

## ■ Understanding Open Source: Free Puppy Syndrome and Other Maladies

### Four Common Assumptions about Open Source CMS Solutions

Selecting a web content management system (CMS) is a very important decision for colleges and universities to make. Open source solutions such as Drupal™ and WordPress are often considered. These types of systems can provide significant benefits, but they won't work for everyone. This white paper uncovers the four most common reasons college and university web teams gravitate toward open source products and provides cautionary information about those arguments to help you make an educated decision for your own institution.



# Understanding Open Source

## Introduction

For most higher education entities, the selection of a web content management system (CMS) requires campus administrators and IT personnel to consider literally hundreds of CMS options. Among the most well-known are open source solutions like Drupal™, which is one of the largest open source projects in the world,<sup>1</sup> and WordPress, which is used to run more sites than any other CMS in the world.<sup>2</sup> These types of systems can provide significant benefits for educational institutions, but they won't work for everyone. This white paper reviews the four most common reasons college and university web teams gravitate toward open source products and offers some cautionary information about those arguments. Although the paper addresses open source in general, it specifically refers to Drupal and WordPress as examples, since they are so broadly known.

### 1 PRICE – Free Like a Free Puppy

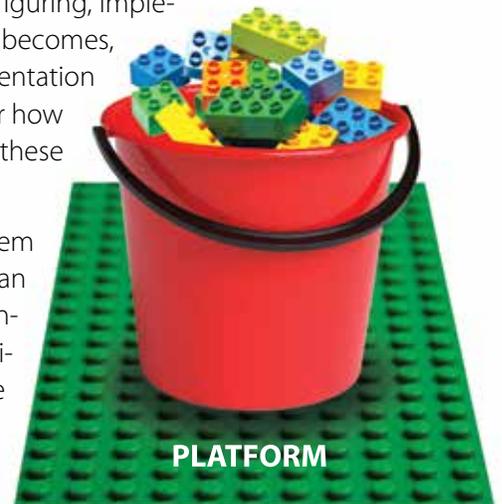
The most immediately apparent reason for choosing an open source solution is because it's "free." There are no licensing costs and, in theory, you can simply install the software and get started. It should stand to reason that if these systems are free, then everyone would immediately adopt them. But this clearly is not the case, as commercial content management systems are used in a larger portion of the overall CMS market. Why is this?

While price may be a factor in the CMS selection process, time is another resource that many institutions have in limited supply. Time must be spent learning, configuring, implementing, and testing a new piece of software. The question then becomes, how much time does your institution have to spend on the implementation of a new CMS? In the case of open source, it's important to consider how much time and effort is commonly spent becoming familiar with these types of systems.

A properly developed open source product can be a powerful system or platform on which a CMS might be built. Drupal and WordPress can be described as platforms used by web developers to build the content management systems that best fit their needs. Workflow, multi-sites, calendars, or other modules can be managed by building the required functionality.

If you were to describe Drupal in terms of LEGO® toys, you might say it comes in a large bucket of assorted building blocks of all shapes and sizes. This is good news if you want a highly complex, customized site and your staff has the time and technical expertise needed to make it work. Although this seems like a potentially attractive solution, the end result is often too complicated for users.

WordPress, on the other hand, is known for being user-friendly and ready to use right off the shelf. It was born as a blogging platform and, as such, is not specifically designed for web content management (the typical blog needs little more than text and images). Development resources must be invested to transform it into a more technology-centric platform that can be used to manage complex sites with multifaceted functionality. This means adding multiple plugins and modules to the core program, which can only be done after appropriate coding and testing. Again, this may seem like an attractive option, but after extensive modification, the original simplicity of WordPress for users is often lost and the desired functionality is lacking. If you need a reliable mode of transpor-



## Understanding Open Source

tation to commute to work in another city, it makes sense to buy a dependable sedan, rather than frugally purchasing a bicycle and trying to customize it to function like a car.

**\$5.4+ million**

**Cost of developing  
whitehouse.gov with  
Drupal in 2009<sup>14</sup>**

The effort required to build your perfect CMS can always be outsourced to third-party service providers who are devoted to building sites with Drupal or WordPress, and who will also train your institution's staff on how to use your new custom-built implementation to manage content. Ultimately, the dollars saved on licensing fees can go to these providers as development fees, but that may defeat the purpose of choosing the "free" open source product in the first

place. In addition, if the point of purchasing a CMS is to distribute the work of site management to a wider portion of your staff, then a more user-friendly commercial solution may be more appropriate. Separate studies on the usability of Drupal for first-time users conducted by Google,<sup>3</sup> the University of Minnesota,<sup>4</sup> and the University of Baltimore<sup>5</sup> have highlighted the significantly high—even frustrating—learning curve for new users, even after Drupal sought to make improvements. The Google study in particular cited "new users feeling confused, overwhelmed, uncertain and unaware of Drupal's capabilities."

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The bottom line is that significant resources must be invested in an open source CMS implementation in order to shape it into the system you're looking for. If it's not yet clear to your institution exactly what kind of features you'll want from your new CMS, then time must be spent mapping out the functionality you know you're going to need before you even acquire the framework. This can take a lot of time and end up not being what you want or need at all. Looking purely at development time and cost, there is a potentially unequal ROI that favors the economics of a commercial CMS.

Hardware resources must also be taken into account. The Drupal Toolkit, for instance, consumes a fair amount of processing power. And whereas a typical commercial CMS may require 10 GB of free hard drive disk space, Drupal will need around 120 GB for each array on every redundant and load-balanced server.<sup>6</sup> Because of the breadth of tools and capabilities, Drupal can be slower than other solutions in terms of loading speed.<sup>7</sup> Advanced users have found ways around these problematic performance indicators, but again, this requires a significant investment of time and money.

So is open source free? Yes, free in the way that a puppy might be free. If someone gives you a puppy for your birthday, it's technically free: you didn't pay anything for it. But anyone who has ever owned a pet knows the significant amount of resources needed over its lifetime, including feeding, training, veterinarian costs, and general wear and tear to your home.

The pros of canine companionship may outweigh the cons, but these are variables that must be considered for any would-be pet owner. Likewise, before beginning a long-term commitment to an open source CMS platform, careful consideration is advised. Unless your institution is resource-rich, open source may not be suited for your use or your budget.



## Understanding Open Source

### 2 FREEDOM – For Developers, but Potential Pitfalls Too

As open source products, Drupal and WordPress source code is freely available to anyone who wishes to access it and make changes to it in order to shape the product as they see fit. In addition, each have over 20,000 modules available to extend functionality.<sup>8,9</sup> This combination of open source code and thousands of custom modules (including any you may wish to write yourself) once again is a testament to open source extensibility and scalability. You can literally build whatever kind of CMS you need.

In fact, modules are more than just convenient options—they're essential to the customizable functionality that makes open source so powerful. Core Drupal, for example, doesn't come with a WYSIWYG editor, image handling capabilities, or even a dashboard; these are modules that must be plugged in. Anywhere from five to ten modules must be added to Drupal in order to get the base functionality required for a typical website<sup>10</sup> (which is especially necessary if non-technical users hope to utilize the system). Drupal modules may not necessarily have plug-and-play characteristics; often a user needs to configure their behavior in order to make them function as desired. If desired, developers can write their own modules or modify existing ones.

Unfortunately, this customization power can become problematic when it comes time to upgrade from one version to another. Like any software product, there is more than one version of an open source CMS. For example, Drupal 7 is currently the latest release, with Drupal 8 in the works. Drupal changes the API every release and adds new features that are incompatible with previous versions. This can present a quandary to the institution that has spent time manipulating the source code

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and plugging in (and even tweaking) various modules to create their custom CMS, because modules that worked in one version will not necessarily have support in the new version.<sup>11</sup> To make your older preferred modules work in the new version, a new round of custom coding

will be required from your developers or a hunt to find others that can suitably replace the functionality of the old one. Since many open source modules are developed by third parties, you may be at the mercy of these unknown sources that may have moved on to other projects rather than upgrade their creations. Even if you've built your own modules, you may need to spend time modifying the code to ensure nothing breaks in the new version. In addition to all this, it's likely that the new version may require greater memory and CPU requirements than the previous iteration.



Again, much of this work can be contracted out to the experts. Many useful Drupal and WordPress modules are developed or maintained by technology firms that recognize the profitability in developing and maintaining the contributed modules much in demand by open source enthusiasts. Purchase and upgrade of these premium modules may require some of your technology budget.

## Understanding Open Source

For these reasons, using an open source CMS may be appropriate for institutions that are willing to choose one specific version and stick with it (especially if they've done or plan to do extensive customization). As such, they can expect to do a fair amount of custom coding over the long term, since they won't necessarily be able to rely on the development community or commercial support for help with their one-of-a-kind open source creation. Unfortunately, this could create an unintended risk for your institution: exclusive technical knowledge of your CMS will lie in the hands of the individuals who customized it, making their continued employment at the college or university essential for the ongoing efficacy of the system. Should anything happen to them, your content editors and even administrators can be left with an unwieldy system that they little understand. Since open source solutions typically store site content in a proprietary database format, conversion to a different CMS will not be a simple task.

### 3 SECURITY – Core Code vs. Third-Party Plugins

The Drupal and WordPress core code is certainly secure, especially when considering that it's open for anyone to access and manipulate. Both products have large and competent volunteer security teams that constantly monitor the code for any problems. And since anyone can identify and report a security issue to the team, vulnerabilities are eventually noticed, reported, reviewed, and fixed.

While their core code is quite solid, there are many contributed modules required for smooth functionality in Drupal and especially in WordPress that may not fall under the security team's oversight. In Drupal, modules with only development or beta releases are not as stable as those with a supported stable release (e.g., 1.0, 2.1, 3.14). Your team should encourage the Drupal module's maintainer to create a stable, supported x.0 release if these modules will be used for critical applications. With more than 20,000 plugins available for WordPress, it's inevitable that some will contain security vulnerabilities that can be exploited by hackers. A report released in June 2013 by a code analysis security firm revealed that more than 20% of the 50 most popular WordPress modules are vulnerable to common web attacks.<sup>12</sup> Care should be taken to only use trusted modules or use them sparingly (a difficult task if your site requires complex functionality), or just be safe and build your own.

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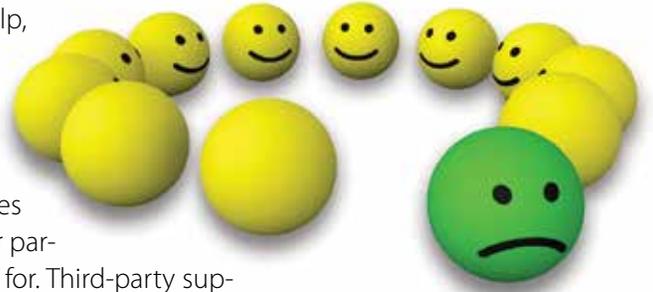
As a database-backed platform that utilizes server-side scripts in PHP, WordPress can be vulnerable to SQL injection and URL hacking.<sup>13</sup> A thorough set of access rules on your web server can make up for this shortcoming. There are other security issues typical to sites managed by WordPress that are well known to hackers on account of the application's popularity. Your web team will need to research best practices to keep your site secure.

### 4 COMMUNITY – But Not a Higher Education Community

A major advantage to open source CMS solutions is the developer community that collaborates daily to support both the platforms and one another. This heavy developer focus also allows for rapid innovation in coming up with new modules, since dozens if not hundreds of talented programming professionals can be working on the same project at the same time. Assuming you're able to reach out and connect with someone who can help you with your problem, this community can be an excellent resource for your web team.

## Understanding Open Source

While an intelligent and able community exists to help, there are no guarantees that anyone will actually be available when you need them. Your institution's available time and resources will come into play, as you may need to wait to find someone who can help you with your particular problem—which also requires some time spent bringing them up to speed with your particular version of the product and what you're using it for. Third-party support is always available for hire, but a commercial solution (especially one that assists you with the initial implementation) will not only have support, but a comprehensive knowledge of your CMS solution and website, garnered from time spent working with your web team. A great deal of time can be saved speaking with a customer support specialist who not only knows your situation, but with whom you have an established relationship and rapport. In addition, this person is required to help you with whatever you need, whereas there's no guarantee the Drupal or WordPress communities' priorities will continue to dovetail with your institution's priorities as the years go on. The same holds true when developing new modules or plugins.



## Conclusion

The effective management of a higher education website (or sites) can hardly be considered a short-term project. Effectively managing web content means establishing protocols, responsibilities, roles, and communication strategies for all parties involved. The necessary tool for this job must be an appropriate content management system that fits the needs and skills of the people using it. Furthermore, the tool must be one that can be used both today and down the road, since web technologies, student behaviors, and education priorities are always shifting. The selection of a powerful, yet accessible CMS is a very important decision for institutions to make, which is why entire committees are often formed to decide on the appropriate system. Drupal is one of many solutions available to the higher education community, but its high learning curve and resource-hungry nature make it an unwieldy tool for many web stakeholders, whether educational or commercial, public or private. WordPress is used by many colleges and universities to manage blogs and news pages, but if it is attempted to be used as a full-featured CMS, significant development and vigilance are required. When considering technology resource management for your institution, for both the present and the future, a commercial CMS solution may make more sense.

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