



Continuum Technologies
An Introduction to CMS

If you are planning to upgrade your Web site or analysing Web strategy, then the inclusion of content management will need to be considered. This document explains your options and how Continuum can help achieve your goals.

What is a Content Management System

Content Management makes collaboration easier, enforces design standards, enhances user-interface consistency and reduces confusion & training costs.

A content management system is a database which organises and provides access to all types of digital content. It basically has 4 clear divisions:

Authoring

The mechanism of placing and styling the digital content into the database

Workflow

The approval route the content is subject to

Storage

The way the data is held within the system and the ability to reference it

Publishing

The mechanism and options of displaying the digital content from the database

These areas are looked at in greater detail later in this document.

Content Management Systems vary dramatically in both features and price. There are literally hundreds of providers all offering different systems of varying cost and functionality. The ultimate decision of which solution you choose will need careful consideration.

Business strategy or just maintenance of your site?

Basically content management allows you in-house control of the content and framework of your site(s). It avoids the need for day-to-day external assistance from your Web agency or in-house technical team.

The CMS may be introduced to control initially your internet site and/or intranet site or a combination of both in an extranet.

The reason most organisations begin considering CMS is generally based on past experience or a current realisation of situation. It is a fact that many companies are drowning under huge amounts of electronic data. They find it increasingly difficult to maintain their sites. Common problems include:

- Out of date material
- Poor design
- Inconsistency and bad brand representation
- Lack of authority and approval
- Bottleneck of update

With the old school approach, Web site control was very manual. Lots of staff working on individual pages using an editing package such as FrontPage or Dreamweaver was not uncommon. The pages generally were mediocre in design and the time spent by staff significant.

Alternatively larger organisations adopted in-house teams working on lots of requests from across the business. Mundane work that had little control and frustrated those involved.

So the solution and sensible approach is to take away the mundane work and allow the organisation to utilise their in-house teams to enhance their sites rather than just enlarge and shelf stack them.

This is content management in the true sense, it can be seen as more of a concept and business strategy than just a piece of software. It is to the level that you wish to take this strategy and the extent of the areas of your organisation you wish to cover that holds the key to the solution you require.

This approach should be seen as the modern way of content control. It is basically empowering the content creators to populate the CMS whilst making sure that approval and recovery mechanisms are in place. It is also using technology to sort and organise the data in intuitive ways, publish across platforms and

allow for scaling and future proofing of the application.

Larger organisations may start with all their data in the schema. What is for the intranet, what is for our internet etc. The task in hand rapidly increases in the bigger picture.

Continuum are not suggesting this is ultimately the approach you should choose but it is one that should be considered. The view that you have a Web site of data, then an unconnected intranet of data and then lots of other random and possibly inaccessible data throughout your organisation will ultimately cause duplication and cause many of the issues listed previously. Thinking of a central pool and then dividing and tailoring for the variety of uses is a far better approach but ultimately one demanding greater set up cost and greater forethought.



Core features of a CMS explained

As stated previously the core features are defined as:

- Authoring
- Workflow
- Storage
- Publishing

In deciding on the system the relevant importance of each area may indicate the solution best suited for your organisation and requirement.

Authoring

This is the process that the user/author can create the Web content within a controlled environment. It could be the addition of a news item, an event or a full on-line prospectus or catalogue.

Begin the appraisal by considering the types of data you are likely to add and the frequency.

In addition you must consider if there are any requirements to utilise data, held externally to the CMS. This might include importing an existing database file during development, re-using a previous site or re-organising existing electronic documents within the business.

Points to consider when reviewing CMS on authoring are:

- Ease of update
- Is training required?
- Included features such as spell checkers
- Templates - is it easy to change layout?
- Are documentation/manuals available?
- Do additional users/editors require additional user licenses?
- Is the editing WSIWYG?

In truth the only way to understand the authoring side of a system is to view and also try the systems themselves.

Workflow

Workflow encompasses the approval or route-map that the content takes on its way to be published. In most environments content will need to be checked for accuracy and consistency.

Points to consider when reviewing workflow are:

- The ease of setting up the workflow
- The flexibility of the system – number of scenarios
- Can users be grouped into categories?
- Alerts - how do you know when something needs approval?
- Who has the administration rights?
- What if someone is away - how do you control the system?
- Workflow across locations
- Response data such as responses and statistics - who
- can access and use it?
- If data is drawn from other sources how is this incorporated into the approval chain?

Storage

This is the holding of the authored content in the database. In addition it covers the controlling and auditing of the data. Many systems allow version control meaning content can be rolled back to a previous state if need be.

Content added to the system will also require additional and defining information associated to it. This could be Metadata as used by some search engines or more specific categorisation.

The flexibility and opportunities of extending the functionality of the site through metadata tagging the authored content should be a consideration in the selection of a CMS.

Finally although the system will obviously allow for the content to be published to the Web site how flexible is it to retrieve the data for other external uses. How do you get the subscriber listing from the system and in what format will it be received. How well is the data integrated into other software applications such as CRM and accounts packages.

Points to consider when reviewing storage are:

- Can metadata be added and its format changed?
- Government guidelines?
- What functionality is included to allow for personalisation?
- Does the CMS require an external database to be purchased?
- Is versioning required?

- Is the data available externally to the CMS and in what format?
- Are there hosting issues and license issues with the CMS software?

Publishing

This is the process in which the stored content is delivered. It can obviously be as a Web page but may extend to an Email, SMS message or kiosk application. Is the content delivered on demand or published as a schedule, i.e. do your approved changes go live immediately.

In researching CMS a lot of reference is made to separating content from style/design. This generally means that the content is fed into templates that contain the attributes for design such as layout, colour, font style, navigation etc.

Templates therefore can be changed external to the content, which is very beneficial if, and only if, the style needs to be changed or the data will be propositioned into other sites or guises i.e. text only for accessibility issues with the disabled or sub sites.

The flexibility the system offers in building and implementing templates should be considered. It is likely that your agency will produce the initial templates leaving you with the content provision but will you want to take this responsibility in-house at a later date?

If the answer is yes then training staff or having designers with web skills will be necessary. It is likely that the CMS system will provide only basic wizard type building blocks. Your agency will have probably programmed a lot of functionality into the system, making it appear simple.

In addition developing sites that look good, work across browsers and resolutions and have considered navigation and structure is unfortunately again in the hands of the Web designer - not the CMS.

On a plus point a CMS system does make it easier for an agency, so even if your initial thought is to leave the implementation to an external company then it should reduce any future costs.

Away from the template design it is also necessary to understand how the content in the database is held and more importantly retrieved. Is it in a universal and cross platform format such as XML? Or is it held purely for the use of the application? Not an issue if the data is used

solely for the purpose of the job in hand, but consider future plans.

Finally once published does the system give you scalability? If you have 100 news articles now how will it deal with 10,000, creating longer and longer pages is not an option. How does the navigation update when content is added. Are these standard issues programmed by a developer such as Continuum at implementation stage or do they come as standard in the CMS package.

Points to consider when reviewing publishing are:

- Is it possible to publish across a number of channels
- (PDA, SMS)?
- How much of the scalability is automated?
- Is the data accessible in a universal format?
- Can the templates be easily modified and created?
- How easy is it to republish the data in a new guise?

So what are your CMS goals?

Is CMS a business strategy or do you just want to update your Web site?. If you are still unsure review the questions below:

- Do you just need the ability to add content to your site yourself or do you have an infrastructure that will require workflow of content and approval chains?
- If multiple staff are to author, then what skills do they have and how much time can you allow them to spend? Will individuals be adding 1 or 100 articles a week?
- Do you wish to publish the same content across different sites/applications?
- Do you wish to integrate data from existing sources such as databases, other software applications and external organisations?
- Do you see your content management system as a tool to do the job in hand or do you require the flexibility to evolve and expand its capabilities?
- How much is cost an issue, is the purchase seen as a one off or a business asset to be exploited over time?
- Do you have millions of users visiting, how critical is your sites uptime to your business?
- Do you (in-house) want to be able to develop your site sideways or just add more content of the same genre?
- Do you see the CMS speeding business response and being the first step of an online strategy such as intranet, client areas and/or sub sites?
- Is it critical that your information on the site is accurate? Are the authors likely to need an approval chain?
- How is the majority of your current data stored? Is it in documents such as Word or at the printers?
- Do you have slightly different messages for customer sectors? Would a CMS be able to evolve a more tailored marketing strategy?

- Is there opportunity within your organisation to undertake e-commerce?
- Do you have plans to build a customer support/service section on-line?
- If you are considering a CMS for an internet site how useful would an intranet or an improved intranet be within your organisation?
- What in-house IT support will you have once you have implemented the CMS?
- By what criteria will you measure the success of the eventual system?

Answering these questions (and others) will give you and Continuum a better understanding of your aspirations. There are many solutions and generally the more features, the greater the cost. CMS brochures are very glossy and jargon ridden, beware in choosing a solution over and above your requirements, or in fact the reverse. Continuum are always pleased to offer advice.

Cost Considerations

Proprietary systems such as Continuum's in-house solution has no price attached as the cost is recouped in the website development charges.

Third party CMS varies in price dramatically, from Microsoft Content Server €30K+ to Vignette €500K+. They are sold under licence and generally consist of server licences and user licences and normally require dedicated hardware.

The server licence may only cover individual processors so you must make sure that your server is not a twin processor or the cost may double.

In addition support for the CMS system may incur an ongoing charge as well as training, upgrades and technical services.

Continuum CMS

In-house solution or third party

As stated Continuum have an in-house solution Continuum CMS. This system has evolved over a number of years and today offers a high degree of functionality.

Our in-house solution will manage the content on your site and offer many of the features found on third party solutions. However it is not the basis or a strategy and if in the original question "Business strategy or just updating your site?" you answered the later then our in-house solution offers value for money and all the functionality you will require. This is proved by the number of companies already using it successfully.

However, if the answer was "strategy" then the minimum spend on third party software will start from €15,000 and rapidly rise as you consider the various options.

Continuum CMS Functionality

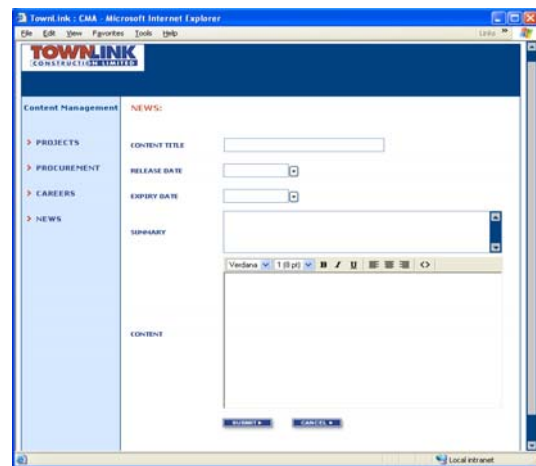
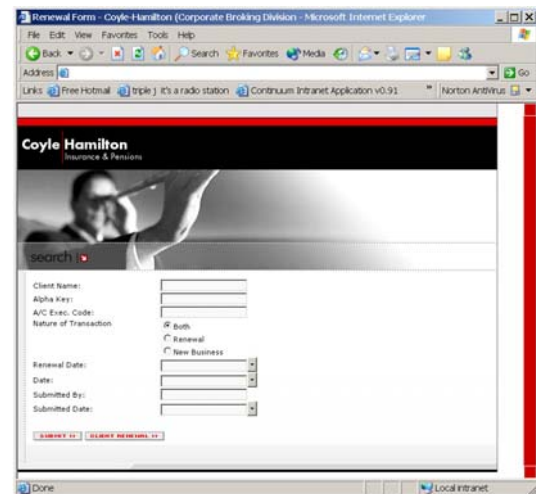
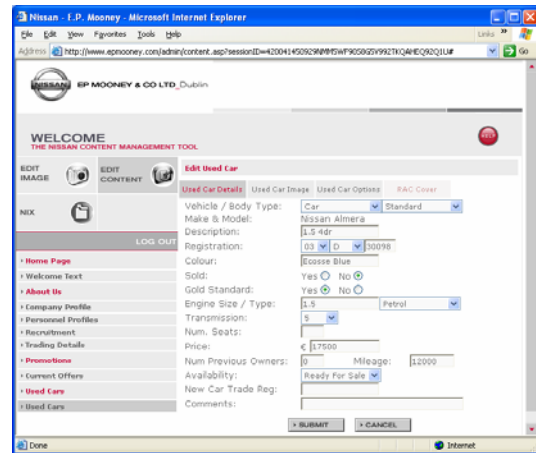
The cost of Continuum CMS is based on the functionality and level of customization you require.

Key Features

- Page & category creation
- Comprehensive text formatting
- Set templates
- Add images & documents
- Assign individual authoring &/or publish status per site section
- Internet based
- Metadata

Advanced Features

- Page, category & section creation
- Comprehensive text formatting
- Flexible templates
- Add images & documents
- Fully customisable workflow
- Import Direct from external applications
- Internet based
- Metadata



Summary of CMS terms

1 - Versioning

1.1 Auditing Capabilities

An audit trail records the sequence of activities that occur on any given file or body of content within a content management system.

1.2 Version Control - check in/out, locking & merge

Can be applied by authors or developers responsible for producing various types of content, including application code, graphics, text and other file-based content. If multiple users are involved in developing content, the version control system .locks. (makes read-only) a file in editing, or between editing and reviewing, to ensure that no two authors modify the same document at the same time. A development of this is the ability for multiple authors to edit content simultaneously, followed by a managed .merge. process.

1.3 Version control - roll-back

Systems also save past versions of content elements, files or entire projects, track the date and time of changes, and provide an option to keep the comment log. Everything from a text file to an entire site can be "rolled-back" to an earlier version.

2 - Integration

2.1 Asset Management

Manages the storage and reusability of elements of content. Allows multiple users to edit content and make changes without running over each other. See also Version Control.

2.2 Custom content/asset types

Support for arbitrary content/asset types. Do you have to build your own administrative interface from scratch for each new asset type?

2.3 Conversion of non-HTML documents

Automatic translation of format X to XML/HTML. Can be extended to include translation to text only, PDF, WML. Allows the use of standard desktop applications to create web content.

2.4 Metadata management

Content classification systems allow you to organise key metadata value and attribute pairs to aid in web applications that fall outside core

CMS functions, such as site analysis, personalisation, content targeting, web site and internet search results.

2.5 Retrieval

When adding your content to large collections of data in a CMS where you'd like to draw relationships between the data, the author needs to be able to retrieve and review the relevant info before confirming the relationship.

2.6 Staging

Content management systems can explicitly provide virtual staging of Web site content, thereby supporting a formal quality assurance phase before final publishing to the production servers. The staging area is designed to emulate the production site in every way possible.

2.7 Support for external thesaurus and other controlled taxonomies

Controls the application of metadata describing web content. See also "Metadata management".

2.8 Templating

Content Management systems and other development tools allow the site designer to easily create and establish templates to give the site a uniform look. These templates may also be modified when desired to radically alter the appearance of an entire site or specified areas. Consistency of look and feel - as well as the logical organisation of the sites content . is simplified when templates are used. Designers should design and authors should develop content. Having well-prescribed roles simplifies site management.

3- Workflow

3.1 Integration - messaging

Integration of other channels of communication into the workflow (i.e. email). E.g. On completion of new content, the CMS sends an email to the next person identified in the workflow, probably a content reviewer.

3.2 Workflow

Workflow systems enable you to define multiple step processes involving varied content types, cross-departmental staff, and required actions, such as submit, review or approve. Event driven workflow systems can be built into larger content management systems or employed as a standalone service that integrates processes, people, and content as needed.

4 - Data Repository

4.1 Database storage

Storage of assets in a database integrated with the CMS can aid content re-use and management, especially where content is repetitive. It increases granularity of your assets beyond the file level of HTML. This is often confused with content management itself, but is only part of the story. See XML-based data repository. Storage of assets in a file system can be more efficient, up to a point, especially on the public web site. Flexibility in content storage is an advantage.

4.2 Integration . existing data . databases

A data storage mechanism managed independently of the operating system by server applications. The applications can either store and retrieve data natively from disk or store and retrieve data from a file system object. Data stored within databases are only accessible from database application interfaces. These can be a core part of the CMS. Databases are designed for rapid, efficient search and queries for structured data. This can be achieved pre-deployment to create a .flat. web page which may then be .cached. for instant retrieval.

4.3 Integration - existing data - file systems

A data storage mechanism natively managed by the server operating system. File systems allow operating systems to store and retrieve data from disk. Data is stored on disk logically categorized using into directories following a file cabinet metaphor. File systems are designed for rapid, efficient, scalable disk access for most common forms of saved data.

4.4 XML-based data repository

Generic repository systems help you maintain and manage large amounts of diverse content. By storing content as XML, vendors claim improvements in content re-use and re-purposing. XML-based systems also include transformation services and content validation. The primary advantage of XML-based systems is that XML permits you to separate content, format, and business logic. Documents and Web pages can be dynamically constructed by combining many individual elements from the repository.

5 - User Management

5.1 Devolution of management

Can you have users who have users who have users? Can you devolve the administration and publication of parts of your web site while maintaining "quality control."

5.2 Roles-based security

Workflow systems allow administrators to control allowable actions based on each team member's role. Fine grained, role based security is important because it allows content creators and developers to interact with business managers by limiting them to the appropriate content access levels at different stages of a process.

6 - User Interface

6.1 Brower-based ("TTW-Through The Web")

Client and administration tools allow team members to configure, control, and participate in the system. Many of these interfaces are provided in cross-platform browser client form. Browser based authoring permits contributors to work from any location as well as minimising support overheads.

6.2 Editing, authoring tools

Site designers are not restricted in their choice of HTML editor. You have staff with no web skills who need to update content, but you also have very experienced web designers. A CMS can tailor the user interface to each type, providing a .Web form. to some and a "virtual Sandbox" to others for use with any web design tool. See also "Self service editing".

6.3 Link Management

See "Reporting."

6.4 Planning, mapping and modeling

Tools to create a site structure, lay out sections of the site, figure out the navigation, mark areas for future development, etc.

6.5 Reporting

The reporting tools included with most content management systems are generally extensive and reflect the breadth of coverage of its supported functionality. Examples include performance, workflow, link status, page size, possible slow pages, daily submissions. If the CMS runs the live web site, then this can include access and error log file analysis.

6.6 Self-service authoring for non technical content providers

Content authors should be able to quickly create materials using standard desktop applications, as well as image, video, and other types of media files. After materials have been developed, content providers should be able to post them to the Web using pre-built design templates that provide the proper formatting and corporate branding elements. Non-technical content authors should be empowered to keep content up-to-date and able to directly post

content to either a staging environment or a live Web site.

6.7 Site management

Most Content management systems provide “big picture” view of the web site that allows site designers to create an overall navigational model for the entire Web site.

7- Applications

7.1 Common API

Though there is a desire by vendors to lock in their customers to use their solution only, they also see the value of providing methods for other tools to integrate easily with their content management systems. Some vendors provide this interoperability through published Application Programme Interface (API) that enables onsite developers or third party vendors to tap into the functionality of their system.

7.2 Integration . Marketing tools

With advertisement servers, marketing campaign management tools, and group filtering products.

7.3 Localisation

Your content is available in a variety of languages.

7.4 Programmability

Can you script the CMS (or link to an application server) so as to automate tasks or generate dynamic pages?

7.5 Scheduling of content publishing and archiving

Allows content providers to determine when content is presented on the site and when it is removed. Automating this process ensures that date-sensitive information is available only while available.

7.6 Searching, Indexing

Content management systems often provide support for integrated indexing and search functionality. By embedding categorised metadata it is possible to fine tune desired search results and ensure that customers can easily find what they want. A indexing application “walks” a file system, reads every text file, and builds a mini-database of content elements (most typically content metadata).

7.7 Custom tag definition

Can you define your own tags in the templating language?

7.8 Business rules

A business rule may be referenced in conjunction with a personalisation engine. Business rules determine which users are delivered a specific type of content. However, simply targeting a few key groups (groupalisation?) offers many advantages at lower costs. See Personalisation.

7.9 E-Commerce

Including secure transactions.

7.10 Personalisation

The ability to personalise the user’s experience is dependent on linking dynamic page content to previous user actions. Personalisation also requires a membership database to store customer attributes and purchasing history.

7.11 Session analysis

The process of observing a customer’s behaviour as s/he clicks through the Web site and storing that click-through information in a user profile database. Behaviour tracking enables business managers to target content with tailored business rules. By logging user activities you can produce reports that clearly show popular areas, average visit time, and other important information.

8 - Deployment

8.1 Caching

Content caching of dynamic pages, the ability to mark web elements as cached in server memory, influences site performance.

8.2 Flexible output

Soon web browsing will take many forms, from PDAs to cell phones. You will want to ensure that your site looks right regardless of how a user accesses it. You will continue to re-purpose content for paper, CD-ROM and voice.

Continuum Technologies Ltd.
54 Iona Crescent
Dublin 9
Ireland

p: +353 1 830 4200
f: +353 1 830 4300
e: info@continuum.ie
w: www.continuum.ie