Master-Project Thesis

Developing content management and Presentation facilities

with

Adobe Flex and the Zend Framework

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Abstract

Table of Contents

1 Introduction

2 Background

2.1 The Zend Framework

2.2 Adobe Flex

3 Well known Content Management Systems

There are several different Content Management Systems available online. When searching on the internet for free CMS's there are a few systems that you will notice in the first hits of the results. These systems are: Joomla!, Drupal and WordPress.

Since I didn't want to compare just the first hits of Google I searched for the best free CMS's. This resulted in a list of the top forty of best free CMS systems (1). Within this list Joomla!, Drupal and WordPress are in the top three. Since this is only one comparison I also searched for other CMS comparison websites. At webdevnews.net (2) there was another comparison with a top ten of open source CMS's. In this comparison we also see Drupal, WordPress and Joomla! But only in another ranking.

Because these CMS's are very popular and well known I will have a review of these systems and compare them with each other. Doing this will give a good idea about the parts which are important within a decent CMS.

3.1 Comparison criteria

For comparing these three CMS's we need some criteria. In the next chapters I will go into the criteria which I will go into when reviewing the CMS's.

3.1.1 Installation

When an user want to set up his website and wants to use an CMS he or she has to install the package onto his server. Since every package might have different requirements for installing the package we will have a look at the installation process of the CMS. Another thing to look at if the installation process is easy and user-friendly. The best solutions would be pushing a button and everything would be set up.

3.1.2 Usability

The second thing I will look at is the usability of the CMS. This means setting up your first website, changing the contents of the website and changing the types of content. For example a blog on the website or adding pages with the latest news. Finally an overall review of the usage of the framework and for which type of user and website this CMS would be perfect.

3.1.3 Search Engine Optimization

Everyone who wants his own website wants to make sure his or her website will be found when searching for in with search engines. There are a lot of options to make sure your website will be higher in the results. I will check what these CMS's have included to help you get higher in the results.

3.1.4 Expendability

One of the most important features of an CMS would be if it is expandable. For example if we have a working system and we want to include a forum or a photo gallery. In this part I will check the possibilities of adding modules to the CMS and how easy or difficult this is. Since this has to do with the source code of the framework I will also go into the required knowledge when expanding the CMS to suit the needs of the user.

3.1.5 Templating

When working with a CMS its required to work with templates to use the design you want for you website. Since it might be very complex to create the website in the style you want I want to check out how difficult this is in reality for these CMS's.

3.2 Joomla!

For starting I want to give an introduction to what Joomla! is and where it came from. Joomla! is an CMS under the GNU/GPL License. Next to this it works as an application framework. This because the CMS can be used with a lot of plug-ins which are freely available.

Figure 1: Joomla! logo, http://cdn.joomla.org/images/logo.png

So how did Joomla! get where it is today? In march 2000 a company called Miro Construct Pty Ltd started developing a closed source project called Mambo (3). In 2002 this project became open source. In August 2005 a new project is started called Joomla!. This project started with the same codebase as the current Mambo project (4).

Joomla! has been rewarded with multiple awards. Joomla! won the Packt Publishing Open Source Content Management System Award in both 2006 and 2007 (4). Joomla! is also nominated for the best open source cms winner of 2009 (5).

3.2.1 Installation

Before installing we need to know about the system requirements of the CMS. The requirements of the Joomla! CMS can be found on their website and are very clear (6). Since I will work with an installation of WAMP (7) all the required needs are met automatically.

We can get the latest version of the Joomla! CMS on the download page (8). I used version 1.5.14 for this document. This is a zip file which can be opened with WinZip, 7Zip of any other (de-)compression tool. The extracted folder needs to be placed inside the document root of the webserver. With WAMP on windows the default location for this is c:\wamp\www. Since the CMS there needs to be a database which is set up. This can be done with PhpMyAdmin which is integrated with WAMP.

If we then browse to the website which would be located at: http://localhost/Joomla_1.5.14-Stable-Full_Package/ then we would automatically see an installation wizard which is visible in figure 2. In the second step the installation will check if the requirements for the installation are met which is a very nice feature.

The only real thing we need to do is fill in the settings for the correct database which will be validated during the installation. We can set up an FTP if we want. I decided to skip this feature. Another nice feature is to install data which makes it easier to start working with the CMS as a new user. Then the installation asks to delete the installation folder on the server. When this is done we have a fully working website which can be adjusted to suit the needs of the user.

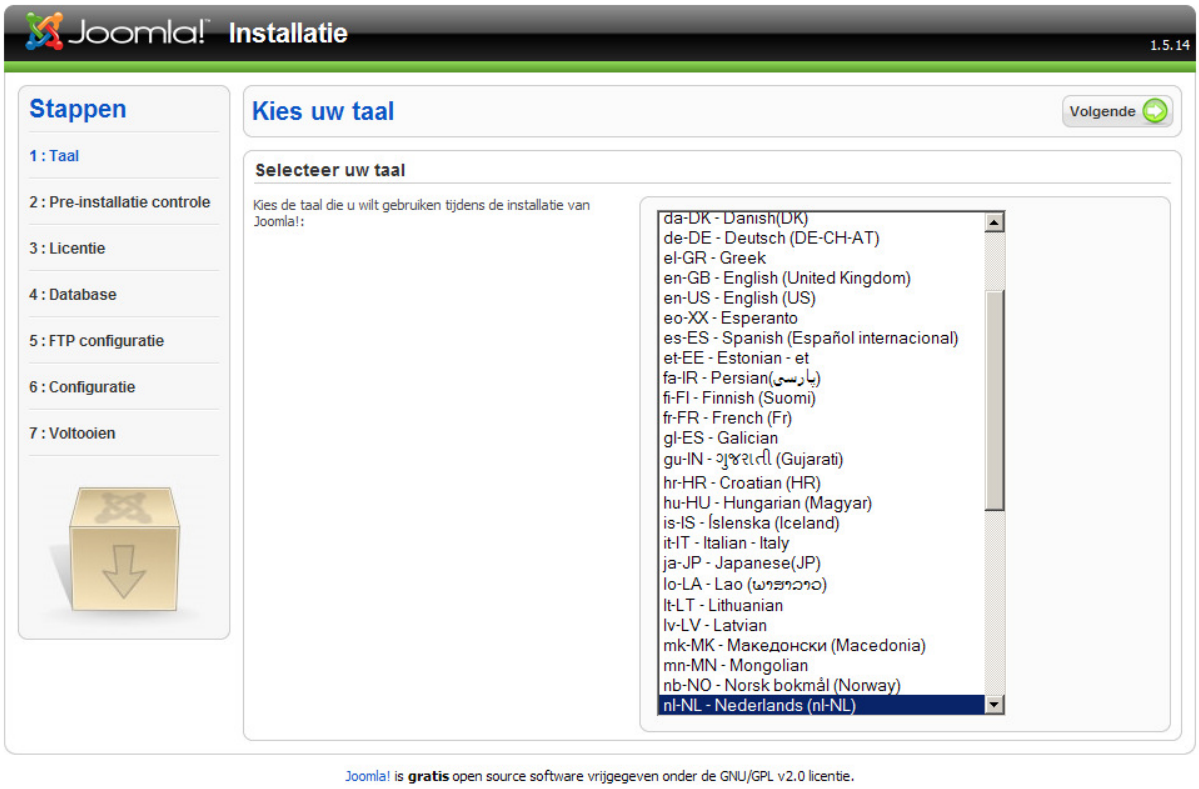


Figure 2: Joomla Installation.

3.2.2 Usability

To test if the Joomla! CMS is user-friendly I will have to test the functionality which is included inside the system. Therefore I will add an page to the homepage. The first thing which I want to do when I see the administrator panel is write a new article. This seems to me a new page, so this is what I will do.

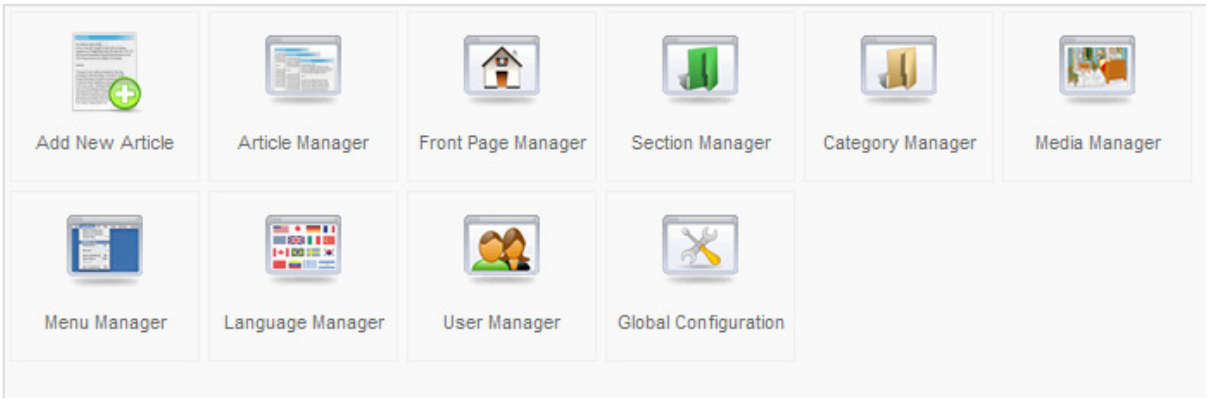


Figure 3: Joomla administrator panel

When adding the article we have to provide some information like if we want to display it on the homepage and if it should already be published. Also we can define which category we want this article be part of. Or if the article should be uncategorized.

So how does this article system works? When working with the CMS I find it unclear how it actually works. I know that we have sections, categories and articles. After searching online I found this image which clarified a lot for me.

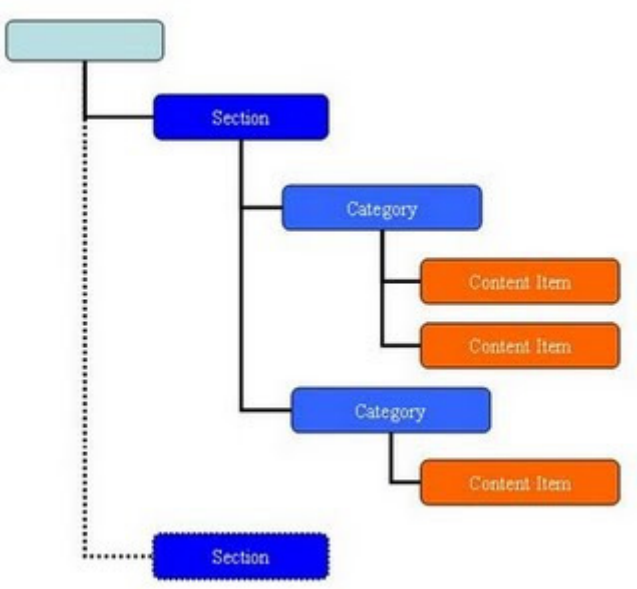


Figure 4: Joomla! structure, http://2.bp.blogspot.com/_1rl-4SPNYjM/SiE6eS5N0MI/AAAAAAAAAD0/-Hv9YyQh8hA/s320/26.jpg

Here we can see that if we have a complete website this contains numerous of sections. Each section can contain multiple categories. And each category in his place can contain multiple content items which can be articles. Also can a content item be for example a menu or a login form. Knowing this makes working with the CMS a lot easier.

Since there are a lot of extra features which you will not find out by just using the CMS it is good to read the quick start manual which can be found on the website.

http://help.joomla.org/ghop/feb2008/task048/joomla_15_quickstart.pdf

3.2.3 Search Engine Optimization

Since SEO is very important for the next generation of websites also CMS's have to be prepared for this. By default Joomla! has the options for working with SEO disabled. For example, there is an integrated solutions which rewrites the urls to Search Engine Friendly Urls, but this is disabled by default. (9), (10)

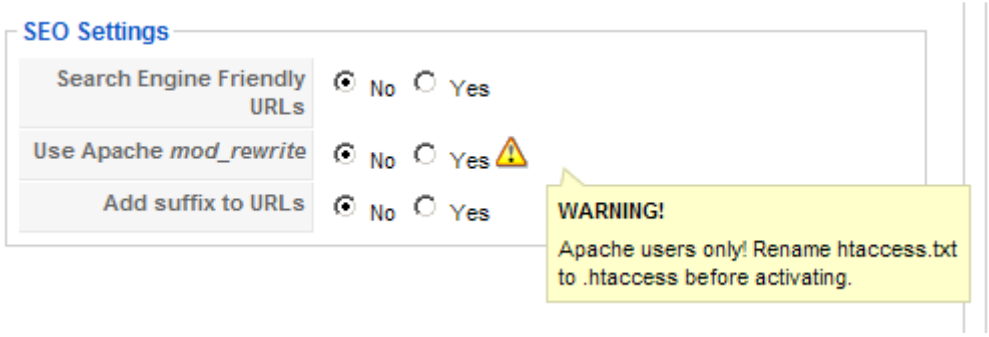


Figure 5: SEO Settings

The reason this feature is disabled is because Joomla! can also be used on another web-server than Apache and these other servers might require different rewrite rules which are not implemented in the release of the CMS. When enabling the SEO setting you do need to enable the mod_rewrite in Apaches configuration and rename the already provided htaccess file.

Further with all websites it is important to set the right keywords and title for each page. This makes the position inside search engines higher because they can be indexed in a better way. There is a patch available for Joomla! which gives you control to the metadata and title tags inside the page. This way you can make sure your page gets higher inside the search engines. (11)

3.2.4 Expendability

Expanding the Joomla! CMS isn't very difficult. There are various extensions available which can be included into the CMS. (12) You should however be warned that these extensions are mostly developed by normal programmers and therefore might contain bugs and don't have any warranty.

The good thing to do before using these extensions is create a backup of your website and then install the extensions and then do some extensive testing. Even then there might be some security risks or bugs inside the code.

If you are really into the code of Joomla! you can create your own extensions and use these on your website. There are several guides on how to do this. (13) By creating your own extensions you can make sure that you have secure code and remove the bugs easily since the code is your own.

Figure 6: VirtueMart Joomla! extension,
http://booksr.netau.net/index.php/component/virtuemart/?page=shop.browse&category_id=2&vmcchk=1

Above is an example of a Joomla! extension which is included in a live environment. Including such an webshop inside the Joomla! CMS system is very easy.

3.2.5 Templating

When working with an website you want to give it your own look and feel. There are two default templates installed when you install Joomla! to your web-server. But because your website should look unique you can download several other template from the web freely (14). But if you choose to create your own template this is also an possibility. Doing this requires knowledge of HTML, PHP and CSS. There are detailed guides about how to create a template which is suitable for the Joomla! CMS (15).

3.3 Drupal

How did Drupal come to where it is today? Dries Buytaert was working on a bulletin board which evolved into the CMS which it is today. In 2001 the project became open source and at this moment the community is also developing with the CMS (16).

Drupal have been rewarded with the 2007 Overall Open Source CMS Award. Also did the system have been finished in second place for the *Best PHP Open Source CMS* nomination and the *Best Open Source Social Networking CMS* nomination (16).

Figure 7: Drupal logo, http://culturekitchen.com/files/drupal.jpg

3.3.1 Installation

Before installing the Drupal CMS we need to know about the requirements of the Drupal system. The requirements can be found on their website after searching for a while (17). Working with the WAMP webserver system all the requirements are met. We can however enable some features as iser friendly urls when we enable the mod_rewrite module in apache.

Downloading Drupal can be done via their download page which isn't that easy to find (18). But once located the page we can easily download the archive needed to set up the CMS. For this document I used version 6.14 which is at moment of writing the latest official release.When we extract the archive with an (de)compression tool and place this in the folder of the webserver we can visit the page and follow the installation instructions. Also we need to set up an database via PhpMyAdmin.

When we navigate to the url of the CMS (http://localhost/drupal-6.14/) we see the installation screen of the CMS.

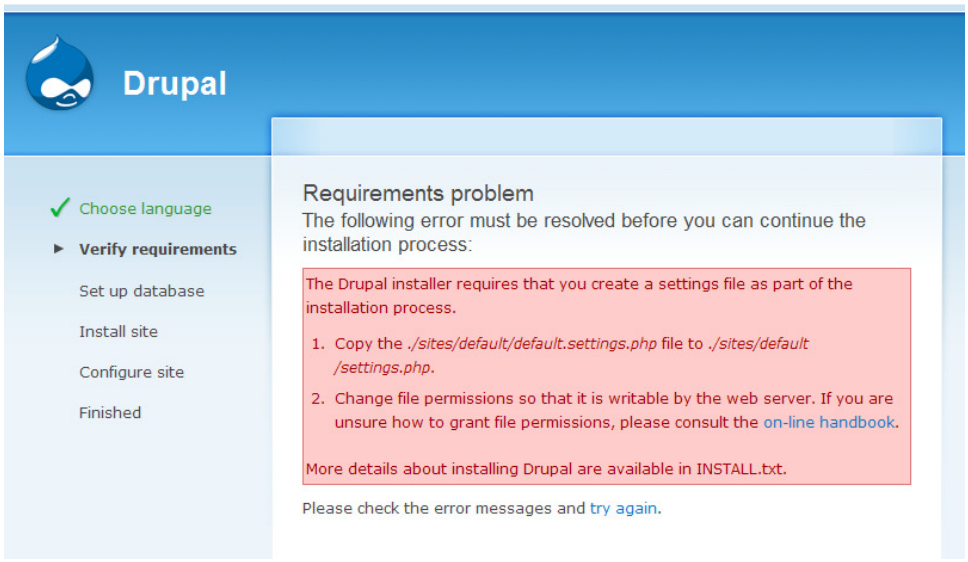


Figure 8: Drupal installation error.

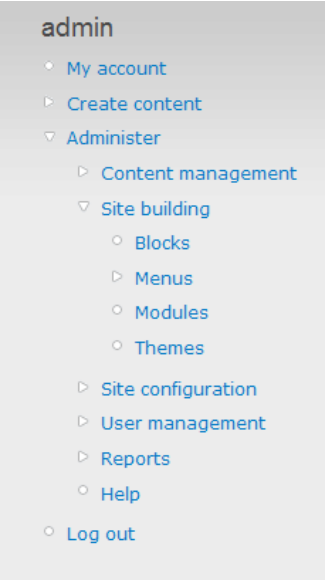
During the installation we get an requirements problem which is an error. What we need to do to fix this is fix problem number one of the screen and copy an file to another folder. Once this is done the problem is fixed and we can continue with the installation process. When using WAMP we get another error at the end of the installation which says that the connection with the mailserver has failed. The reason for this is that the settings for the default PHP installation of WAMP are different than the ones required by Drupal. At this moment we are done and can navigate to the already working website. On this page we get some advice on how to change the website to suit our needs.

3.3.2 Usability

When creating a page within the Drupal admin there are not that many things to do. You can choose to add two types of content, namely a Page or a Story. A Page is designed for pages which will not change a lot. For example an "About Us" page or an disclaimer page.

A Story is designed for pages which may change a lot or which users of the website can respond to. This can be a news item or a normal blog. By default a story will be displayed on the home page of the website.

Creating content withing the backend is very straightforward and doesn't require much knowledge since the CMS explains itself very easily. One of the downsides is that it doesn't use an WYSIWYG editor. So if you want content with for example an **bold** word in it, you still have to write code for this (bold) which isn't very user friendly in my opinion.



The menu of the backend of the CMS is very easy to understand. You can see a few buttons which contain there sub menus. Changing the users account is one of them. Another one is creating content which exists of stories or pages. The third is the administer which is the most important part of the backend. Here we can change and delete content, change the websites layout and add or delete modules and themes.

Also set the websites configuration and edit the users which are available within the frontend of the website. Also see any errors or warnings with the website and available updates for the website.

There is also an getting started page on their website which displays more information if needed. This page can be found here:

http://drupal.org/getting-started

Figure 9: Drupal Admin menu.

As we can see in the menu above the CMS works with four types, we have a theme which can include some modules. A module can be a forum or a photo gallery. If we want to display something on the website we have to place this inside a block. So the entire website is build out of blocks and each block contains its own information. For example a forum or photo gallery or maybe a menu for the website. Inside the theme the layout of the blocks and so the entire website can be changed the way you want it to be.

Further the CMS has enough information when working with it and there is an detailed help function available. Here is also more information available about the "blocks" of the CMS.

3.3.3 Search Engine Optimization

Working with SEO urls with Drupal is disabled by default. To enable this we have to go to the configuration part of the website and there the sub section of Clean Urls.

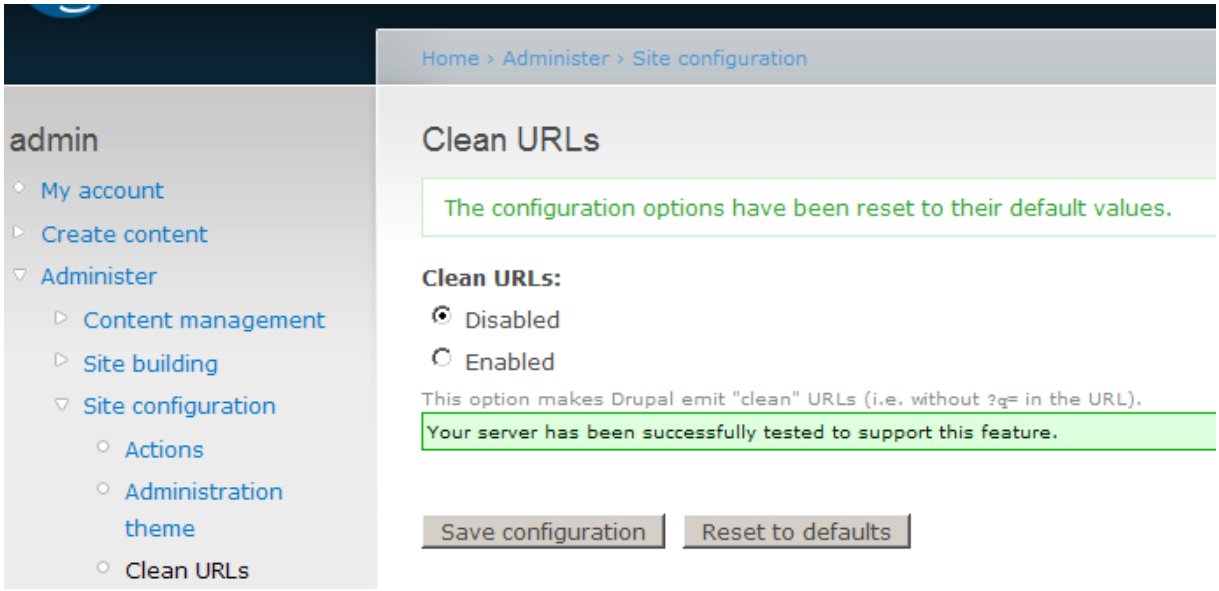


Figure 10: Drupal Clearn Urls.

Here the CMS will automatically test if the configuration of the web server supports working with clean urls, if not there will be a message which says what to do. Usually this means enabling the mod_rewrite module of the apache server.

Then we can enable this function and all the urls will be rewritten to an url which is user and also friendly for search engines. More information about clean urls is displayed on the website of Drupal (19).

3.3.4 Expendability

The Drupal CMS can be expanded with several modules. There are a lot of modules available for download for free. They can be found on the Drupal website (20). There is also a list of all modules in alphabetical order (21).

If you want to write your own module this is also possible. Drupal has a very detailed API which can be used when creating your own module for your website. There is also a getting started page on their website where you can create your module from scratch. These tutorials are separated according to the different versions of the CMS (22). All the information for doing this can be found here:

http://drupal.org/developing/modules

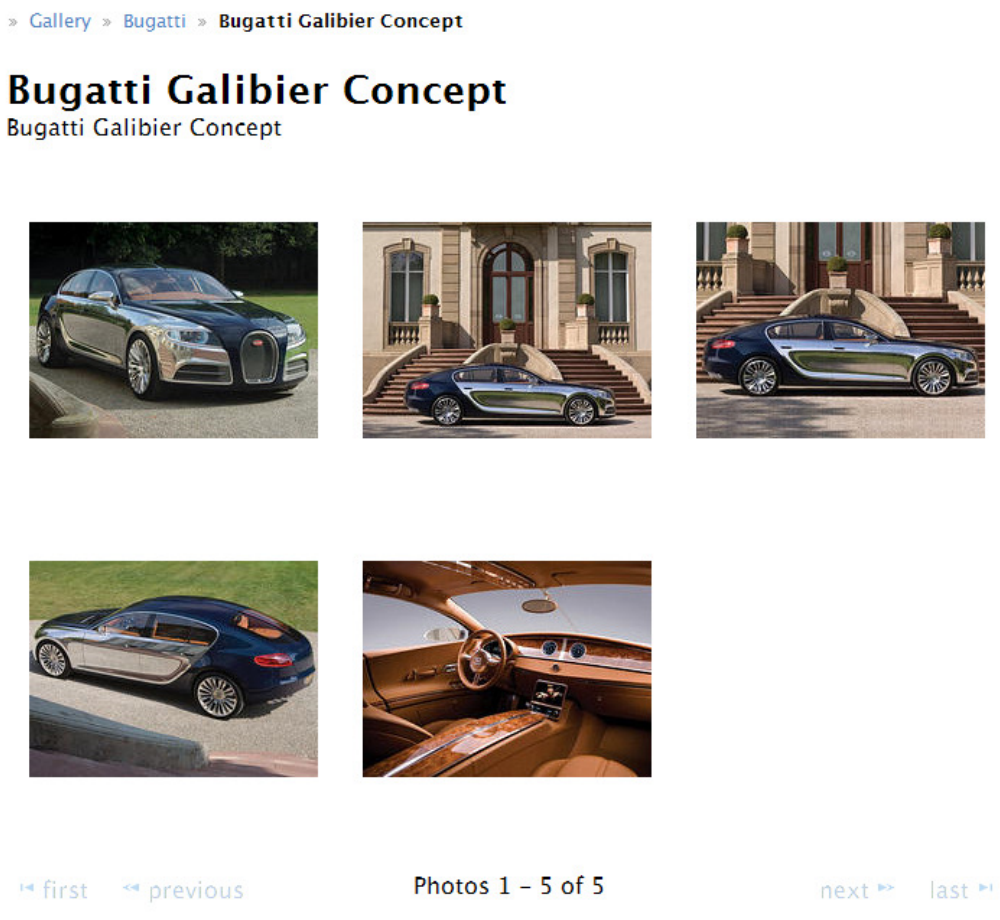


Figure 11:Example module, Photo Gallery, http://www.arabamoto.com/index.php/Bugatti/Bugatti-Galibier-Concept

Above we see an example of an Drupal CMS module namely the Photo Gallery. With this module you can easily create a photo gallery within the Drupal CMS and display your own photos inside it (23).

3.3.5 Templating

With Drupal there are six templates installed by default which can be used. But since you want your website to be different than any other website you want to change your website. On the Drupal website you can download several other templates (24).

If you want to use the default theme but still want to change the layout you can choose to use other colors in the admin panel. There is of course also the possibility to create your own custom guid. For this there is also an detailed guide available on the Drupal website (25).

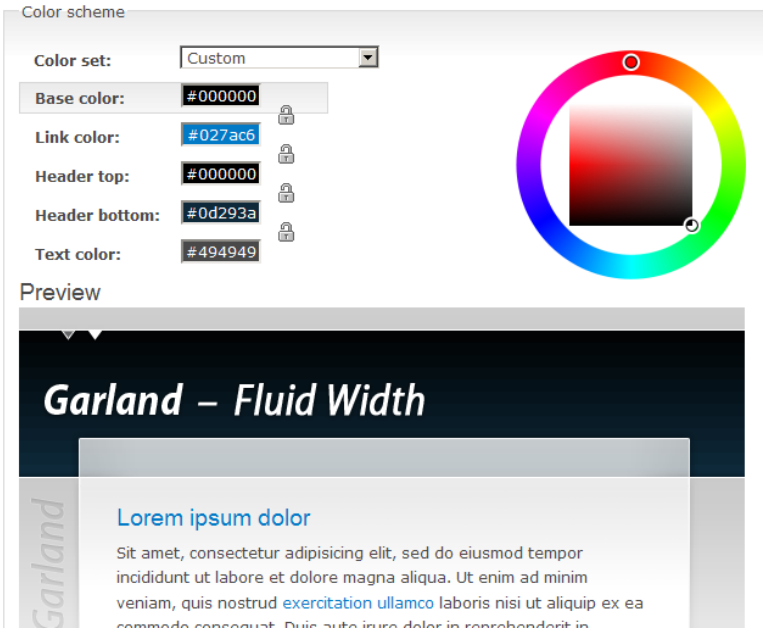


Figure 12: Drupal Theme Color Changer.

3.4 WordPress

What is the history of WordPress? In 2003 a weblog tool was developed which was called b2/cafelog. Later in 2003 the source code of this project was copied to start another project with. The name of this project is called WordPress (26).

WordPress has been rewarded with a *Packt Open Source CMS Award* in 2007. The current version of the CMS is version 2.8.4 and appeared in August 2009 (26).

Figure 13: WordPress logo, http://upload.wikimedia.org/wikipedia/commons/c/ca/Wordpress-logo.png

3.4.1 Installation

If we want to install WordPress we need to know about the server requirements. After searching a while on their website we can find the requirements and there are not that many compared to the two other CMS systems (27). We do however need to have mod_rewrite enabled which isn't by default within the WAMP webserver.

We can download WordPress from their website (28). Here we can choose from a zip or .tar.gz file. Both of these files can be opened and extracted with the most (de-)compression tools. The version I used for this document is the latest version namely version 2.8.4. Working with WordPress we also need an database which is set op which we can also do with the PhpMyAdmin program included inside the WAMP webserver.

If this is set up we can navigate to our website which is in our webserver. The location for this would probably be like this:

http://localhost/wordpress-2.8.4

Then we will get a message which says there is no configuration file which we need to create. After this we need to set the database configuration and then we can run the installation script. Carefully note the password which is generated during the install and then we are done. When we are logged in we can change all the settings which we have made during the installation.

3.4.2 Usability

Creating a page within the WordPress CMS is very simple. Within the menu we can click on the pages entry, there we can click "Add New". Here we can type the content in the WYSIWYG editor and then click the publish button to finalize the page.

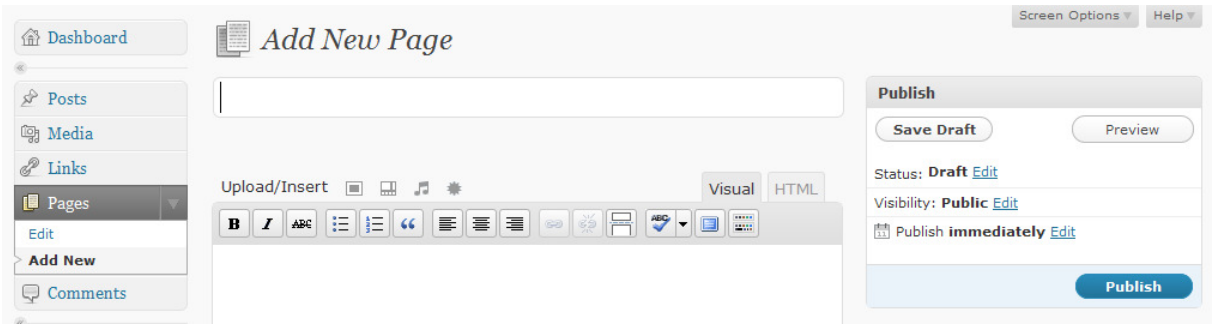


Figure 14: Add new page inside WordPress.

Other things we can do is edit the posts which have been made on the website, manage the links on the website and the media that have been uploaded at the website.

Further does the CMS contain some options for plugins and options to change themes. But the CMS is designed for blogging. The things that are included in this CMS work very easily and do not require very advanced knowledge of creating and editing a personal website or CMS's.

3.4.3 Search Engine Optimization

The WordPress CMS requires the mod_rewrite module for apache to be installed. But by default it doesn't use this module at all. And by default user friendly urls as well as search engine friendly urls are disabled. We can enable this in the configuration of the website (29).

If you think this isn't enough to get your website higher in the ranking for search engines there is a complete guide how to optimize your website for search engines. The most of these features are however relevant for most other websites and CMS's. Information for this can be found here:

http://yoast.com/articles/wordpress-seo/

and here:

http://codex.wordpress.org/Search_Engine_Optimization_for_Wordpress

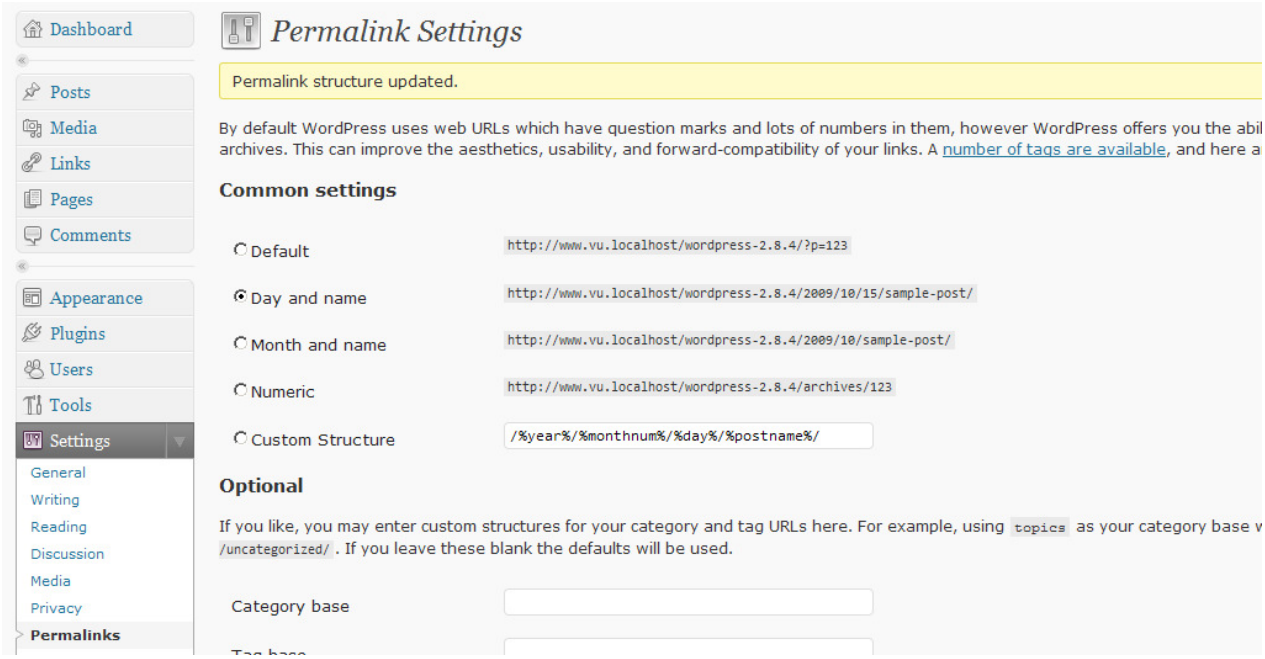
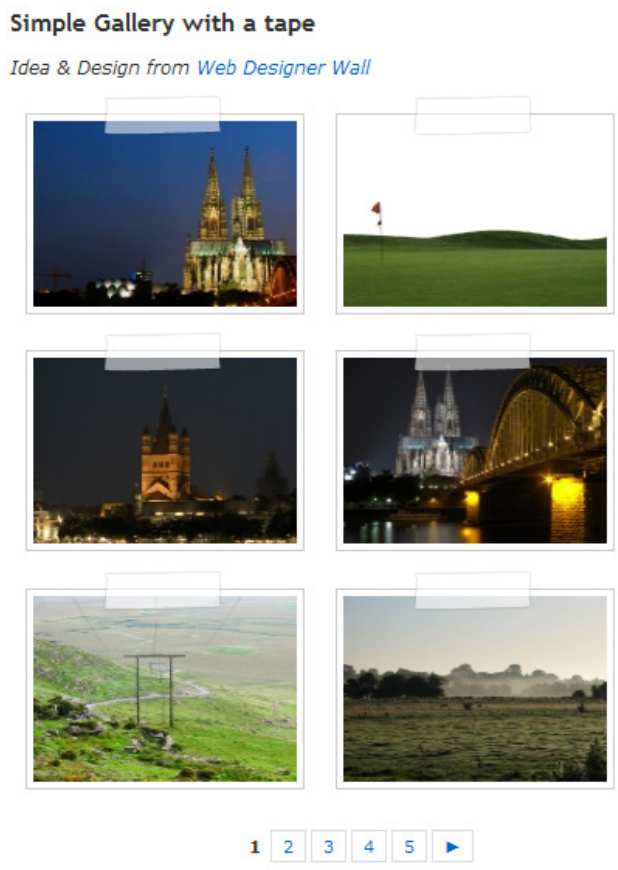


Figure 15: SEO in WordPress.

3.4.4 Expendability

As well as for the other CMS's there are also a lot of plug-ins available for the WordPress CMS. They can be found on the website (30). Some nice features are a photo gallery or a shopping cart.



If you can't find the plug-in which suits your needs you can always program it yourself. This does require knowledge of PHP, CSS and if you want AJAX/JavaScript.

There is an detailed guide with very much information about how the plug-ins should be structured and how they to create a custom plug-in (31). If you want information from the WordPress CMS itself you can use the API to retrieve this information. Information on how to do this can also be found on the website (32).

Figure 16: Plugin example, Photo Gallery, http://nextgen-gallery.com/templates/example-1/

3.4.5 Templating

Changing the look and feel of a WordPress website can be done in multiple ways. We can add some widgets to change the layout of the website. Also we can change the colors of the headers and change the stylesheet of the website to position some elements on a different location. Changing the stylesheet does require knowledge of CSS.

Further we can change the theme of the website. By default there are two themes installed. On the website of WordPress we can download many other themes which can be imported into the system (33). If you really want something special you can always write your own theme and import this into the CMS. The WordPress website contains the information on how the themes are structured and how they can be created (34).

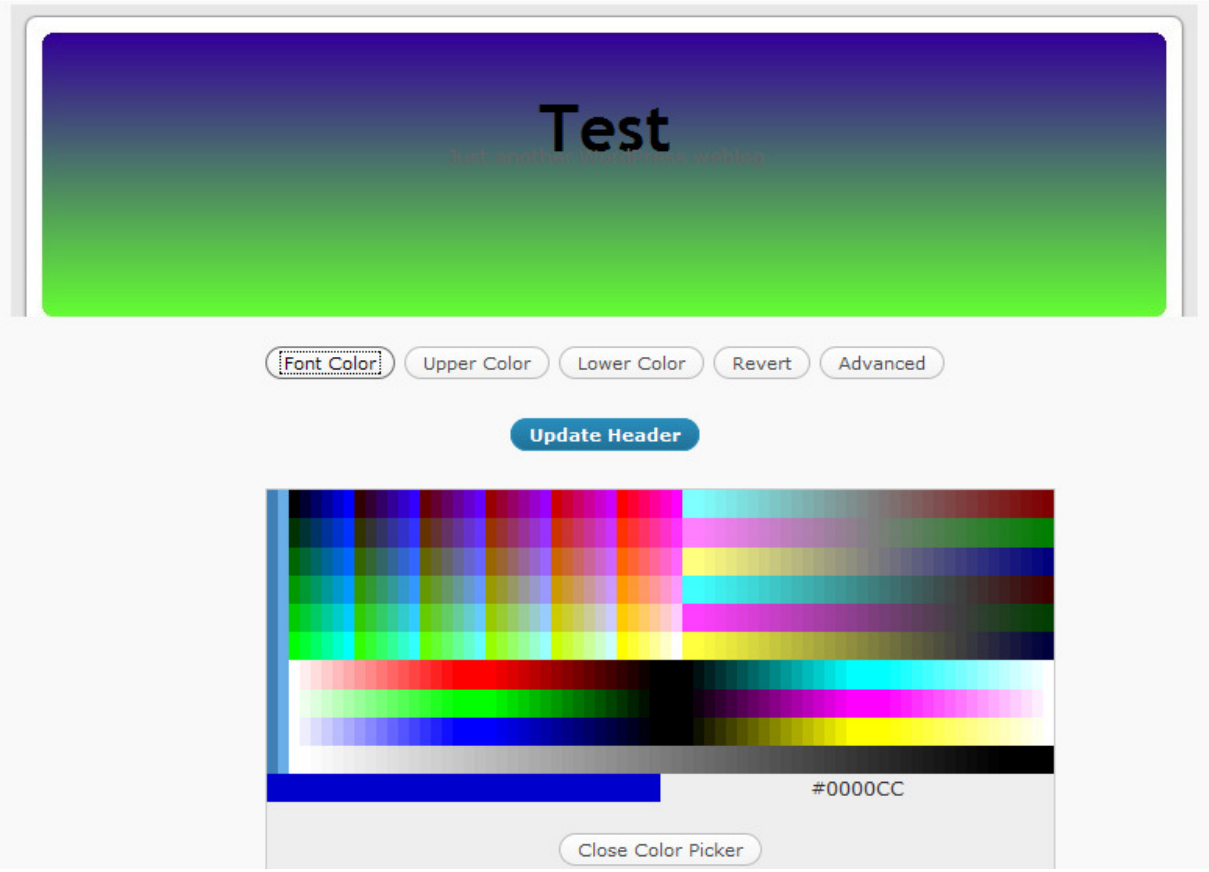


Figure 17: WordPress color picker, changing header.

3.5 Conclusion

After reviewing these three CMS's I will give an overview of there up and downsides. After this is will produce an overview which contains this information. First of all the installation process of the three CMS's. When having WAMP installed the installation process of all three CMS's is relatively the same. We need to set up a database and configure this in the installation process. Further we need to fill in some information about the website.

The usability of the CMS's however is a little different. For Joomla! you really need to read the getting started document before you have a good idea of how the system works and sticks together. Drupal works a lot easier because the structure is better and there is a lot of information available when adding content to the website. WordPress works the easiest if you have no knowledge and haven't read anything of the documentation of the CMS.

Optimizing the CMS's contents for search engines is also relatively equal. We need to enable the mod_rewrite for better indexing with search engines. Further there are a lot of other things we can do as using headings for titles. But all these things can be done with all three system.

If you want modules for your system to expand it then Joomla! is the best solution. Joomla! has a very large community which shares a large collection of modules. These modules can be written by anyone which might therefore contain security problems. For Drupal and WordPress there are also a lot of modules and extensions available but not as much as for Joomla!. If you want to write your own modules than Drupal is your best bet. Drupal is an CMS with an very detailed API and the source code is very structured and clean.

Creating custom templates is not that easy with any of these systems. If you have no knowledge of doing this, the best solution is to find a custom theme and use this. Otherwise Drupal has a nice color picker which enables you to change the look and feel of the website by simply changing some colors. In my opinion this is something that can be changed in the future by using for example AJAX or Adobe Flex.

The documentation is always another important part when wanting to use an CMS. Since the community of users of Joomla! is very large the most information can be found about this CMS. All three CMS's do have enough information on their website to use the website besides the community. But in my opinion you really have to try if you want to find the information you need on the Drupal website.

4 Experience with Flex/Zend Framework

5 Requirements Flex CMS

6 Evaluation

7 Conclusion

8 Epilogue

9 References

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10 Appendix: Tutorial