Content Management Systems

IT 320

Introduction to CMS

Lets Get Right To It!

- What is a CMS (Defined at a high level)?
- What can a CMS do?
- Why should you care about CMS?
- How do CMS(s) work?
- Where are CMS(s) used?
- How are they used?
- How can CMS(s) help?
- Are there different types of CMS(s)?
- Who are the major CMS players (tools)?

CMS Defined

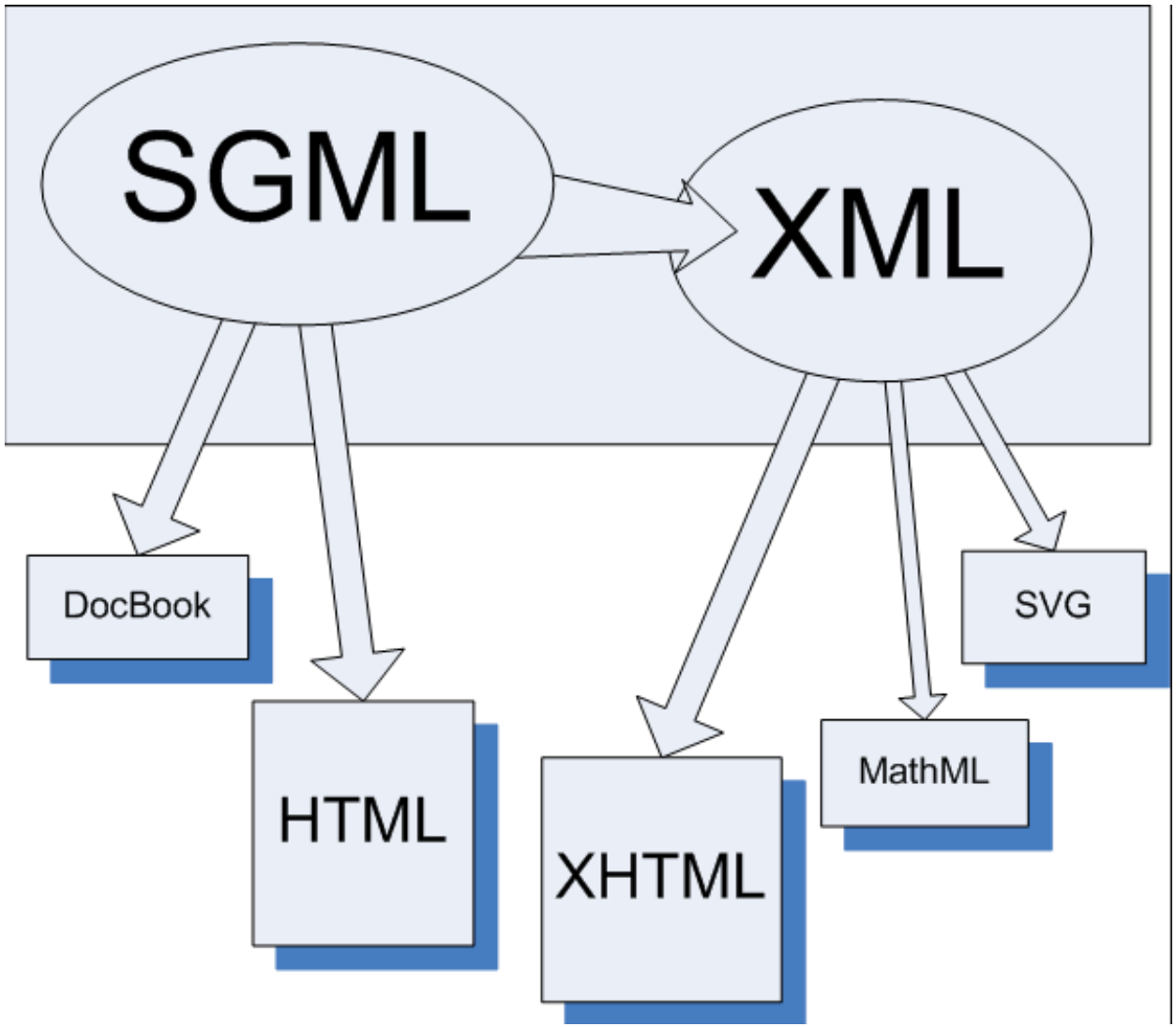
"A content management system (or CMS) is software that assists in the organization and presentation of content on a website"

Joseph LeBlanc – Author of Joomla 1.5 Essential Training

CMS Defined

- CMS is a general definition for software that assists in the organization and presentation of content on a website.
  - CMS is a category of software
  - CMS is a construct
- CMS is a class of software products.
- There are different types of CMS products.
- CMS products are different just like SGML languages are different.

Type Of SGML Language's



CMS is a category of tools

- CMS is a generic description for a large number of software products
- There are both open source and proprietary CMS(s)
- CMS(s) can be broken down based on the content/documents they store/process and their functionality

The Types Of CMS(s) are divided by the Types of Content they serve/process

- WCMS – Web content management system (WordPress, Joomla, **Drupal**, **Modx,** Wikipedia)
- CMF – Content management framework (**Drupal, Modx**)
- ECMS – Enterprise content management system (Alfresco, SharePoint)
- EDMS – Electronic document management system (Also called DMS) (Mayan, Synergis, MaxxVault, OpenKM, docStar)
- DAMS – Digital asset management systems (Nexeo)
- LMS – Learning Management Systems (D2L, Blackboard)

Web Content Management System (WCMS)
Examples: WordPress, Joomla, Drupal, ModX

- Web content management is devoted specifically and solely to providing tools for the creation, presentation, and maintenance of **web site content** like **Blogs, Posts, Articles**.
- Web CMS includes everything from the back-end text and display handler of a blog to full-site creation and management tools like Drupal to the enormous applications that back user-customizable portal sites like Yahoo!"

Dave Clark - University of Wisconsin-Milwaukee

Web Content Management System (WCMS) Examples: WordPress, Joomla, Drupal, ModX

- Web content management is devoted specifically and solely to providing tools for the creation, presentation, and maintenance of **web site content** like **Blogs, Posts, Articles**.
  - NOT PDF(s), Microsoft Office Documents. Open Office documents,
  - WCMS are for the presentation of web site content & some digital media
    - Note for optimal performance, do not store large HD images, audio, or video files on your Web Host file system. Store off-site and use plugins that can access off-site stored digital media.

Enterprise Content Management System (ECM)

Enterprise Content Management is an often-massive attempt to combine the functionalities of web, **document**, and content management and to systematically incorporate not only traditional publishing activities but e-mail, financial records, human resource documents, etc. for an entire organization."

ECM(s) are for storing documents.

Dave Clark - University of Wisconsin-Milwaukee

Document Management System DMS

DMS versus Web CMS and CMS.

- A document management system by definition preserves documents intact.
- A DMS is at its base an electronic filing cabinet that replaces tabbed folders with sophisticated browsing and searching capabilities
- A DMS still sees documents as stand-alone entities with content that is **locked to a particular presentation**.
- Web CMS, on the other hand, share a devotion to the separation of presentation from content.
- In Web CMS, content is a thing to be created, stored, and managed, and presentation is a thing to be added just in time for the content to appear in a form suitable for human use.

Dave Clark - University of Wisconsin-Milwaukee

Digital asset management (DAM)

- Digital asset management (DAM) is a business process for organizing, storing and retrieving rich media and managing digital rights and permissions. Rich media assets include photos, music, videos, animations, podcasts and other multimedia content.
- While digital media management software tools were once used exclusively by publishing and media companies, they are increasingly being incorporated into content management systems and are of particular interest to retail sales companies that have customer-facing websites.
- DAM is generally considered to be a **subset of enterprise content management (ECM)**, a business process for organizing text documents, email and spreadsheets.

Are all CMS(s) Open Source ?

Not all CMS(s) are Open Source. There are Proprietary ($) CMS Particularly in the E-Commerce Arena

- SharePoint
- Nuexo
- Demandware - http://www.demandware.com/
- SitePoint

Types of Content and Documents that CMS Products Store: Structured and Unstructured Data

Content and Documents

- **Unstructured content** enters an organization's IT infrastructure from a variety of sources. Regardless of how a piece of content enters, it has a lifecycle. Follow a document through its lifecycle as viewed through the use of ECM technology.
- **Electronic Unstructured Data:** email, instant message, text document, spreadsheet, etc.
- Electronic Forms
- Paper Documents/Forms

ECM vs. WCMS

- ECM
  - Are for business-critical enterprise content (**Document and records management**)
- WCMS
  - Are for website content (**Blogs, Posts, Articles**)

ECM vs. WCMS

- ECM
  - deal with business-critical enterprise content (Document and records management)
    - White papers
    - Contract negations
    - Expense reports
    - Marketing documents
    - Legal records
    - Medical Records
    - Office documents
    - XRAYS
    - Images
    - videos
- WCMS
  - deal with website content
    - blogs
    - articles
    - stories
    - posts
    - Pages
    - images
    - links

In this class (IT 320)

- We will learn the difference between a **Content Management System** (CMS) and a **Content Management Framework** (CMF)
- We will discover and learn how to create practical CMS websites using the WCMS **WordPress** and CMF **Drupal**
- We will learn how to extend the functionality of a CMS through sub-themes, addins, plugins, and custom modules.

WCMS Major Players

The WCMS Major Players

- **WordPress** – Free open-source blogging tool and content management system (**CMS**) for simple websites
- **Joomla** – Free open-source **CMS** can be used to build complex websites
- **Drupal** – Free open-source **CMF** used to build **CMS**(s)
- **MODx** – Free open-source **CMF** used to build **CMS**(s)
- **ExpressionEngine** – Commercial **CMS**
- **MediaWiki** – free open-source software used to create wiki sites. Used by Wikipedia and others.

Market share trends for content management systems for websites

This report shows the market share trends for content management since June 2015.

	2015 1 Jun	2015 1 Jul	2015 1 Aug	2015 1 Sep	2015 1 Oct	2015 1 Nov	2015 1 Dec	2016 1 Jan	2016 1 Feb	2016 1 Mar	2016 1 Apr	2016 1 May	2016 1 Jun	2016 19 Jun
WordPress	60.3%	60.2%	58.6%	58.7%	58.6%	58.6%	58.7%	58.8%	59.1%	59.2%	59.2%	59.3%	59.5%	59.5%
Joomla	7.2%	7.1%	6.8%	6.8%	6.7%	6.6%	6.5%	6.4%	6.4%	6.2%	6.1%	6.1%	6.0%	6.0%
Drupal	5.2%	5.2%	5.0%	5.0%	5.0%	5.0%	5.0%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%
Magento	2.9%	2.9%	2.8%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.8%	2.8%
Blogger	2.8%	2.8%	2.7%	2.7%	2.8%	2.7%	2.7%	2.7%	2.7%	2.8%	2.8%	2.7%	2.6%	2.6%
TYPO3	1.6%	1.6%	1.6%	1.6%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Bitrix	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%	1.4%	1.4%	1.4%	1.4%
Adobe Dreamweaver			1.5%	1.5%	1.5%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.3%	1.3%	1.3%
PrestaShop	1.3%	1.3%	1.2%	1.2%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
Shopify	0.8%	0.8%	0.8%	0.9%	0.9%	0.9%	1.0%	1.0%	1.0%	1.1%	1.1%	1.1%	1.1%	1.2%
OpenCart	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Squarespace	0.7%	0.7%	0.7%	0.7%	0.8%	0.8%	0.8%	0.8%	0.8%	0.9%	0.9%	0.9%	0.9%	0.9%
FrontPage			1.1%	1.1%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.9%	0.9%
DataLife Engine	0.8%	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
vBulletin	1.0%	0.9%	0.9%	0.9%	0.9%	0.8%	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%	0.7%
DotNetNuke	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
ExpressionEngine	0.6%	0.6%	0.6%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
phpBB	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Wix	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Bigcommerce	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Discuz!	0.5%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
osCommerce	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Weebly	0.3%	0.4%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%
Telerik Sitefinity	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
SharePoint	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%

ECM Major Players

- **Microsoft SharePoint** – Commercial, cloud, and free education (and non-profit) versions ECM
- **Alfresco** – Commercial, cloud, and free community versions ECM
- **Open Text Enterprise Content Management** (ECM) – Commercial ECM
- **Oracle Enterprise Content Management** Products – Commercial ECM

WCMS Comparison

	Drupal	Joomla	WordPress
Homepage	www.drupal.org	www.joomla.org	www.wordpress.org
About	Drupal is a powerful, developer-friendly tool for building complex sites. Like most powerful tools, it requires some expertise and experience to operate.	Joomla offers middle ground between the developer-oriented, extensive capabilities of Drupal and user-friendly but more complex site development options than WordPress offers.	WordPress began as an innovative, easy-to-use blogging platform. With an ever-increasing repertoire of themes, plugins and widgets, this CMS is widely used for other website formats also.
Type	CMF used to build CMS websites	CMS	CMS used to build blogs and simple websites
Extensibility	Fully Extensible	Moderately Extensible	Limited Extensibility

WCMS Comparison

	Drupal	Joomla	WordPress
Ease Of Use	Drupal requires the most technical expertise of the three CMSs. However, it also is capable of producing the most advanced sites. With each release, it is becoming easier to use. If you're unable to commit to learning the software or can't hire someone who knows it, it may not be the best choice.	Less complex than Drupal, more complex than WordPress. Relatively uncomplicated installation and setup. With a relatively small investment of effort into understanding Joomla's structure and terminology, you have the ability to create fairly complex sites.	Technical experience is not necessary; it's intuitive and easy to get a simple site set up quickly. It's easy to paste text from a Microsoft Word document into a WordPress site, but not into Joomla and Drupal sites.

WCMS Comparison

	Drupal	Joomla	WordPress
Features	Known for its powerful taxonomy and ability to tag, categorize and organize complex content.	Designed to perform as a community platform, with strong social networking features.	Ease of use is a key benefit for experts and novices alike. It's powerful enough for web developers or designers to efficiently build sites for clients; then, with minimal instruction, clients can take over the site management. Known for an extensive selection of themes. Very user-friendly with great support and tutorials, making it great for non-technical users to quickly deploy fairly simple sites

WCMS Comparison

	Drupal	Joomla	WordPress
Abilities	High-performance (20,000 requests/second proven) Praised by developers CMF used to build CMS	Medium–performance Good output (deign, printability, font sizing) Praised by designers Full CMS	Low-performance Simple easy startup Praised by beginners Partial CMS…and growing fast
Usage	500,00 active sites	Unknown number of sites	25 Million sites total 12 MM on wordpress.com
Scalable	YES - Fully	Moderately Scalable	Not Scalable

Lets Take A Look at that first slide

A little closer…

Web Site Editing With Out The Know How

What they mean by “Know How”?

- HTML
- DHTML
- CSS
- APACHE or IIS
- PHP
- CGI
- Security
- JSP
- ASP.net
- DOM
- SPRING
- WAR
- Java Script
- MySQL Administration
- SQL
- AJAX
- XML
- XSTL

Content Management Systems

"A content management system (or CMS) is software that assists in the organization and presentation of content on a website"

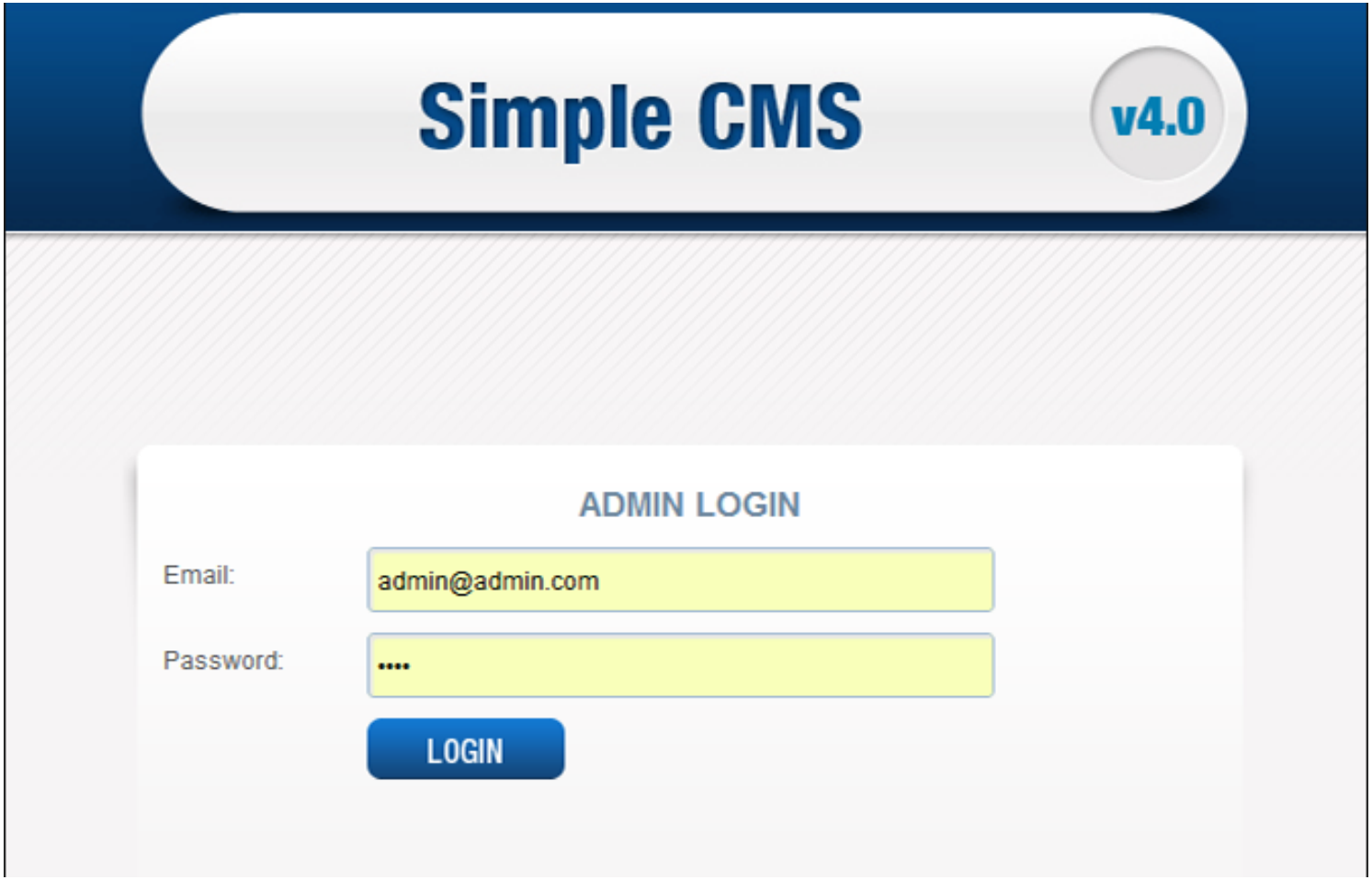
A CMS is made up of two applications

- Content management application (CMA)
  - Allows administrators to create and organize content for the website
  - Also known as the **backend**
- Content delivery application (CDA)
  - Presents the content on the viewable website
  - Also known as the **front end**

CMS – 2 parts – First CMS core concept

Content management application -CMA

The CMA is protected and you must be a registered admin user to login



CMS Attributes

- A CMS is a tool
- A CMS is software that runs on the web server
- CMS(s) use a content repository or data store to store page content, metadata, and other information
- CMS are composed of 2 applications: CMA or front end and the CDA or backend

CMS Attributes

- **CMS(s) allow for the separation of presentation and content** (2nd core concept)
- A presentation layer (template engine) displays the content to website visitors based on a set of templates

Separation of content and presentation is the 2nd CMS core concept

Web CMS are all about the separation of presentation from content

- In Web CMS, content is a thing to be created, stored, and managed, and presentation is a thing to be added just in time for the content to appear in a form suitable for human use.
- This is know as a Theme or Theming

What Can A CMS Do?

- Identify users, their roles, and access levels to a website
- Organize content into different sections and categories for **ease-of-reuse**
- Create and define workflows for content creation and deployment

What Can A CMS Do?

- Control versions of content
- Deploy design templates to provided a more interesting look-and-feel to the published website
- Provide advanced tools for modifying website functionality

Why should you care about CMS?

CMS knowledge and skills will increase your value in the marketplace

Why should you care about CMS?

The skills learned in IT320 can easily be applied to other technologies & CMSs in the workplace.

Why you should care about CMS

- Lots of freelancing opportunities; easy to ramp up consulting work ($)
- Easy access to create very sophisticated websites ($)
- Tightly coupled with Web2.0 and social sites
- CMS are powerful tools for non-coders or light coders
- Growing need in the marketplace for CMS skills ($$$)

Growing Need CMS Skills In The Workforce

- CMS site designers (theme designers/builders)
- CMS site developers
- CMS site maintenance specialists
- CMS upgrade specialists (Drupal)
- CMS site and module security analysts
- CMS custom module developers/analysts
- CMS implementers (Installers)
- CMS CIMIS specialists
- CMIS SEO and e-marketing specialists

Before We Look @ How CMS(s) Work

- Review of client and webserver
- Review of old fashioned static web sites
  - Web page request from a client computer
  - Server determines that the request is for a static page
    - Finds the page
    - Strips the page down to prepares it as an HTML page
    - Delivers the HTML page and associated files (images and CSS) to the client computer

Before We Look @ How CMS(s) Work

- Review of client and webserver
- Review of old fashioned static web sites

Clients and Web Servers

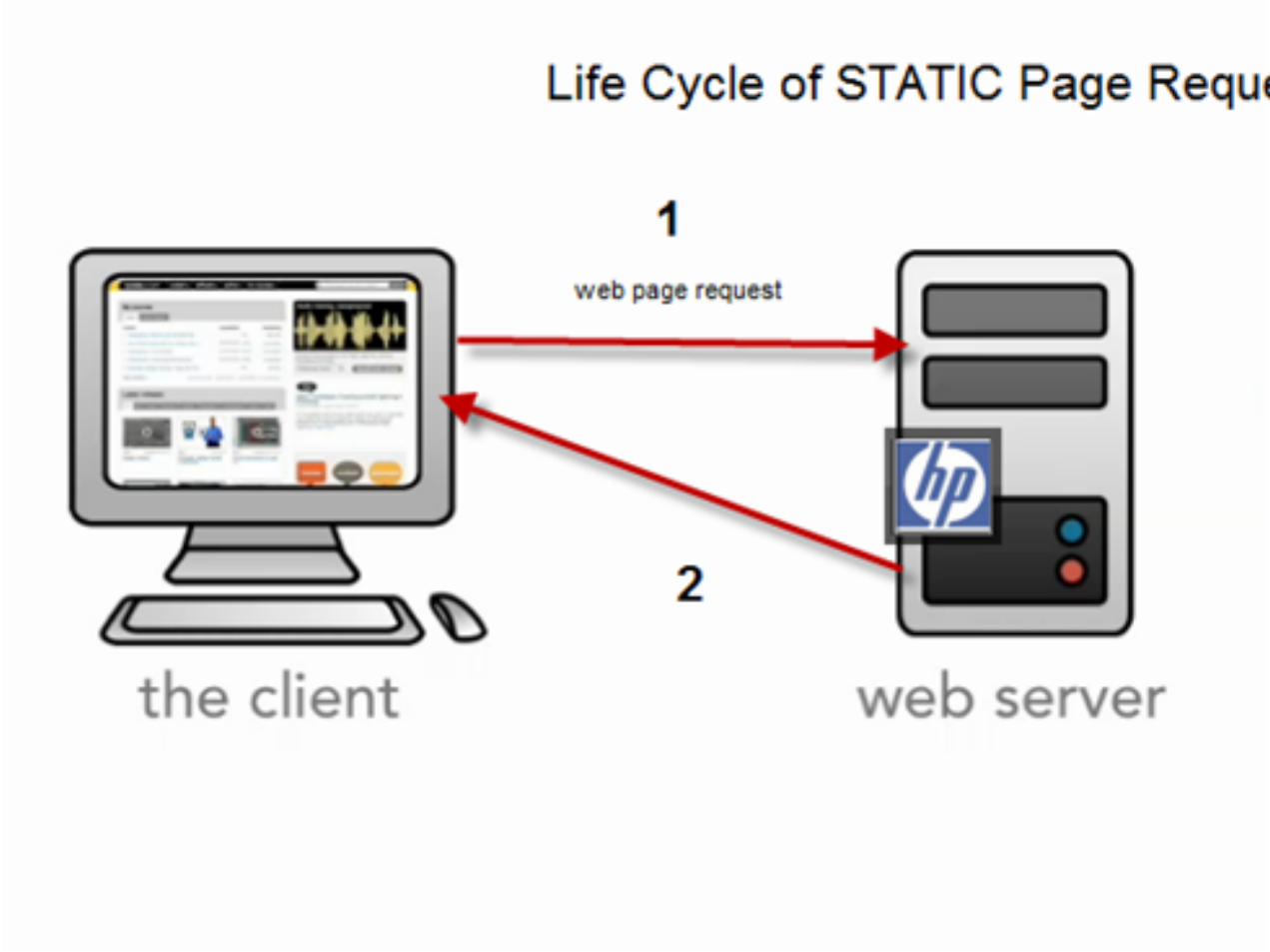
- Clients are the laptops, workstations, tablets, mobile phones you use to access the web using a web browser
  - The web browser is installed and runs on the client
- Web Servers are a combination of hardware and software components
  - Web servers run web server applications (Windows - IIS or Linux or Unix - Apache)

Before We Look @ How CMS(s) Work

Review of old fashioned static web sites

1. Web page request from a client computer
2. Server determines that the request is for a static page
   - Finds the page
   - Strips the page down to prepares it as an HTML page and delivers the HTML page and associated files (images and CSS) to the client computer

Static Websites



Why was this old way so bad?

- Unless you knew all the languages, and tools and had licensed copies of the integrated development environments (IDE), you had to rely on the site developer or consultant to make your changes for you

In Other words, Unless you had the know how (and access)

- You had to wait
- You had to write change request forms
- You had to wait until someone was free to work on your changes
- The smallest change could break your site, and you could be site-less for days, weeks, or months

Static Web = Wait For Changes

Static Web Sites = Hard to use

Static Web Sites = Easy to break and hard to fix

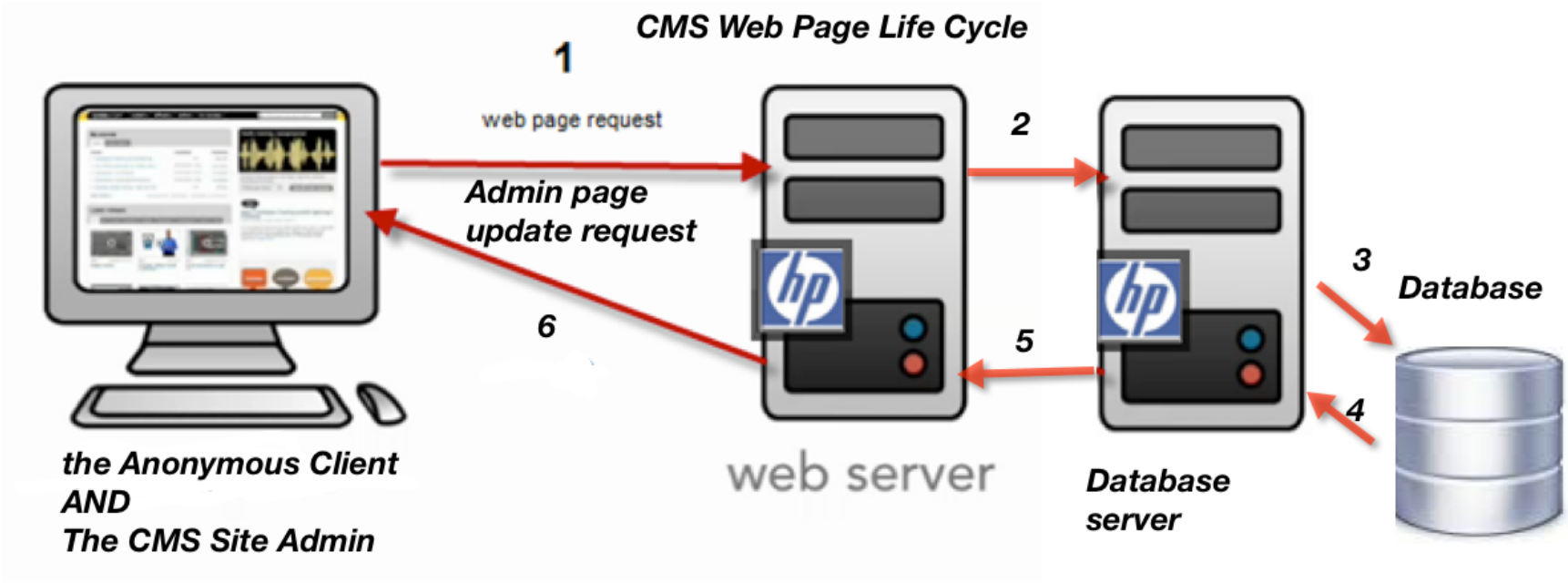
How Do CMS(s) Work?

How do CMS(s) Work

CMS servers up a web page

1. Web page request from a client computer
2. Server determines that the request is not for a static page and turns the request over to a PHP that acts as a middleware (translator/facilitator)
3. PHP requests information from the database. The database delivers the information back to the PHP
4. The PHP middleware prepares the page for server delivery by stripping out the PHP, replacing it with HTML and associated files (images and CSS)
5. The HTML page is delivers to the server
6. The server delivers the page to the client

CMS Websites



Where are CMS(s) used?

- On the internet
  - Used to present dynamic information
  - Used to build community
- Within an enterprise
  - Used as portals or intranets
  - Used to support e-commerce functionality
  - **Used to support workflow and document management**

How are CMS(s) used?

- Blogs (and discussion forums)
- News and magazine style publishing
- Online books
- Social Networks
- Knowledge repository (Wikipedia – for example)
- Portal
- Enterprise Document Management
- Enterprise Workflow Management
- E-Commerce sites

How Can CMS(s) Help?

- THINK BACK TO STATIC WEBSITE ISSUES:
  - Static websites had the following attributes:
    - They were not easy to manage.
      - You had to be proficient in many tools and languages.
    - Content and presentation were coded together and stored in easily corruptible flat files.
    - Next to impossible to organize content
    - There was no code re-use
    - There was no way to apply automated roles or workflows
    - Nothing was done quickly and it was hard to make content and or style changes
    - SEO was difficult to setup and maintain as it was all done by hand

Static Web Sites = No Organization

Without CMS

CMS(s) to the rescue

CSM(s) Are Easy To Use

- Most CMS(s) are easy to use and **do not require computer skills** although programmers can usually **easily extend** their functionality.

CMS = WITH OUT THE KNOW HOW

CMS = Content Organization

CMS allows for easy content organization.
Content is stored in a database and is separated from the web site presentation template

CMS = Central Content Storage

Content is not stored in flat files its stored in a data store or relational database. This means data can be backed up and kept safe.

CMS = Central Content Storage

- information is stored once, and reused in multiple areas of the site.
  - This makes updating content quick and easy, since changes need only be made in one location and are subsequently, replicated throughout the site.
- Past versions of content are also kept in the CMS allowing users to view and reactivate them as necessary.
- Archiving is another important aspect of the right CMS, as it enables content to be kept for as long as the you see fit, and gives system administrators the ability to configure expiration dates for press releases, blogs, and other content to be automatically archived.
- Central content storage preserves consistency throughout your organization's website as well by ensuring that content is standardized in all areas of the site without any additional work on

CMS Require Database

- This is the third core CMS concept
- Right now CMSs use relational databases (MySQL, PostgreSQL, others)

Other CMS benefits

- Content is separate from the site's presentation template.
  - You can change the look and feel of the site without affecting the content.
- Content is stored as discreet entities in a database and can easily be used and re-used on different website presentation pages.
  - This is content re-use
- Storing content in a database means it can be backed up and kept safe

Still more CMS benefits

- Some CMS(s) have built in **workflows** and allow for the creation of custom workflows. When used with role based security, these workflows can be used to streamline and automate content publication.
- Role based security makes it possible to grant specific abilities to users to control who can make changes to content.
- Most CMS(s) have built in **SEO** editing
  - Pages can have SEO added using a simple editor

Still more CMS benefits

- Most CMS(s) have built in **SEO** tools. As either plugins, modules, or add-ons
  - In WordPress, once the SEO plugin in enabled, you the content editor can easily add SEO to web pages using a simple editor