

Chameleon Net

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Chameleon Net's Guide to Effective Web Content Management

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Introduction

The way people use the web is constantly changing, and organisations need to adapt to keep up. In the recent past there have been significant developments in web technology to provide a better experience, to allow for easier exchange of data, and to make information simple to manage and retrieve. Closely linked to such advancements in web technology are the expectations of web users, and what organisations want to deliver over the web.

Making the most out of the web involves more than posting a static web equivalent of offline collateral. A website is often now a revenue channel, and a mechanism of making available a wide variety of information. Web content is no longer HTML web pages alone; it includes MS Office documents, PDF files, rich media such as audio or video clips, and data exchanged between a dynamic web page and a database system.

Messaging and brand remain important factors in a web presence, but now site visitors want more interaction from a site, and information at their fingertips. Delivering this user experience requires a more complex site architecture, a variety of content that changes frequently, and an increased focus on the web as a powerful medium.

In turn the static website model is not scalable, and becomes decreasingly viable as the quantity of regularly changing online information increases. A number of issues arise:

- Who authors information and should they be responsible for publishing it?
- How is quality control achieved to make sure information is up to date, relevant, and standardised?
- What methods should be in place to manage access to information? Will certain content only be appropriate for certain users or user groups?
- How are branding, look and feel, and navigation maintained when site editing is rolled out to a wider group?
- How easy does site editing need to be in order to get people involved?

Is web content management relevant to you?

Most companies now understand they need to be 'web-strategic' in their thinking. There is a great deal of competition for mind share, and an increasing pressure from existing customers, prospective customers, partners and suppliers for more varied online information than ever before.

Budget for web projects are typically constrained (as with all projects!) and require a compelling return on investment. Web projects that seek to drive down costs and enhance the effectiveness of your organisation are much more likely to win approval from senior management and internal departments. Building content management into a web architecture, or improving an existing inflexible CMS, is one such type of project: it has tangible cost and productivity benefits.

These benefits include:

- Content authors and owners edit websites directly, removing publication bottlenecks and reducing spend with third party agencies or internal IT teams.
- A content management system can be used to manage resources across multiple web-based systems, such as public websites, extranets and intranets. This improves knowledge sharing, information accuracy and productivity, at the same time reducing the cost of ownership.
- Costs are saved by making content available online that would ordinarily be published offline.
- Online information is easier to keep current and relevant, which makes for a more engaging experience and encourages repeat visits.
- Non-office based staff or partners can edit content, which can improve productivity and help to meet flexible working initiatives.

This white paper explores these benefits in more detail, and looks at the practical considerations involved in implementing web content management.

What is content management?

Content management is a logical evolution for websites, and is a technique that is now widely used. Accepting that sites often have many pages, and non-technical individuals own the content for these pages, the conclusion is that content owners need a method of editing their content that does not involve programming skills.

In essence, a content management system is a mechanism that allows editors with basic PC skills to easily add, change and delete content on a complex website, irrespective of the nature of the content involved, and the technical details of how the site is constructed. It can also help improve how site users find what they are looking for.

The need for companies to manage their web content directly to keep their sites fluid, without recourse to a web agency or in-house technical staff, has been around for some time. Content management systems have historically taken the form of a client-side application or a separate administration site on the web.

Often such ways of managing content have been limited in their capabilities or have been awkward to use for non-technical staff, and that has impacted the effectiveness and freshness of sites.

A more flexible and current way of giving users content management tools is to provide an in-context system. This is effectively an editable version of the website, where users simply login and browse to the page they wish to edit. They are then able to edit that page directly through their browser. User rights set by the site administrator define who is allowed to edit what pages and elements.

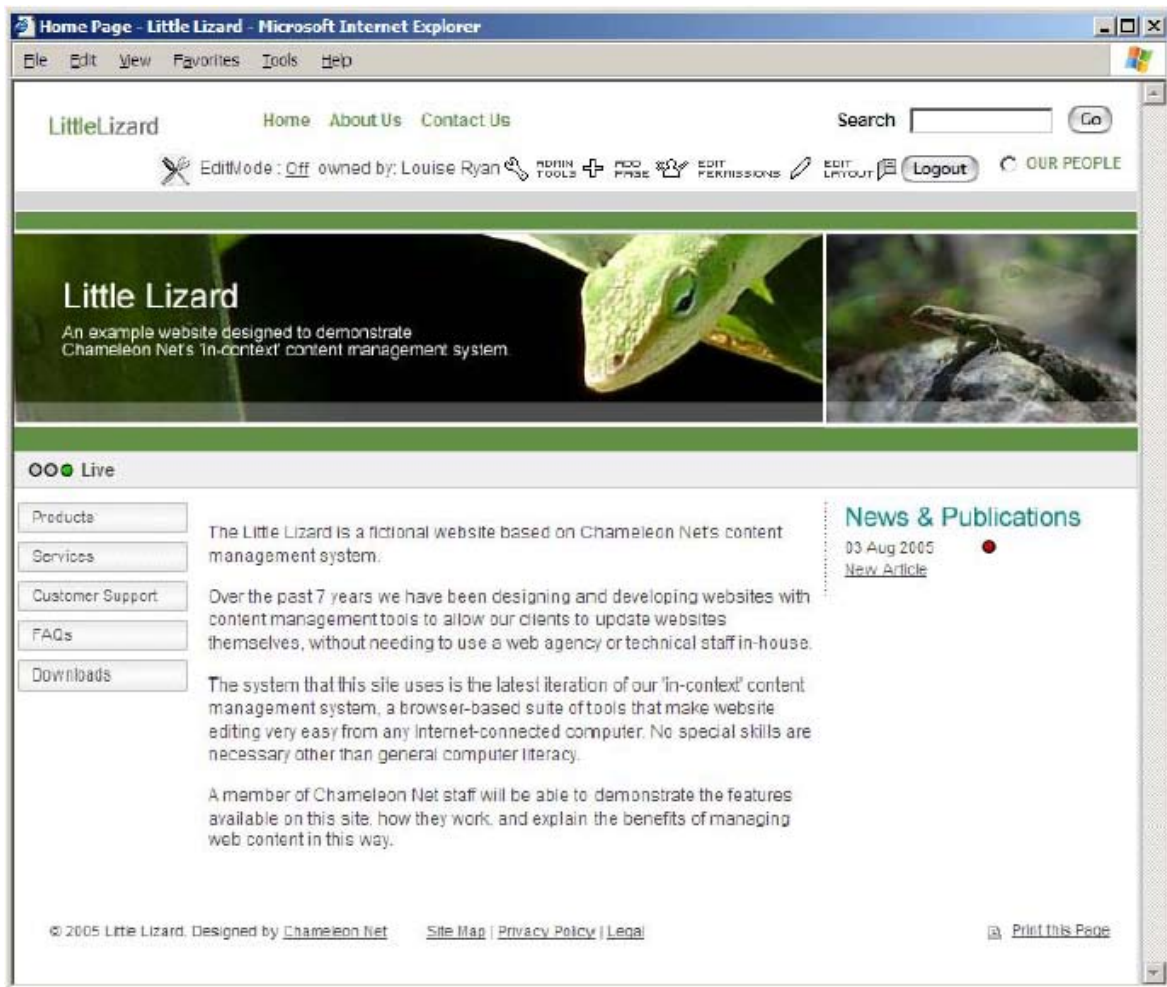


Figure 1: Logged into Chameleon Net's demo CMS site, The Little Lizard

Websites that use a content management system are usually template driven, with the information that is displayed on each page being drawn from a database. This template system allows for careful positioning of page elements, and at the same time the ability to decide which elements are editable, and which are not.

Earlier database-driven sites struggled with the dynamic nature of building web pages 'on the fly' from databases – they did not generate meaningful URLs and were difficult for search engines to index. Today's content managed sites are much more evolved, with the generation of pages taking into account user issues like URLs and searchability.

The benefit of using a content management system is the ability to roll out the responsibility of web editing to those best qualified to do it – the content owners – yet maintaining look and feel, site navigation, important functional code, etc. outside of their immediate control.

This makes for a graphically consistent site, in line with established identity and brand guidelines. It also allows for navigation to be enforced. The usability of a site is an element that is very carefully thought out prior to site build, incorporating best practice guidelines and extensive user testing. Employing a CMS allows the site to adhere to defined navigation, and for the ultimate site owner to manage any changes for additional sections that fall outside of the existing architecture.

Making content easy to find

The best sites allow their visitors to find what they're looking for quickly and easily. This is straightforward if the site does not contain many pages, but where sites contain hundreds of pages and thousands of documents making it easy to find specific content is more challenging.

There are two core ways to find information on a site from the user's point of view – navigation and site search. If sites have poorly thought out navigation, or a search facility that returns the wrong results, then it follows users will have difficulty locating content.

Navigation

Most sites have multiple levels of navigation, which falls into two types:

Top-level navigation – visible at all times, irrespective of the page on the site the visitor is viewing. Top-level navigation should comprise the key sections of your site so that it gives your users an easy way to move between sections, and also to find their way back to nearer the surface of the site.

Context-sensitive navigation – changes dependent on the page the visitor is viewing. This navigation will contain links that are not appropriate for all areas of the site, and so would not be suitable for top-level navigation. However these are tailored to the section of the site that the visitor is browsing to give them a quality experience where related information is easy to locate. There can be numerous tiers of navigation dependent on the quantity of content.

Implementing a CMS can be the impetus to rethink how your site's information is architected, and actively categorise content. Not only will this effectively 'tidy up' your site, but it will inevitably positively impact the site's navigation – when information is purposefully organised in an orderly fashion, then the navigation tends to be more logical.

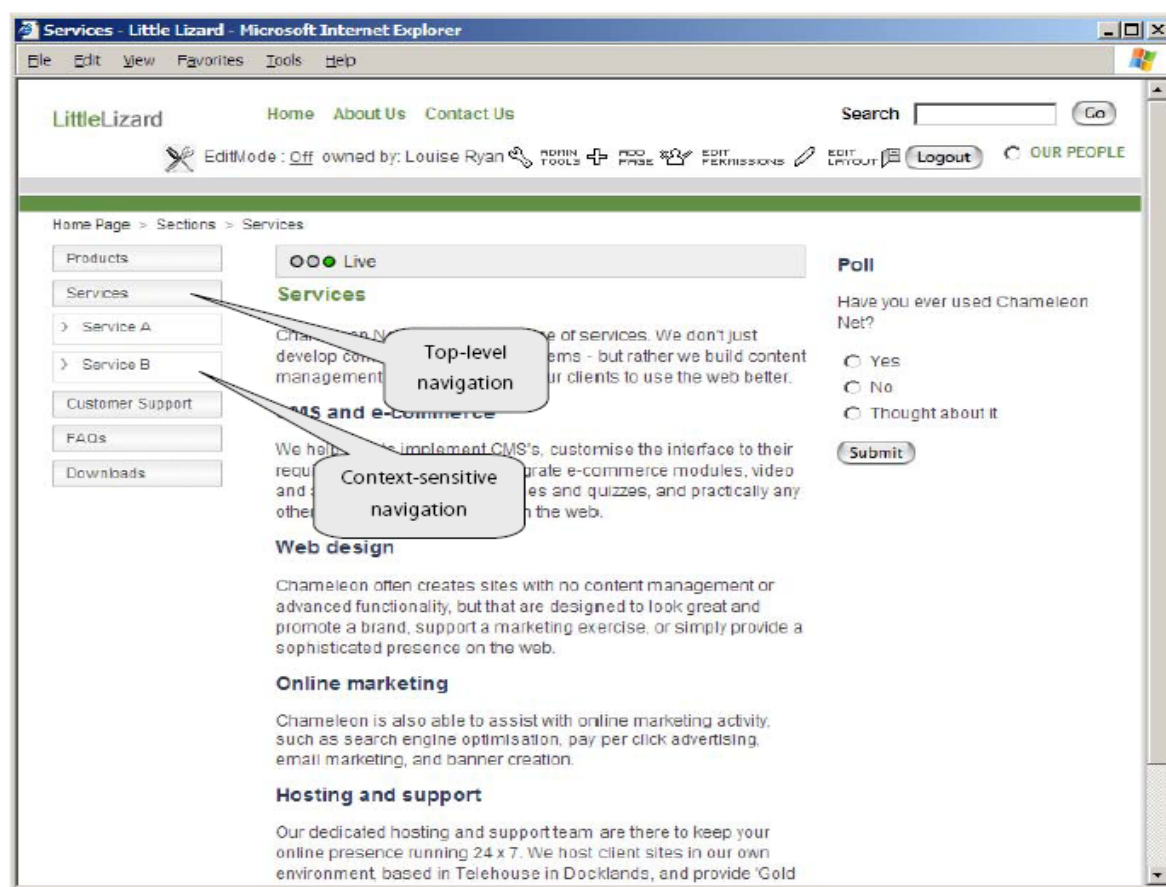


Figure 2: Top-level vs context-sensitive navigation

If appropriate, a further possibility is to allow certain authorized users to add and remove items from the site's navigation, so as to further reduce the bottleneck of central site administration. For instance, a section of the site may be entirely managed by a particular department, the members of which are best qualified to organize the content they manage.

Search

Unlike an Internet search engine, you are in control of your environment and how your search operates and produces results. You can therefore afford to adapt your search facility, and make it as specific as appropriate.

But there is the problem of making sure content can be found by a search. Quite often information authors do not realize the importance of providing supplementary information in pages to make them searchable, or are not technically aware enough to do so. A CMS can make it easy for authors to associate metadata such as keywords, titles and categories with content so it is easily searchable. Because CMS's are now GUI-based, editors need no web programming skills to include metadata.

What is metadata?

Metadata is simply data about data - a set of attributes or elements that describe a resource. For instance, a library catalogue has metadata about books and other items it holds, which includes information on author, title, date of publication, the subject it covers, and how to find it. Metadata allows visitors to discover resources quickly and easily when they execute a search.

There are many benefits in specifying metadata via a CMS:

- Search results will provide more relevant information.
- Information seekers have more opportunity to filter their searches.
- Information providers can influence their rankings.
- The organisation achieves harmony in the categorisation and terminology associated with its content.
- The profile of 'searchability' is raised within the organisation.

Making content easy to manage and publish

A major difficulty often faced when managing websites is that content owners are not technically skilled, and so may not be able to edit it directly.

This is partly due to the increasing complexity of web programming. Most medium- or large-scale sites, while their presentation is fundamentally HTML-based, are usually designed using more complex methods to make the information architecture flexible and manageable. Some examples include employing database software like MS SQL and Oracle, web services frameworks like J2EE and .Net, and scripting languages such as Java, ActiveX, JavaScript and PHP.

This added complexity means that content owners either need a greater level of understanding of web technologies than in the past, or they need a tool to remove them from the technicalities, and simply put them in direct contact with the content. This is the concept behind CMS.

However, the needs of content owners have driven the development of CMS techniques over time, so that the way in which content can be managed has evolved.

Central information repository

It is common for there to be groups of CMS users who are all stakeholders in the same content, often because they are members of the same department or workgroups.

A CMS manages information centrally, with built-in version control ensuring that everyone knows which is the current iteration of any particular item of content. At the same time, this type system makes it easy to roll back to previous versions, or to schedule new versions for go-live if they are time-sensitive.

Ensuring information accuracy and relevance

In a situation where the task of managing content is rolled out to multiple content owners, most organisations choose to implement an approval process, where an individual (or team of individuals) have the responsibility of checking content authored by content owners against a set of guidelines to ensure accuracy and relevance.

Flexible access

Organisations are increasingly encouraging remote working, and the web-based nature of most CMS tools means non-office based staff can easily manage web content irrespective of their location. In turn, a CMS offers further possibilities in rolling out ownership of content to individuals outside the organisation, who may previously have been required to submit content to a central point for it to be input. This is particularly useful for specialist content, where only a few individuals are qualified to author it, and they may not necessarily be located near to the organisation they are working for.

Where the content meets the guidelines, the approver sends it live. Should the content not meet the guidelines, the owner is asked to re-edit it. This owner can be notified in a number of different ways, for instance by an email from the approver, or by alerts on the system when they login.

CMS Technology

In Chameleon Net's experience, CMS should be developed using a three-tier architecture for maximum stability and scalability. A carefully structured *data layer* forms the foundation of the system, containing content and user information. A *logic layer* is used to manipulate the underlying data and provide an interface between the Data and *Presentation layers*. Finally, the presentation layer formats the information for delivery to site users (e.g. presentation of front-end web pages).

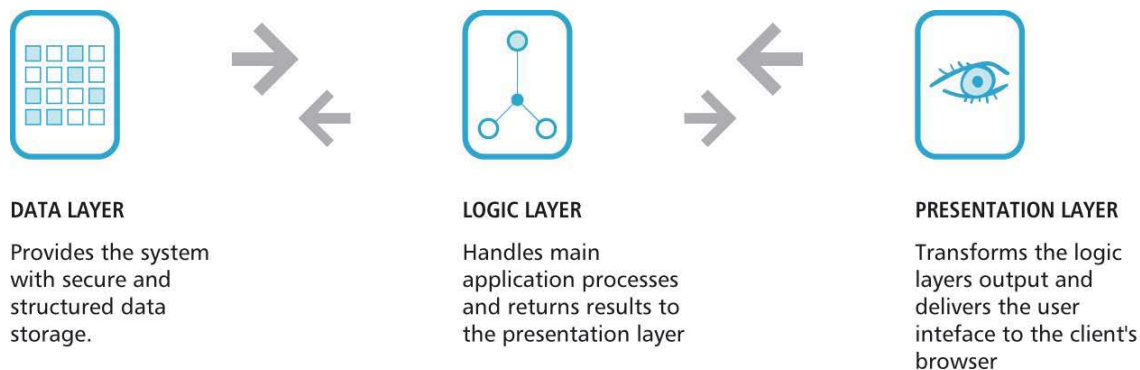


Figure 3: Example interaction of the layers in a three-tier architecture

Data layer

The data layer handles both data storage and data access, using stored procedures to improve database performance and ensure there is a clear separation between data access and logic functionality.

Logic layer

The logic layer is a software component that is integrated with the web server, often using an XML interface. The web server handles transformation of XML data to HTML/XHTML presentation logic, by a combination of programming and XSLT (eXtensible Stylesheet Language Transformations) integration.

Presentation layer

Site pages are created using templates and content pages. A template approach speeds up development, ensures common design and navigation is maintained across the site, and makes site-wide design changes far simpler.

The standard language for delivery of web pages is now considered to be eXtensible Hyper Text Mark-up Language (XHTML), which is simply an XML-compliant form of HTML. It is backwards compatible with the vast majority of browsers, while newer browsers such as Internet Explorer (IE) 5.5+ and Netscape Navigator (NN) 6+ provide complete support for the standard. If necessary, XHTML can also be parsed as XML, which is not the case with normal HTML. The result is a far more flexible and standardised method of encoding web documents.

Internal and external content - where the lines blur

The ubiquity of the web and an increasing reliance on Internet technologies means there is a growing trend for organisations to place services online. This applies to both internal and external users.

Web-enabled applications provide users with greater flexibility and simplicity in the way they work. Client software vendors have recognized this trend, Microsoft and Adobe for instance, and are making the navigation of their programs similar to that of a browser because users find it so familiar.

This trend towards 'browser-based everything' has an effect on deploying a CMS for web content. It is easy to see a public website as just that – public – and pigeonhole a CMS into managing content simply for that website.

The more requirements a CMS can fulfill for your organisation, the better return on investment you achieve. A typical scenario is that a company will have content that is appropriate for external users, content that is suitable for internal use only, and content that is appropriate for a defined group of external users (e.g. partner companies).

Developing a CMS that provides content to different users allows for the segmentation of content, and the ability to deliver it to disparate user groups without implementing separate systems. See figure 4 below.

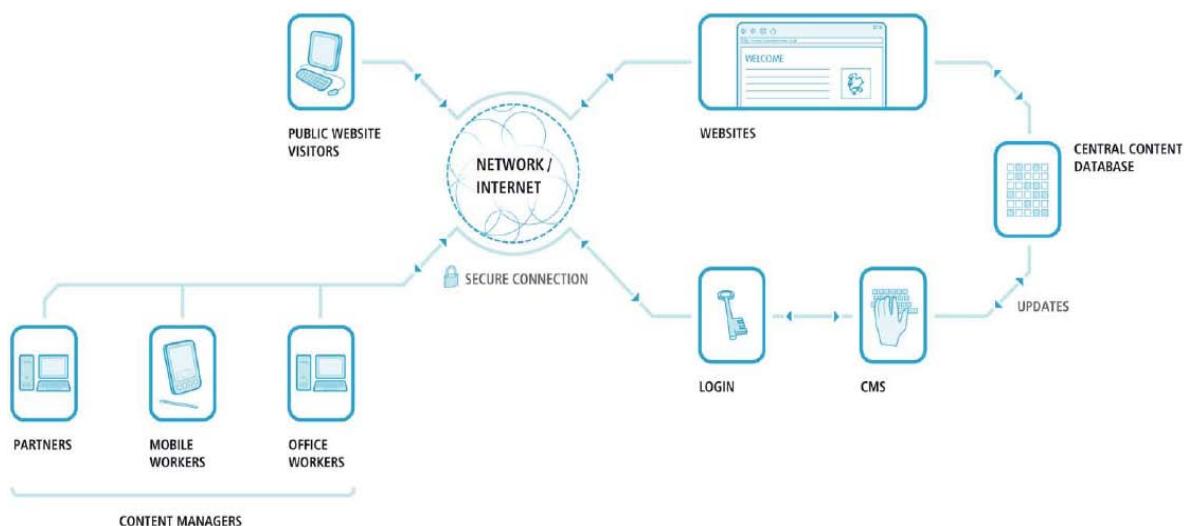


Figure 4. Multiple user groups can use a common CMS to manage their content

Ensuring content security

As these lines between internal and external systems blur, it is crucial to maintain security.

Access control

A CMS that is publicly accessible, and potentially permits use by non-company employees, should have a steadfast method of access control.

Methods of securing access include:

- One user account per person, rather than sharing login details.
- Changing passwords regularly
- Using 'strong' passwords – i.e. alphanumeric containing more than 8 characters
- Where possible using supplementary safeguards, e.g. allowing limited access to users with non-corporate PCs.

Data privacy

It is equally important to guarantee that information is not intercepted in transit, particularly if it is sensitive, or internal-only. Most organisations find that SSL (Secure Sockets Layer) encryption is adequate for most scenarios. Because almost all web browsers have the capability to handle SSL-encrypted sessions, this is a very simple solution. For especially sensitive connections, it is also common practice to use an IPSec VPN.

For remote workers editing content on non-corporate PCs (e.g. at home or in Internet cafés) cleanup software can be used to make sure that no content is left in the cache or in temp files on those PCs.

Security and hosting

If your website and CMS are hosted outside of your premises, then it is essential to select a hosting provider that has a tight security infrastructure in place to protect your content from hacking, virus infection, denial of service, and general misuse.

Aside from reactive security measure, your provider may also offer proactive services. Common proactive security technique include monitoring the environment for unusual activity, taking regular backups to ensure disaster recovery, and penetration testing, which checks your site's security by using the tools and methods of hackers.

Cost savings and improved productivity

Typically, organisations that have built a simple web presence to reflect their business online reach one of the following scenarios:

- An in-house webmaster or IT team is tasked with maintenance of the site, and they often the staff with the relevant technical ability. The webmaster's or IT team's time becomes increasingly in demand as a greater amount of content is published online, and a greater amount of stakeholders are involved. There becomes a bottleneck for publication of content, updates take an increasingly long time to be applied, and so the site is slow to react to visitors needs.
- There is no one with the technical knowledge in-house, so an agency is contracted and retained to update the site. The same situation in terms of quantity of content and number of stakeholders is experienced, and so there is a variable time delay (depending on the agency) between content being produced and being published. More importantly, the more content that needs to be published and managed, the higher the cost to the company in agency fees.

Taking the opportunity to roll out the maintenance of web content to the content owners not only reduces the publication bottleneck by putting the onus on the content owner, but also reduces the overall cost of ownership of the website. Agency fees are reduced – their involvement necessitated only for structural and code changes – or in-house webmasters have more time to concentrate on technical tasks.

A benefit that inevitably ensues from improving the ease by which content can be published and managed is the scope of content that can be made available online. When the management of content is distributed to those that own and care about it, this has the effect of improving the quantity and overall quality of content across the site.

In turn, the more an organisation relies on online and soft-copy content, the less they need to print hard copy materials. Printing is a costly exercise. There is always the temptation to over-order because of the economies of scale involved, and the fear of running out. The printing process then needs to be repeated when the content goes out-of-date, which leaves excess printed materials wasted.

Shifting the company focus to electronic content, with a minimum of printed information, leads to a more efficient way of working and real cost savings can be achieved. At the same time this allows for flexibility to changing market conditions and customer needs, with the freedom to amend content quickly without financial penalty.

Reacting to usage trends

Successful website owners carefully scrutinise their visitors' activity, using that information as marketing intelligence, and to further adapt the site.

Deploying a CMS provides an opportunity to get closer to site visitors. Allowing content owners direct access to site usage information for sections they manage means they can react immediately to visitor activity. For instance, if a content owner sees that in the course of a week there have been numerous searches for a particular term which does not have any related content, they can remedy the matter by rapidly publishing appropriate content, or adding keywords to existing content.

Website owners can also monitor usage activity by content owner to see how frequently content is edited, who are the most active users, and what features of the system they use most.

The website owner can then use this information to see which areas of the site change most and least, and coupled with visitor usage patterns this can form the basis for the future architecture and direction of the content of the site.

Content owner activity statistics also give a strong indication of the value of investing in a CMS – for every page edit, there would previously have been an associated cost in the shape of the time of a web agency or in-house webmaster.

Summary

As discussed in this white paper, an in-context CMS can offer many benefits, particularly if:

- You have multiple content authors who could potentially edit the website directly.
- You employ dedicated staff to keep up with the task of maintaining website content.
- You spend a significant amount with a third party or internal IT team to maintain website content.
- You have an existing CMS that is inflexible or difficult to use.
- There is an increasing amount of information that you would like to publish online.
- You spend too much time editing your website at the expense of other important tasks.
- You have flexible working initiatives that mean you need to roll out content management to authors outside of your premises.
- Your customers or users want to see more of you resources online.

Chameleon Net has extensive experience in developing web applications, and we understand the many associated issues. We would be pleased to talk with you about providing a CMS that matches your specific requirements.

Alternatively, if you already have an off-the-shelf product that provides most functions but you want to adapt it to meet your needs, we are able to offer consultancy and development services to help.

Visit <http://www.chameleonnet.co.uk> for more information about our services. Alternatively, please contact us on 020 7332 6360 or by email at info@chameleonnet.co.uk.

We would be pleased to hear from you!

