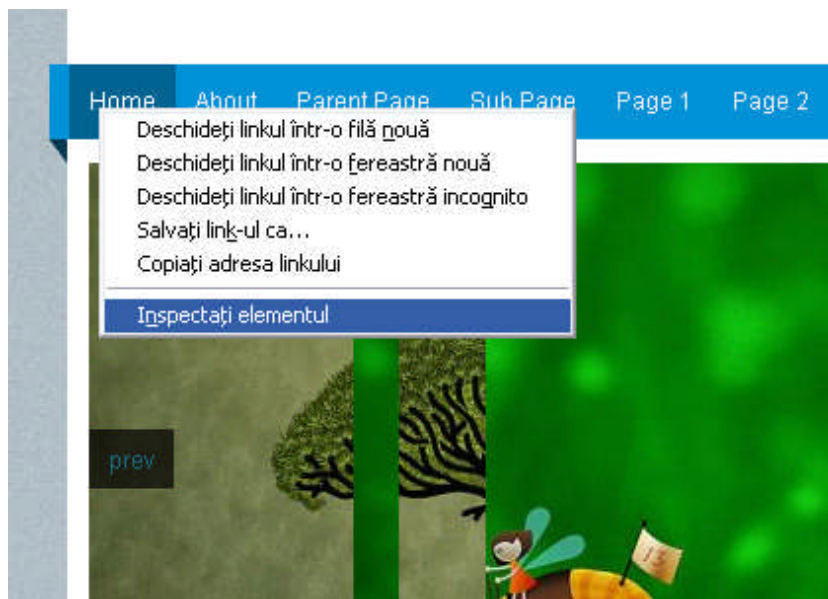


Figure no. 3. The examination of the HTML code

After this step, the browser displays the HTML code of the item selected for inspection, and other information about its encoding (figure no. 4) and the link to the CSS file (Cascading Style Sheets - external file that completes the style of an element).



Figure no. 4.

We take the beginning of the division as a benchmark:

```
<div id="catmenucontainer">  
<div id="catmenu">
```

These lines of code are searched in the header.php file of theme and will copy to create another identical division.

In the header.php file we identify the following lines of code:

```
<div id="catmenucontainer">  
<?php wp_nav_menu( array( 'container_id' => 'catmenu','theme_location' =>  
'primary','fallback_cb'=> '' ) ); ?>  
</div>
```

The highlighted code line is the php syntax that the system will display a list of pages. After creating a copy of the division, we have the following lines of code:

```
<div id="catmenucontainer">  
<?php wp_nav_menu( array( 'container_id' => 'catmenu','theme_location' =>  
'primary','fallback_cb'=> '' ) ); ?>  
</div>  
<div id="catmenucontainer">  
<?php wp_nav_menu( array( 'container_id' => 'catmenu','theme_location' =>  
'primary','fallback_cb'=> '' ) ); ?>  
</div>
```

We replace the highlighted line of code with the syntax:

```
<?php  
wp_list_categories('sort_column  
=name&title_li=&depth=4'); ?>
```

This syntax displays a list of categories and subcategories with a maximum depth of 4 levels of subcategories.

After performing the above operations, two identical divisions will appear but with different elements, one displays pages, the other displays categories (figure no. 5).

Any Web page can be simply edited by selecting it in the control panel followed by the change.

Promoting a website is one of the keys to success in an online business. SEM - Search Engine Marketing, online marketing subcategory, meaning both: classical advertising (offline) and online advertising. SEO techniques - Search Engine Optimization, belong to these SEM practices, their purpose being that, depending on the budget available, sites should reach positions as high as possible in the search engines.

One useful module offered by WordPress is *All in One SEO Pack* which allows adding / modifying three types of meta important tags of on-page optimization (title, description and keywords) in the hosting control panel (figure no. 6).



Figure no. 5. The final form of the header area

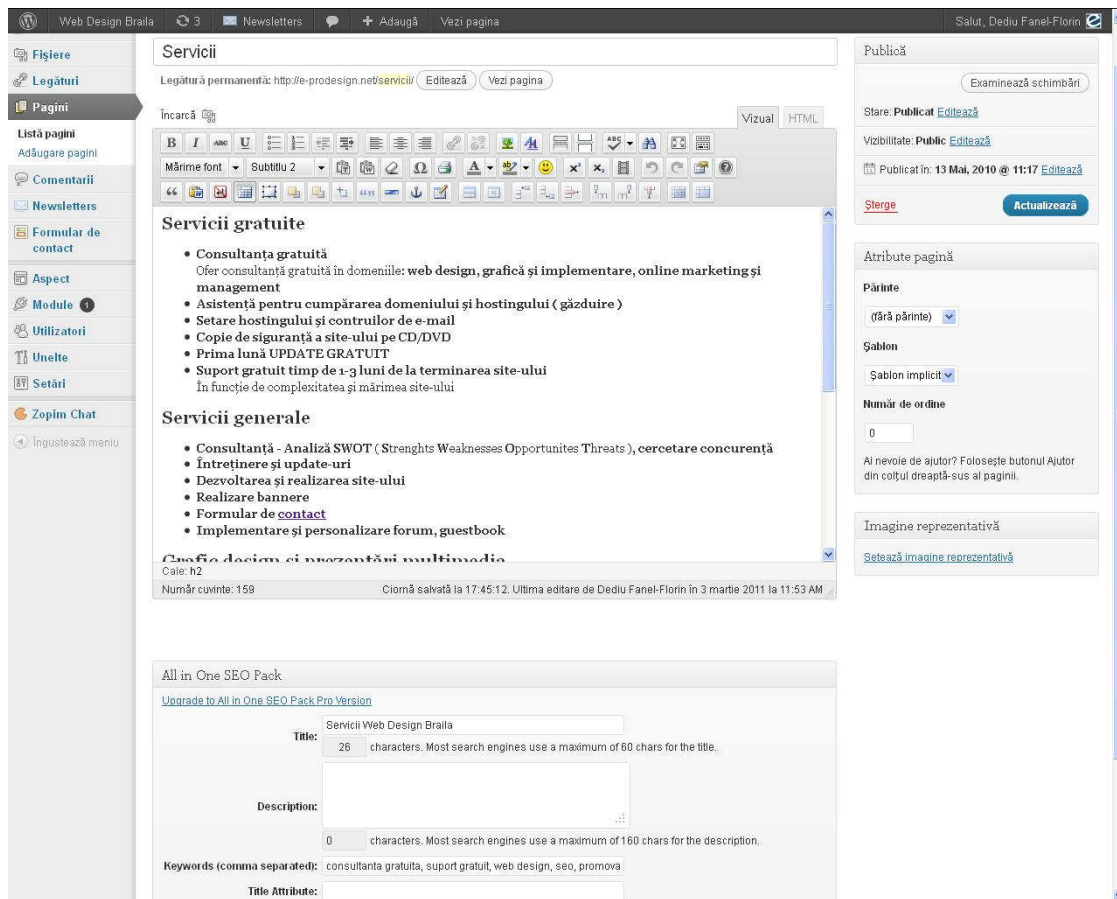


Figure no. 6. Setting title, description and keywords for the page *Servicii*

On-page SEO is a process that is carried throughout the design and the development of the Website. This service includes:

- Highlighting of some keywords in the content of the text: border keyword/keywords in the strong tag

```
<h2>Servicii gratuite</h2>
<ul>
  <li><strong>Consultanța gratuită </strong></li>
</ul>
```

- Layout of content
- Choosing a conclusive title consistent with the text page
- Generating appropriate meta tags and implementing basic functions that will help search engine crawlers to find the site

```
<meta name="description" content="Descrierea pe scurt a conținutului" />
<meta name="keyword" content="Cuvinte cheie importante" />
<h1>Titlu</h1> , <h2>, <h3>
```

The supervision of the advertising campaign and the improving of the search engines was made through statistical services: Google Analytics - <http://www.google.com/analytics/>, GTop - <http://www.gtop.ro> and Webmaster Tools (figure no. 7).



Figure no. 7. Traffic report over the last four months

The first target in terms of the promotion was to reach the first position in the list of search by keywords “web design Braila” (figure no. 8). This goal was accomplished before the deadline of six months.

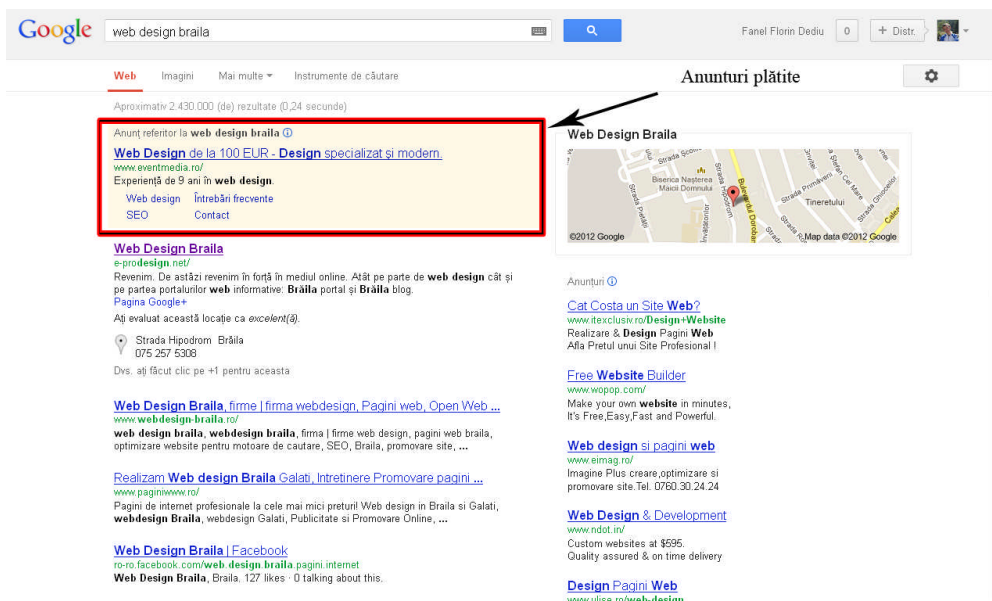


Figure no. 8. The position of the site on the first page of the search results for the keyword “web design braila”

For the development and the publishing of this website we should consider some investment costs such as:

- purchase of a Web domain

Because the area of interest is a web design an appropriate web domain was chosen: www.prodesign.net. Web domains such as .net cannot be purchased on an unlimited period. These domains are reserved for a defined period of time for which an annual fee of seven euros is paid.

- purchase of a hosting plan

ShopHost.ro was chosen for this service and as a hosting package - medium, at a cost of \$ 4 and it includes: 2000 MB disk space, 20,000 MB monthly traffic, parked domains, e-mail and unlimited databases.

3. Conclusion

According to the research in the field of open-source applications, it was shown that it is a true ideological movement.

When referring to the category of open-source content management systems (CMS) which were used in the development of websites, the offer of such systems is very varied. Therefore, it requires a comparative analysis of the existing CMS packages on the market in order to choose that package that will enable the development of the website according to customer requirements.

For almost any firm, a web presence is critical, the development process of websites involves significant financial and human resources, technical knowledge and the end-product must be obtained in a very short period of time. This is where an open source Content Management System (CMS) demonstrates that it is useful.

In this paper we exemplified the use of an open source content management system, WordPress, which was used to develop a website. The aim was to confirm significant market share (56%) of WordPress.

In our opinion, the WordPress features which can support the market share are: technical resources, flexibility, detailed structure of software package, using short lines of code helps to customize the website without excessive waste of time for understanding the source code, a hosting control panel (cPanel) with an easy-to-use interface, the range of add-on modules (free or not) which helps to customize the content of the website, support forums.

In conclusion, we may state that such a system simplifies the development of websites, offering flexibility, low-costs, but it also requires technical knowledge to customize themes and templates provided by it.

References

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