



A Jaffle Design white paper :

Managing Content

Features and functions

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The purpose of this paper is to identify various content management systems (CMS) for managing content on websites, and to review their availability and ease of use. Five features and functions of CMS will be examined, including syndication, format management, version control, template systems, and workflow, in different CMS approaches. Four approaches will be evaluated in a matrix, to review advantages and disadvantages of CMS. Open source system and full license CMS will also be compared. This analysis of CMS will provide a better understanding of systems used and reference to evaluate the best preferences in these systems.

Content Management Systems

Content management is about gaining control over the creation, distribution, and functionality of information (Addey et al, 2002, p12). When an online community starts feeding information into a website, there is usually some sort of content management system in the background to support it. Content management assists the organisation and direction of information on the Web to keep it under control. In the Information Age, it is possible to give particular value and substance to a 'piece' of information, using content management systems, which create and manage pieces of information, tagging them with the data that is needed to appreciate what they are worth (Boiko, 2002). If websites are to be used as a major communication tool for organisations in the future, a content management system will be needed to support all the content assets used and channel them towards members, clients, prospects, partners, employees etc.

Addey et al. explain that content management covers all aspects of publishing content with digital tools, with focus on:

- Asset management - organising units of content;
- Transformation or templating - presenting that content; and
- Publishing - delivering the content to the audience (Addey et al 2002, p2).

It is important to know what value can be offered by information added to a website, which part of this information will be relevant to who, and how this information should be delivered to the appropriate audiences (Addey et al 2002, p13). When these questions are answered, a content management system can be built, appropriate to the needs of the website, to make sure the content reaches the right people in the right way. In general, roles in production of a CMS can be assigned to different groups in a corporation (Byrne, online). An example is provided in the table over page.

Sample Groups	Sample Roles
HR managers – can add and modify jobs	Super-user – performs any function in the system
Product Managers – can update catalogue content only	Editor – approves content
Graphic Designers – can create and modify image files and HTML templates site-wide	Author – contributes content
System Administrators - can update scripts and change file permission site-wide	Intern – adds metadata to site content

Source: CMSwatch.com

Boiko points out that Content Management at the highest level is the process of matching requests of an organisation's information and functionality value to audiences who want that value (Boiko 2002, p168). For websites with members and employees in other countries across the world, content management is vital if the website is to be used as communication hub where information will be added to and taken from the website by a variety of audiences, with varying needs.

According to Web Search Services, a CMS consists of two elements: the content management application (CMA) and the content delivery application (CDA) (Web Search Services online). The CMA element allows the content manager or author, who may not know hypertext mark-up language (HTML), to manage the creation, modification, and removal of content from a website without needing the expertise of a webmaster. The CDA element uses and compiles that information to update the website. The features of a CMS vary, but most include web-based publishing (template development), format management, version control (indexing, search, and retrieval) and syndication.

Features and Functions of CMS

Template systems are the systems that separate the look and feel of the website from the content (CMS Poster, online). Template management system software should be flexible, scalable, modular, and easy to use. The web-based publishing feature than allows individuals to use these template systems approved by the organisation, as well as wizards and other tools to create or modify web content. For organisations, this would allow to update visual design without disturbing the rest of the content, causing the overall website to be comprehensive and easy to use.

The format management feature allows documents including legacy electronic documents and scanned paper documents to be formatted into HTML or portable document format (PDF) for the website.

The version control feature allows content to be updated to a newer version or restored to a previous version (Search Web Services, Online). Organisations may not need a month to sign off the site's terms and conditions because of minor changes made by organisation's lawyer, if that is the time needed for everyone involved to sign it off. Version control also tracks any changes made to files by individuals. An additional feature is indexing, search, and retrieval. A CMS indexes all data within an organisation, so that individuals can then search for data using keywords, which the CMS retrieves.

Syndication gives a website the ability to provide content from a variety of content partners. Website users benefit from syndication by accessing the content within areas of their interest from one single website. Publishers can use syndication to increase traffic and add interest through diversity of content (Tomsen 2000, p177).

Workflow is another function used in CMS. Nakano defines workflow as the process by which people collaborate to develop assets within a content management system. Nakano believes that the workflow function in the CMS applies to situations where multiple people collaborate on a job. The workflow function improves productivity by minimizing the wait-time between successive steps, and it automates the business logic of an organisation (Nakano 2002, p87).

Benefits and Challenges

According to Burns (Online) some of the CMS benefits are:

- CMS minimises the chances of content assets (eg. navigation links, press releases, jobs, photos, etc) accidentally appearing on a website. Any updates must pass through commissioning, creation, and one or more predefined signoff steps before the system will publish it. The resulting audit trail provides accountability for each action.
- Because teams can be distributed in different countries and offices, it is more difficult to notify a team of an assigned task. The CMS could notify a participant by email, by SMS (mobile phone text messaging), by fax or by auto-generated letter. Because all the major tools have a web interface, participants can perform their task and view its results from anywhere with the Internet access. In addition, with a CMS security model, only authorised people can perform authorised tasks.
- It can advance and refresh dates and times for the content to go live and be archived or removed. It can also prompt review dates to ensure that information is not left on the site until a new entry replaces it.
- CMS allows speed of information to the market, because it is maintaining the site's structure, content and visual presentation in separate layers. It is possible for the site to be restructured,

merged, and split, without extensive manual involvement. For organisations this would mean the absence of a need for a centralised website editing.

- Syndication allows gathering of headlines and articles from a relevant news site, or gaining an income stream, by syndicating material to other sites.

Burns (Online) also notes challenges of CMS:

- CMS is a strategic tool. In developing the system, process and infrastructure issues have to be exposed. These issues may have been papered over for some time, and may be forced to be resolved. Although this is also a basic requirement of e-business.

Selecting a CMS

The process for CMS should be customised to a company and its objectives and constraints (CMS Choice, Online). The process for choosing CMS presents five steps according to CMS Poster (Online):

1. Define the decision team;
2. Determine business objectives and constraints;
3. Evaluate vendors;
4. Evaluate total cost of ownership (TCO) and return on investment (ROI) and
5. Gather the decision team and decide.

According to CMS Choice (online) there are four main options. They have been evaluated in terms of their advantages and disadvantages.

CMS Approach	Description	Advantages	Disadvantages
Manual Content Management	<ul style="list-style-type: none"> - Outsourced Web Designers and IT engineers - Changes are approved by Managers and coded in HTML using tools like Macromedia Dreamweaver 	<ul style="list-style-type: none"> - Low start up costs - Predictable - Tailored for the company - Good for small websites, which don't need regular update 	<ul style="list-style-type: none"> - Ongoing costs due to lack of automation - Website redesign is difficult - Lack of automation requires testing of individual sites (human error)
Server-Based Content Management	<ul style="list-style-type: none"> - Licensed software systems installed and maintained on a server - Purchase server based CMS and database; manage servers and software - Create an extranet for remote employees 	<ul style="list-style-type: none"> - Information architecture and page design remains consistent as content is added - Workflow mechanisms in place to ensure authorized person can change, review, edit a website - Content can be changed quickly, without human 	<ul style="list-style-type: none"> - High upfront costs - Lengthy set up time (3-6 months) - Risk of 'shelfware,' where CMS is never deployed or significant functionality not used - High ongoing costs due to IT personnel and support contracts needed to maintain and update server

		error	software
Internet-based Content Management	<ul style="list-style-type: none"> - Internet based vendor maintains a website - Purchased by subscription, usually yearly - Designers create the page design and information architecture, producers implement them by creating templates. - Content creators create the content which is passed through by an automated web-based workflow system 	<ul style="list-style-type: none"> - Information architecture and page design remains consistent - Workflow mechanisms ensure that only authorized people can change sections of the site - Lower upfront costs - Remote employees can manage the content at modem speeds (extranet might not be needed) - Low IT and programming costs 	<ul style="list-style-type: none"> - Suited better for external websites - Custom programming required - The original data and templates are located at vendor
Home-grown Content Management Systems	<ul style="list-style-type: none"> - Hire programmers and engineers to build a custom made CMS - Purchase a database and servers; create an extranet for remote employees 	<ul style="list-style-type: none"> - Custom features can be tailored to the specific needs of the company - Information architecture and page design remains consistent as content is added - Workflow mechanisms in place to ensure authorized person can change, review, edit a website 	<ul style="list-style-type: none"> - High development cost - Risk if software development is not core competency of the company - Turnover in engineering personnel can risk future CMS upgrades - Same disadvantages as Server-based CMS

Open Source and Full License CMS

Content management systems can be built in a way to match any website requirements, which can be a complex and expensive way to meet organisational needs. In a case when organisational needs are very specific and not well matched by any commercially available CMS; or when a website has relatively simple needs; and if web application developers exist within an organisation, building a new system may be a better investment (Addey et al 2001, p125). Adapting an existing open source CMS is equivalent to a compromise between building a customised system and buying it. It might not match the exact needs, but it can be customised, it is free and it can save a lot of time. Some companies may prefer the cost of open source system, although it is important to point out that this may be beneficial only if there are appropriate human resources available within the organisation.

Open source is a licensed software code, which can be modified and distributed as free software. Some main benefits of open source for CMS are (Addey et al, 2001, p132):

- A large amount of prewritten functionality is for free;
- The base of CMS will be in use by other developers, and a community may exist to help with customisation;
- Build system can be also fixed by developers, which allows control without depending on CMS vendors;
- And no commercial vendor contacts and paying licenses.

There are also downsides:

- The system is not written from scratch, which leads into learning of idiosyncrasies;
- The system may still need extensive adaptations, since it may not exactly fit organisational needs;
- An open source may be harder to sell internally, seeing as free software is not to be trusted perception from senior management;
- Possible errors have to be fixed internally and cannot be relied on a vendor;
- Documentation is often poor compared to that of commercial systems.

Open source system is accompanied by a Gnu General Public License (GPL), which requires modified source code available and free. If the modified source code software is distributed and not GPL licensed, professional full license has to be purchased (eZ publish, online).

CMS may not be needed if the content is managed in house and communicates well with the creation and if the site does not need to be regularly updated. Also, if the website does not include any personalisation or community and if one individual has the knowledge of the entire website, CMS should be given consideration until additional functionality is added.

Conclusion

This report has identified different approaches of content management systems (CMS) with its advantages and disadvantages and reviewed their availability and ease of use. Organisations may consider implementing process for choosing appropriate CMS, defining a decision team and determining their clear objectives.

CMS vendors should include all five features and functions, including syndication, format management, version control, template systems, and workflow. These features may benefit some organisations in updating their website content without extensive manual involvement and allow collaboration among members and partners. CMS approach may also be considered carefully before deciding on a vendor.

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