Using Content Management System Joomla! to build a website for research institute needs

Cao Xiang
Information Engineering School
Communication University of China
Beijing, China
davidcao2004@hotmail.com

Wenhua Yu
Information Engineering School
Communication University of China
Beijing, China
wenyu@2comu.com

***Abstract*—This paper introduces the important concepts, main features, basic function and common applications of the award-winning content management system (CMS): Joomla!, which enables you to build Web sites and powerful online applications. After that, we will focus on the procedures and techniques on how to customize a unique template that you or your clients wanted.**

Keywords- CMS; Joomla! ; Template; PHP

I. INTRODUCTION

Managing a web site manually is a time-consuming and tedious job. For this reason most web sites are currently based on content management systems to hide the detailed code from users and allow the user to develop and maintain the site with a high level graphical user interface.

"A content management system is software that keeps track of every piece of content on your Web site, much like your local public library keeps track of books and stores them. Content can be simple text, photos, music, video, documents, or just about anything you can think of. A major advantage of using a CMS is that it requires almost no technical skill or knowledge to manage. Since the CMS manages all your content, you don't have to [1]".

There are many content management systems on the market. There are available commercial and free ones, professional and amateur, closed source and open source. So why choose Joomla! as our content management system for further application?

A community vote for the 2009 Best Open Source PHP content management systems listed Joomla!, Drupal, TYPOlight, WordPress, and MODx as the five finalists[2]. The reasons why Joomla! is so popular are listed as follows:

- Very easy to install and use with lots of extensions and modules
- The documentation is very exhaustive and concise
- Admin user interface is intuitive and powerful
- The backend of Joomla! is very usable and the WYSIWYG editor the content was nice
- Seems like it would scale well and provides a lot of customization options
- Large and active community

II. FEATURES OF JOOMLA!

Joomla! is one of the most popular open-source Content Management System (CMS) platform. The default installation of Joomla! is already a multi-functional content management system, but if the default basic features cannot meet your requirements, you can easily extend it with extensions. There are five types of extensions available for Joomla!: Components, Modules, Plugins, Templates, and Languages. Each of these extensions deals with unique functionality [3].

A component is the largest and most complicated in all of Joomla's extensions, they can often be referred to as mini-applications. A component functions at two different parts, the administrator part and the site part. Whenever a Joomla page is loaded, a component is called to render the main page body. For instance, com_login is the component which handles user login process, users can login the system at the frontend of your Joomla!-powered website if he/she is already a member of the system. As you can see, components are of great importance to the whole system and absolutely can be qualified as the major part of your system. Furthermore, each component is triggered by a specific menu item.

Figure 1. A typical sample of Joomla! application

For almost every Joomla! Web developer, modules are lightweight and flexible extensions when used to render a page.

978-1-4244-5326-9/10/$26.00 ©2010 Crown

Quite often, modules are linked to components such as the module we used in my application - “mod_latestdown”, which lists the top Docman downloads from the site. From the overall look and feel of the Joomla!-powered Websites, modules are often vividly described as “boxes” which surrounding a component, for example: the login module. Unlike other common Websites, the footer is also a module. Each module is assigned to a corresponding menu item so that you can decide which module to hide or to show depending on you need. Nevertheless, modules do not necessarily need to be linked to components. The truth is that they can even be as simple as just static HTML or text.

Plugins are more advanced extensions and are essentially event handlers. Whenever executing a part of Joomla!, an event can be triggered no matter if it is the core, a module or a component. When an event is triggered, plugins that are registered with the application to handle that event execute. Plugins were also referred to as mambots.

The next feature we are going to talk about is template, which is also the major focus of my application. With a template you can change the overall look and layout of a website. There are two kinds of templates in a Joomla!-powered website, that is, the front-end and the back-end. In a template file, you can assign positions for any elements such as components, modules, besides you can style every element using cascading style sheet. As a result, templates provide maximum flexibility for you to style your site.

Lastly, languages may be the most basic extensions and they can be packaged in two ways, either as a core package or as an extension package. In essence, these files consist key/value pairs, these pairs provide the translation of static text strings which are assigned within the Joomla! source code. These language packs will affect both the front and administrator side.

III. CUSTOMIZING OUR OWN TEMPLATE[4]

Using templates, you can define the look and feel of your Joomla!-powered website. Three default templates were automatically installed when you finished Joomla! Installation – beez, JA_Purity and rhuk_mikyway (you may already be very familiar with these templates). And fortunately, more templates can be found at joomla.org. But what if none of these templates available, be it free or commercial, cannot meet your appetite? In that case, you have to design your own template, to put it, customize your unique template to fulfill your goal.

In my application, my clients want their Web site, or say content management system, to be unique and possess all the functionalities that are commonly used by all CMS, so Joomla! is absolute a good choice for it is best known as a content management system and have won many awards. What we need to do is to customize our own template and implement several components and modules of our own or the third party, which are very easy to get on the Internet.

In the following steps, I’ll illustrate how to customize our own template in details and how to install and adjust specific components and modules that are extremely useful in the CMS. Further explanations will be provided if necessary.

To start with, the most basic template consists of several essential files, such as index.php, templateDetails.xml, CSS files and image files. To make things organized, the latter two files are placed into two separate directories, CSS and images, respectively. As a result, our own template which is called “swgrid” is also no exception and it includes all the files and directories mentioned above.

The template our clients required is a generally 3-column layout and this is defined in the template layout file called index.php. While the index.php is a PHP file, it is written mostly in HTML with only a few snippets of PHP. All we need to do is to place the key “hooks” into the Joomla! templating engine, thus, the index.php file becomes the core of every page that Joomla! delivers. In the index.php file, we divided the whole page into three parts which is represented with divs: the top, mainbody and the bottom. And the mainbody div is also split into three sections, that is, left, center and right. In the templateDetails.xml file, we specified each position where we are going to put our modules in. All of the positions are showed in the following diagram.

Figure 2. Our template with all the module positions highlighted

Here is a little trick on how to decide which module to hide or show. That is accomplished by using PHP conditional statements. For example, when deciding whether to show the modules in the right column, we use the conditional states

```
<?php if($this->countModules('right1 or right2 or right3')) : ?>
```

.

Don’t forget to put <?php endif; ?> at the end of the each conditional statement. countModule() is a function which count the total number of modules in multiple template positions. In our case, it determines whether there is any module in the template position right1 or right2 or right3, then adjust the width of the center column.

With similar methods, we can determine whether to show the Frontpage on the first page or not for the aesthetic and practical purposes. Most Joomla! templates show the Joomla Frontpage(the content area) on the first page of the web site. However, in our case we just want a mixup of several modules on the first page, without articles published. Here we use the following lines of code.

```
<?php $menu = &JSite::getMenu();
$frontpage_i=$menu->getActive()==$menu->getDefault();
```

?>

And then insert the following code into the mainbody div of the template layout file.

```
<?php if (!$frontpage_i) :?>
<div>
<jdoc:include type="component" />
</div>
<?php endif; ?>
```

Where, <joc:include type=”component”/> creates the output from a component. What component it is will be determined by the menu link.

With all the work done, a complete framework had been established. In the top div, we have highlight position to show the hot news. In addition, two header positions were also put there to output the search module and the top menu respectively. There are both four module positions in the left and the right to put our “boxes”. Most strikingly positions are the user1 and the user2 position. They are areas where we put our news image modules. The appearance of each box can be styled using links to CSS files in the head section of the index.php file.

Figure 3. Template layout without the right column

IV. Implementing Extra Component And Modules

Since Joomla!’s default components and modules cannot meet all our requirements, we need to install other components and modules that may be created by other people. Fortunately, we found several modules and one component that are exactly what we are itching for. As mentioned above, we reserved two positions for displaying the news with pictures. That’s a very fascinating but still very common feature we know of.

Gavickpro is a professional Joomla! Development Studio, offering innovative products and service of best quality design [5]. On their official website, we downloaded modules like News Show Pro GK1, GK News Image 1 and News Show GK3, which helped us a lot. As for download service in our content management system, we need a download component. DOCman provided a document and dowload management solution for Joomla. DOCman makes offering downloadable documents on your Joomla site a breeze [6]. After installing all the modules and component that needed, at the back-end interface, we have to assign each module into the proper positions we created previously in the last step.

The following picture is the ultimate output with our customized template and is running soundly.

Figure 4. Ultimate template with everyting implemented

Conclusion

A CMS like Joomla! had demonstrated its efficiency and importance for website development and management in our application. It separates the content of a page from the presentation. It provides great flexibility, allowing developers to customize their own template, components, modules and plugins.

In our experience, we also implemented several modules in our system to fulfill our functionalities which today are required by a web site.

Moreover, many more functionalities can be installed as mature modules have been developed to add more features to the Joomla!-powered system.

References

[1] Official webiste of Joomla!, [Online], Available: http://www.joomla.org

[2] Packt Publishing Ltd, 2009 Open Source Content Management SystemAward Winner Announced, November, 2009. [Online], Available:http://www.packtpub.com/best-open-source-php-cms-finalists

[3] Joomla! Extensions Defined, [Online], Available: http://docs.joomla.org/Joomla!_Extensions_Defined

[4] Tessa Blakeley Silver, Joomla! 1.5 Template Design, Packt Publishing Lt. Birmingham, Mumbai.

[5] Official website of Gavick, [Online], Available: http://www.gavick.com

[6] Hagen Graf, Building Websites with Joomla! 1.5, Packt Publishing Lt. Birmingham, Mumbai.