

DEVELOPING AN OPEN SOURCE
CONTENT MANAGEMENT STRATEGY
FOR E-GOVERNMENT

by

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DEVELOPING AN OPEN SOURCE CONTENT MANAGEMENT STRATEGY FOR E-GOVERNMENT

Abstract: A Web Content Management System (CMS) can ease the management of complex e-government websites. This article showcases five approaches to web content management and discusses the benefits of open source content management software for e-government. The tools and guidelines presented will help web developers, information technology staff, and managers develop a CMS strategy and choose appropriate software for running e-government websites.

INTRODUCTION

As the increasing number of Americans with Internet access experience the benefits of the World Wide Web, their expectations for e-government websites are growing. A Web Content Management System (CMS) can ease the management of complex e-government websites.

A CMS is a software system that facilitates the creation and manipulation of content on a website. It usually includes tools for managing users and workflow. Content is generally stored in a database. The separation of content and the visual display makes it easier to maintain a consistent look-and-feel across the entire website. Many CMSes also include collaboration tools such as discussion forums and document management.

By making it easier for non-technical staff to add and edit content, a CMS can streamline the process of maintaining a website. The separation of content and its display makes it easier to change the visual design of the entire website. A CMS can also enhance collaboration by making it possible to collect information generated by an organization and facilitate its distribution. As a growing amount of unsolicited email (spam) clogs inboxes, some communication activities that traditionally conducted using email and listservers could be moved to CMS-based intranets and extranets.

WEB-BASED COMMUNICATION IN E-GOVERNMENT

An e-government initiative may have one or many of the following objectives [Figure 1]:

Communicating with citizens: A traditional static website might be sufficient to meet this goal. However it is possible to improve information dissemination with a CMS that allows customized information retrieval. Sophisticated search tools can allow users to locate just the information they are looking for. Discussion forums

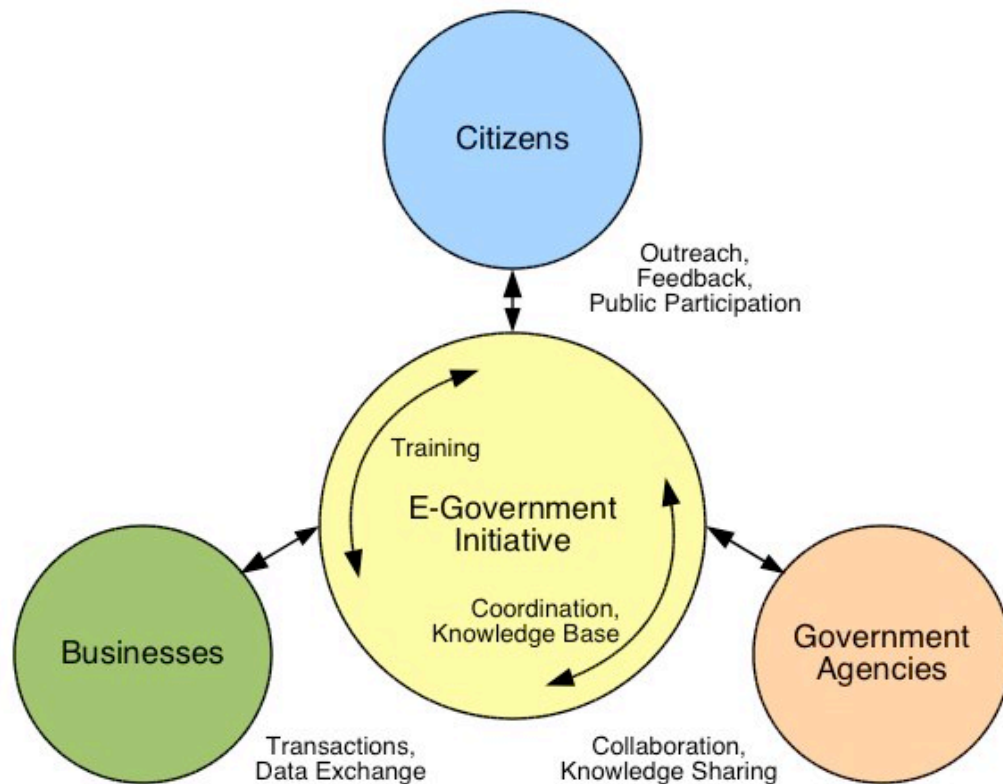
can encourage public interest and participation.

Communicating with businesses: Businesses that provide products and services to government agencies can benefit from access to relevant data and being able to conduct transactions over the web. Since each government agency's requirements are likely to be unique, a CMS for communicating will probably need to be custom-built.

Intra-agency collaboration: A CMS that offers collaboration tools can enhance coordination and serve as a web-based archive of the information that flows through an agency. Engaging staff to participate in maintaining an internal knowledge base can improve the quality of internal documentation. Specialized CMSes called "learning management systems" can also be used to deliver internal training or organizing working groups and committees.

Inter-agency collaboration: CMSes that offer shared knowledge bases, discussion forums, and document repositories can enhance collaboration between agencies. Custom-built web-based interfaces to databases can facilitate data sharing between agencies.

FIGURE 1: WEB-BASED COMMUNICATION IN E-GOVERNMENT



If your needs are unique, you might consider building a custom-made CMS. Depending on your requirements this could be a small programming task or a major undertaking for your information technology (IT) team. Or you can choose

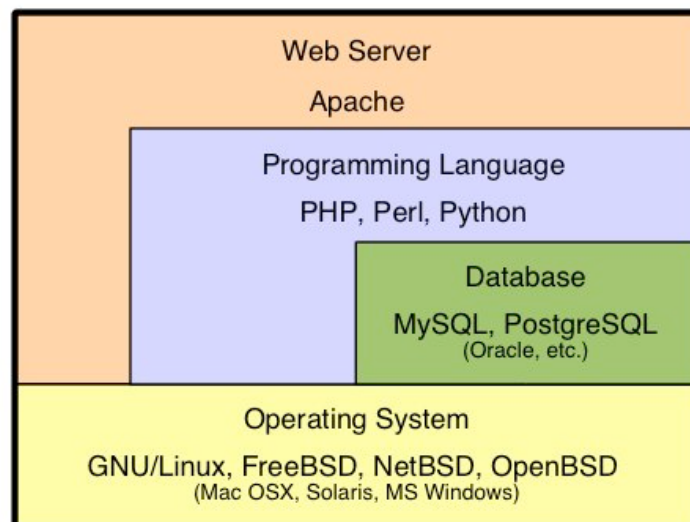
from several pre-built CMSes that are available today.

OPEN SOURCE CMS

While choosing a CMS, one size does not fit all requirements. And it certainly does not fit all budgets. Not every e-government initiative needs a complex proprietary CMS application with high licensing costs. "Closed source" software - - proprietary software for which source code is not publicly available and therefore cannot be customized -- also presents hidden dangers for e-government. Some proprietary products make it difficult or impossible to migrate to another product. As governments are trusted with public data, e-government websites need to avoid this "vendor lock-in". Open source CMSes are well suited for e-government websites. Numerous alternatives are available to match different project requirements, platforms, and strategies. Data is stored in open formats. Source code is available and the software can be customized and redistributed. Open source CMSes are free and most do not have any licensing costs.

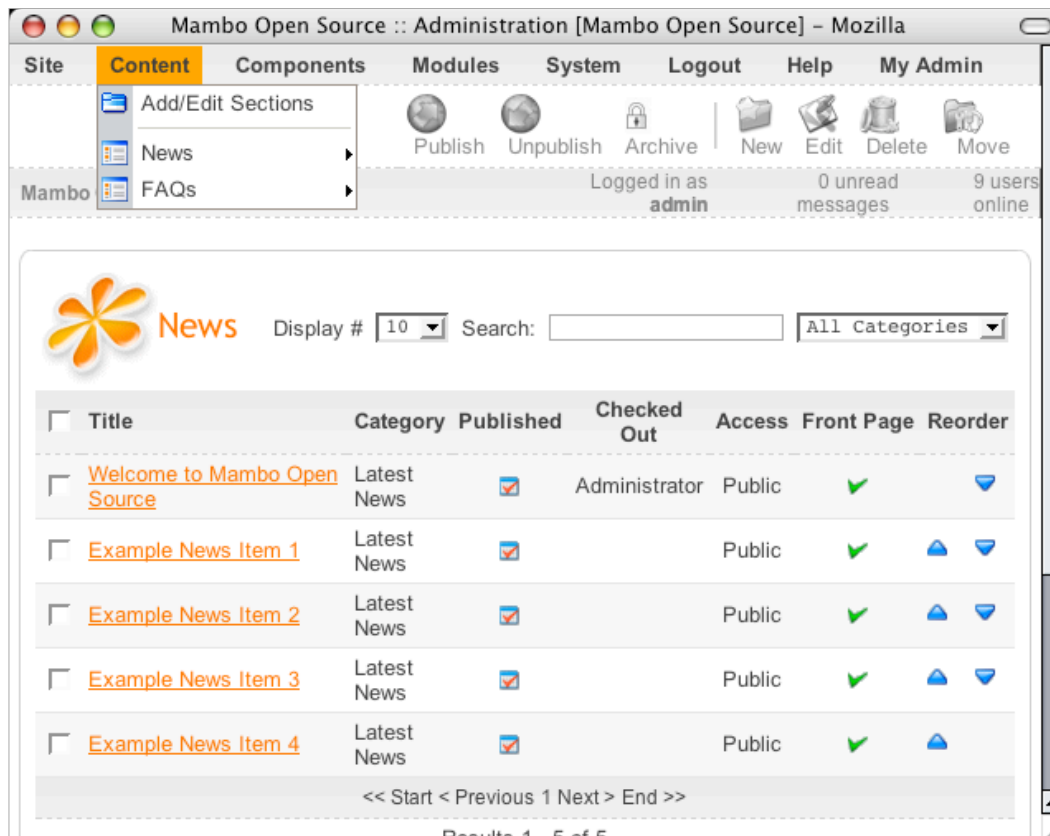
Many leading open source CMS are built using the popular "LAMP" platform which is a combination of an operating system, web server, database, and programming language. [Figure 2]. "L" stands for the GNU/Linux operating system. "A" stands for Apache, the leading web server. The "M" in "LAMP" represents MySQL, a fast open source database. Some LAMP applications also work with PostgreSQL, another open source database or proprietary databases such as Oracle. The "P" in "LAMP" stands for three open source programming languages: PHP, Perl, and Python. Apache, MySQL, PHP, Perl, and Python can run on multiple operating systems. Therefore, it is possible to run open source CMSes built using these components on operating systems other than GNU/Linux, such as BSD, Solaris, Microsoft Windows, and Mac OS X.

FIGURE 2: "LAMP" – THE POPULAR OPEN SOURCE WEB PLATFORM



Several open source CMSes are built on the LAMP platform. Some, such as Mambo, are a good choice for running dynamic websites. [Figure 3] Others offer alternate and interesting approaches to web-based communication and collaboration that are worth considering for an e-government CMS solution.

FIGURE 3: MAMBO – AN OPEN SOURCE CMS

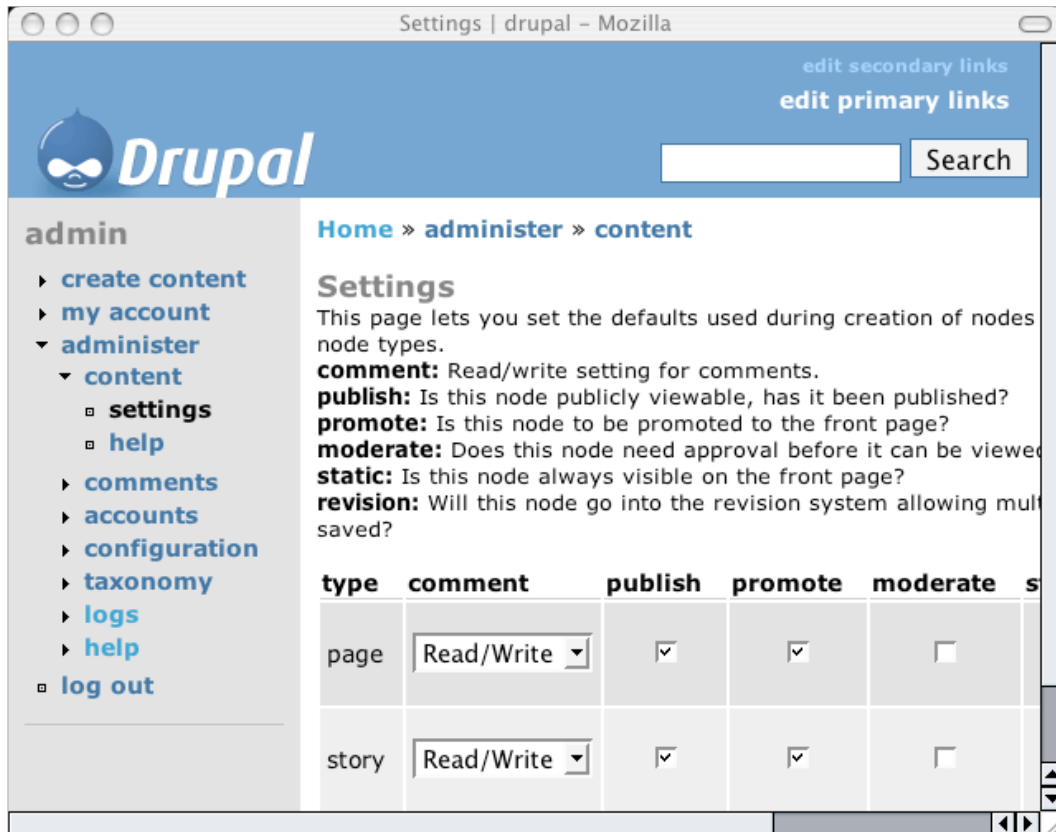


The next half of this article will introduce five innovative approaches to web content management : community website/portal; weblogs; learning management Systems; wikis; and intranets. An example open source CMS for each approach is provided. (All open source CMSes mentioned in this article are available under the GNU GPL license.)

COMMUNITY WEBSITE / PORTAL

E-government initiatives designed to communicate with citizens require a CMS with powerful information categorization and retrieval features. Drupal is good example of an open source CMS that fits this description. It is built using MySQL and PHP and features publishing workflow, discussion capabilities, news aggregation, metadata functionalities, and even XML publishing for content sharing.

FIGURE 4: DRUPAL – CMS FOR COMMUNITY WEBSITES



WEBLOGS

A blog or weblog is a website with periodic “posts” sorted in reverse chronological order. Blogs usually contain hyperlinks to other resources, summaries or commentary, and sometimes comments from readers. Blogs may have a single author or multiple authors can contribute to a “collaborative” blog. Blogs are popular because they make web publishing simple and affordable. The potential of blogs goes beyond writing personal diaries or political commentary.

Blogs are usually written in a personal voice and focus on a specific topic. A blog can make the workings of a government agency more accessible to citizens and direct attention to new information that might otherwise have gone unnoticed. Blogs can also be used internally to document developments and to keep team members informed of progress on an ongoing project.

WordPress is an open source blogging software built using MySQL and PHP that can be used as a personal publishing platform or to run a collaborative blog. It allows multiple authors, categorization of blog entries, and offers several state-of-the-art features.

FIGURE 5: WORDPRESS – OPEN SOURCE BLOGGING SOFTWARE



LEARNING MANAGEMENT SYSTEMS

Learning Management Systems (LMS) -- also known as course management systems, or learning support systems offer features designed for conducting online education. They can also be used to supplement traditional face-to-face instruction. LMSes can be used in e-government to offer internal staff training or to enhance collaboration between agencies.

The cost of running proprietary software LMSes has been high but a new breed of open source LMSes have emerged offering affordable alternatives. A popular open source LMS is Moodle. Built with PHP and MySQL, it can run on most popular operating systems. One installation of Moodle can be used to conduct a large number of courses. It offer features such as discussion forums, online journals, asynchronous private person-to-person conversations, chats, file management, user tracking, logging and reporting, multimedia delivery, email integration and other sophisticated features.

FIGURE 6: MOODLE – A LEARNING MANAGEMENT SYSTEM

Moodle: Add a new course - Mozilla

Moodle Website [Logout](#)

[Moodle](#) » [Administration](#) » [Course categories](#) » Add a new course

Edit course settings

Category: ?

Full name: ?

Short name: ?

Summary:

Arial | 1 (8 pt) | Heading 1 | **B** *I* U ~~S~~ x_2 x^2

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WIKIS

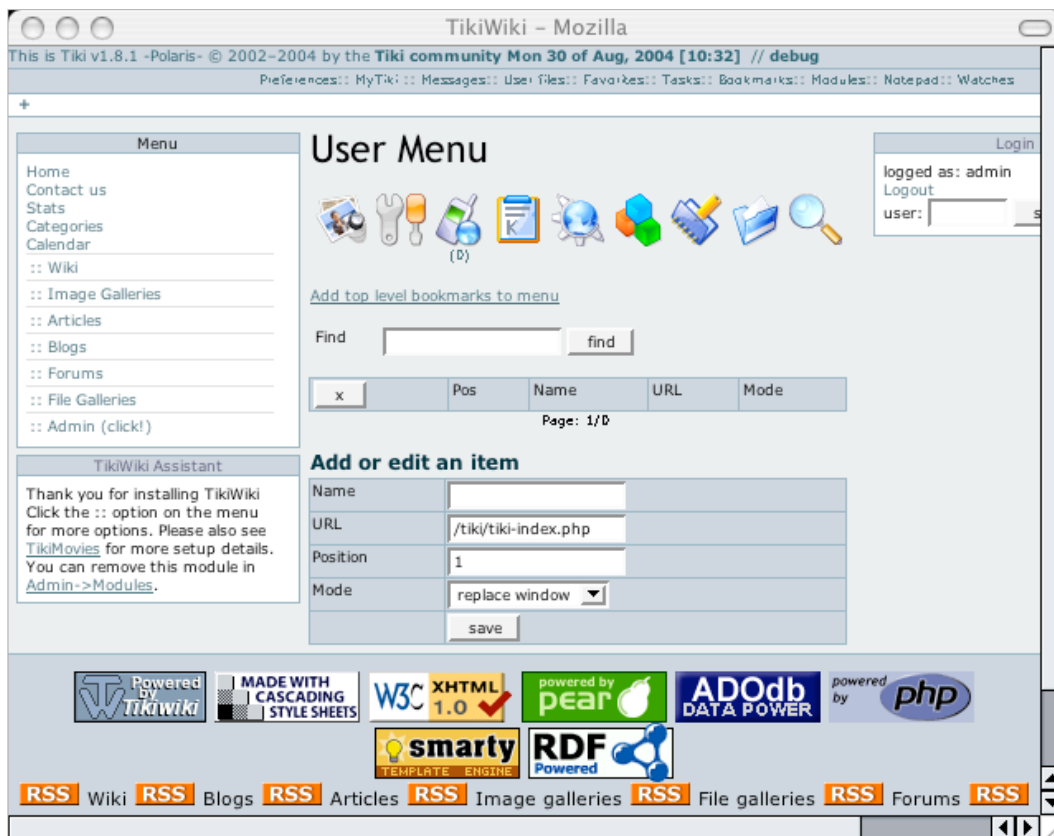
A wiki is a website that allows collaborative writing. The word "wiki" comes from the Hawaiian term for "quick." Wiki software enables users to quickly and easily add or edit material on a wiki-based website. Users do not need to know HTML. The data is usually stored in the database and the wiki software handles formatting and navigation linking. Wikis are flexible in the way information is organized and are meant to evolve over time.

A large number of open source wiki software products are available for various platforms, ranging from simple ones suitable for maintaining personal notes to complex wikis that are comparable to sophisticated CMSes. Modern wikis often feature "version control" so changes to a document can be tracked along with information about who made the edits and when. If needed, a document can be "rolled back" to a previous version. A full-text search engine is usually included too making it easy to locate information.

Wikis are better suited for the written word than for images or multimedia content. However, Wikis are a good choice for maintaining knowledge bases. In e-

government, a wiki can serve as an effective internal documentation system allowing staff to maintain an easily-updated knowledge base or intranet. It can also serve as a platform for intra-agency collaborative writing. Numerous open source Wikis are available. TikiWiki is a wiki built with MySQL and PHP that offers several CMS-style features.

FIGURE 7: TIKIWIKI – A WIKI-BASED CMS



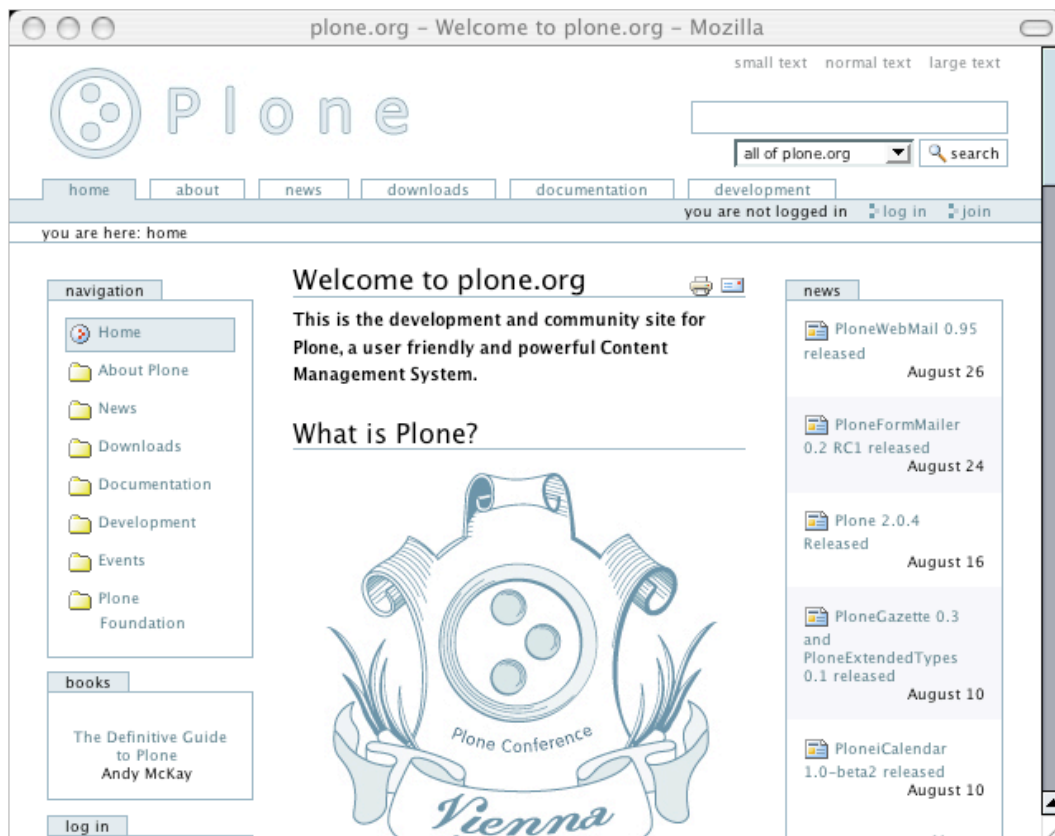
INTRANET

The internal website of an organization is referred to as an intranet. An intranet collects information essential to an organization and places it in a central web-accessible repository. With a little imagination, some compromises, and a few workarounds, all the different CMSes discussed in this article so far could be used internally within an organization as an intranet. However some open source CMSes offer features that are designed specifically for intranets and one such CMS is Plone.

Plone is a complete solution that runs on all major operating systems. There is no need to install a web server, programming language, or database separately.

Unlike the other CMSes listed in this article that are built on the “LAMP” web platform, the foundation for Plone is Zope, an open source application server designed for building CMSes. Installation is handled by an installer that includes everything you need to run Plone. Plone was developed by web usability experts. This is evident in the elegant, thoughtful design and adherence to web standards and best practices. It also follows web accessibility standards such as Section 508. Plone allows easy and flexible delegation of content management tasks. Plone can also be used as a combined private intranet and a public website due to its sophisticated user permissions and publishing features.

FIGURE 8: PLONE – A CMS FOR INTRANETS



SUMMARY

With so many different open source CMSes to choose from, evaluating and deciding which one is best for your needs can be a formidable task. A couple of free online services can help you make your decision.

The website *Open Source CMS* allows you to test leading open source CMSes without having to install them. It provides administrator access so you can evaluate all aspects of a CMS without the drudgery of having to download and

install each one of them. It includes test installations of Drupal, Mambo, TikiWiki, and Wordpress. To conduct a feature-by-feature comparison of CMSes see *The CMS Matrix*. It offers side-by-side comparisons of both proprietary and open source CMSes.

Several OSS projects have matured into sophisticated CMSes. In this time of increasing expectations and tight budgets, e-government websites can benefit from the flexibility and freedom of open source content management systems.

RESOURCES

Open Source CMSes

- Drupal: <http://www.drupal.org>
- Mambo: <http://www.mamboserver.org>
- Moodle: <http://www.moodle.org>
- Plone: <http://www.plone.org>
- TikiWiki: <http://www.tikiwiki.org>
- Wordpress: <http://wordpress.org>

LAMP Web Platform

- GNU/Linux: <http://linux.com/article.pl?sid=02/03/09/1727250>
- Apache: <http://httpd.apache.org>
- MySQL: <http://www.mysql.com>
- PostgreSQL: <http://www.postgresql.com>
- PHP: <http://www.php.net>
- Perl: <http://www.perl.org>
- Python: <http://www.python.org>

Other Resources:

- GNU General Public License (GPL) <http://www.gnu.org/licenses/gpl-faq.html>
- Open Source CMS: <http://www.opensourcecms.com>
- The CMS Matrix: <http://www.cmsmatrix.org/>
- Zope: <http://www.zope.org>