The Gilbane Report

White Paper

Making Content Management Work in the Enterprise

The Importance of Unification, Usability, and Adaptability in the Deployment of Enterprise Content Management Technology

Bill Trippe
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context media

Executive Summary

If organizations are going to successfully manage content across the enterprise, they are going to have to overcome several practical obstacles that have not been easily addressed by first- and second-generation content management projects.

First, they have to give authors and contributors ready access to all kinds of content. This means using content management technology that sees beyond a single repository or data type and provides access to distributed content assets. Enterprise Content Management strategies must adapt to the continually growing, decentralized nature of the Internet. As organizations grow and change, the technology should accommodate newer systems, additional repositories, and additional data types. Ideally, content authors should have a simple, unified view of all content assets, regardless of where they reside or in what format they are stored. Moreover, the ability to monitor, discover, utilize, and track and report on content usage must be possible in real-time to keep pace with today's real-time enterprise, channel, and customer demands. With broader, more immediate user access comes added security and control issues. Managing content in the extended, real-time enterprise requires flexible tools for access control.

Along with broad access to content, enterprise content management technology should support familiar tools for creating, updating, and enhancing content. An author should be able to use a word processor of choice, for example, and a graphic artist should be able to use an industry standard image-editing tool. Perhaps just as importantly, the technology should not impose complex and monolithic workflows—one-size-fits-all approaches that don't take into account the varied requirements and workflows between users across an organization. Indeed, the monolithic workflows often imposed to try and make an "enterprise" solution work are often the very reason they fail. Additionally, users should not have to deal with different user interfaces and tool sets for different repositories. While features sets and specific functionality are important, a high degree of usability is even more important. Content management technology works best when users are able to easily, continuously, and productively interact with enterprise content.

Finally, for an organization to successfully implement enterprise-wide content management, the chosen technology must work well within the broader technical framework that is emerging. Content is becoming an increasingly important part of an organization's assets, and, as such, it should be ready for integration with many other enterprise applications—Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) to name two. Therefore, content management technology must be adaptable, using industry standard platforms and tools to ensure successful and moderate-cost integration.

Organizations have invested heavily in content. Significantly, this investment has at least two components—the investment in the content assets themselves and the investment in any earlier generation content management technology. The only way to achieve a return on this

investment is to provide authors and other contributors with tools and interfaces they will be willing to use to continue to create and update content. Significantly, these tools can't be imposed by applications outside the domain expertise of the author. The three factors we have discussed here—unification, usability, and adaptability—make content management technologies better able to extend the value of content.

Context Media's Interchange Suite™ is designed to blend a unified view of distributed content with usable and intuitive tools for managing, utilizing, and distributing that content. It has a simple user interface that is effective because it allows different users to use familiar tools and workflows. At the same time, it is built on an open, flexible architecture that uses contemporary programming models such as Web Services to enable low- and moderate-cost integration with a variety of systems. The Interchange Suite has essential features for organizations that hope to maximize their investment in content and content management technology. This includes the key requirements we have identified here of unification, usability, and adaptability.

The Content Management Problem

The recent focus on "Enterprise Content Management"—or ECM—has provided a useful backdrop for organizations trying to understand their content management needs. Companies are increasingly aware that content management is not a monolithic problem, where one data type in one repository needs to be managed. Indeed, organizations are coming to terms with just how much content they have, how many forms it comes in, and how many places in an organization it resides.

When they really dig in to the problem, organizations begin to uncover needs for use and reuse, requirements for publishing to many formats, and complex and overlapping workflows. While first-generation content management applications—especially those for Web Content Management (WCM)—often only had to deal with a small set of data types, the newest content management technologies need to deal with many data types residing in many repositories and need to be distributed in many forms to many audiences.

Moreover, there is a new awareness of both the personnel costs and the technology costs associated with owning and updating content. Some organizations are entering their second or even third generation of content management technology, and are still determined to solve the problem but are more cost-conscious than ever. As a result, organizations are sharply focused on getting the most from their current investments, and making very careful decisions as they look at the next generation of systems for content management.

70% of the content within the enterprise is not managed by a Content Management (CM) or Digital Asset Management (DAM) system, despite the significant value inherent in these unstructured assets. This lack of management is partly because organizations are still getting content under management, but it is also because of the cost of using earlier-generation systems. These systems have often proven to be too complex, and the costs ended up outweighing the benefits.

Fundamental Challenges of Content in the Enterprise

While smaller enterprises and individual departments may be able to target a discrete problem—the requirement to update one kind of content to one audience—the larger enterprise is almost always facing multifaceted requirements.

- *Multiple repositories*. In the extended enterprise, content and related metadata likely resides in more than one repository—file systems, databases, and existing CM, DAM, and Document Management (DM) systems. First-generation content management systems often required all the content and metadata to reside in a single repository, but newer systems must deal with widely distributed content. A reality of the Internet-enabled world is that *the network is the repository*, and solutions must be architecturally supportive of this fact.

- *Multiple formats.* Content management is continuously embracing more types of content. Early Web sites expanded from HTML text and bit-

mapped graphics to include audio and video, and Intranets quickly became document repositories. Enterprises now require comprehensive management of many kinds of content.

- *Multiple user types.* Gone are the days of the Webmaster, when a single, highly skilled user was responsible for creating and updating all the content on a site. This proved to be a bottleneck, of course, and the bottleneck persisted even as larger, specialized teams were assembled to "maintain" the site. In fact, the true requirement is to allow business users to create and maintain their own content. This, then, implies that different users, with different skill sets, will need appropriate tools and interfaces for interacting with the content, The specialized Web professional requires different tools than a business user who is only occasionally updating certain content.

- *Multiple output devices*. Web content management applications have always had to deal with multiple browsers, with support for variants of HTML and style sheet technology such as Cascading Style Sheets. More recently, there has been an explosion in output to smaller form-factor devices, such as cell phones and Personal Digital Assistants (PDAs). But content management systems still struggle with the oldest problem of all—output to print formats such as Postscript and PDF. As organizations look to truly automate content management and production, they must support all kinds of output, from Web to wireless to print.

- *Multiple relationships.* Enterprise content is directed at many internal and external audiences. For a manufacturing company, certain product information is meant to be liberally shared with everyone from the employees to the potential buyers, but other sensitive material may be suitable only for internal engineers and selected outside suppliers. Managing the flow of information within these relationships can be time-consuming, costly, and prone to error. However, the right content management technology can provide the right controls and security for protecting sensitive information, while also still automating the wide distribution of other content to many parties.

- *Multiple workflows.* The larger the organization, the more likely that content is created, updated, and managed by different users, in different parts of the organization, using differing workflows. The press release being posted on the company Web site might follow a relatively rapid and straightforward workflow of creation, followed by review and posting, among a small group of management and executive employees, while an engineering drawing may have a long, complex, and iterative workflow among internal engineers, outside suppliers, and selling partners. Content management technology must be able to model and support many workflows. More importantly, *content management technology must work in concert with the specialized workflows of other systems*. For example, if a CRM system requires access to content at various points in a workflow, the content management system should support the CRM system workflow, without requiring additional work or complexity on the part of the user.

Taken together, these requirements present a fundamentally different and more challenging problem set than that faced by earlier generation content management systems. A truly "enterprise" approach to content management is a broad, complex problem that goes well beyond the capabilities of WCM, DAM, and DM. Indeed, these individual systems often have proven to be best at quite specialized operations within an enterprise, leaving unmet the broader challenge of providing users with a unified view of all enterprise content. Ideally, users should have access to what is often called the *real-time enterprise*—a current, seamless view of all enterprise assets. Users, with unfettered access to the real-time enterprise can accelerate decision-making, increase informational velocity, and ultimately improve organizational ROI. Such a unified view enables the real-time enterprise.

Why Usability Matters

Gartner and other analyst groups have recently been reaching similar conclusions about enterprise content and the need for content management. Content is important to the bottom line of all kinds of organizations, so content management technology should support the value that needs to be created and maintained in enterprise content. For organizations in the "business of content," such as publishing and entertainment companies, this is obvious: the content they create is their value.

But enterprises of all kinds have content that provides fundamental value. The engineering drawings of an electronics company are their core intellectual property, but technical documentation, product literature, and price lists are also extremely valuable. Just as inventory needs to properly managed and accounted for, so does content. As businesses become increasingly information based, they are in fact becoming increasingly content based. Enterprise content needs to be continuously and efficiently updated to truly reflect the current assets of the organization.

In such a business context, usability then becomes absolutely essential for success, as content management is best understood as enabling technology that allows the business user to easily and continuously create, update, and enhance enterprise content. What, then, are some keys to making content management technology more usable?

- *A single, appropriate user interface.* Users should not have to use more than one user interface to access content. Instead, they should have a single, obvious user interface to all content—one that uses familiar metaphors for navigation and access. The browser provided this kind of interface for an HTML enabled world. But as new systems have proliferated—notably new content management and portal systems—the need for a unified interface has reemerged and intensified.

- *Familiar, productive tools for the content itself.* Business users who create and update content should not have to use specialized tools for what normally would be routine tasks—updating a document, editing a chart, or commenting on work in progress. A business user who normally uses Microsoft Word, for example, should be able to use it when updating a document whether it is in the content management system or not. More importantly, seamless access to enterprise content means that users do not have to know and learn how to discover and retrieve the content.

- *User-friendly tools for metadata.* Content management systems are most effective when they allow the user to easily create and update metadata along with the content itself. Interfaces to metadata should be obvious and easy to use, allowing users to quickly and efficiently deal with metadata.

- *User-friendly and obvious mechanisms for workflow.* Workflow is a mixed bag. On the one hand, some specialized applications are very effective when they employ rigorous, detailed workflows. On the other hand, most applications—and most users—in fact only need rudimentary and obvious workflows with functions such as check-out, check-in, forward, review, and approve.

All of these factors contribute to making content management users more efficient at creating and updating content. Such productivity occurs when users can efficiently access content, create and update both the content and the associated metadata, and manage it under a simple workflow that enforces the appropriate business rules. Finally, solutions that further impose excessive or overly complex workflows are impediments to ROI. For example, requiring a writer to understand a complex DAM workflow that is designed for a graphic artist will in fact make the writer less productive and not more. Workflow should be predicated by the direct task at hand, and not on the capabilities of a given system.

Content and *Extended Enterprise Distribution*

Usability is important, but the goal is not to create content for its own sake, but to create and enhance it in such a way that it is then best delivered to the many audiences that need it. Content assets are valuable inasmuch as they support communication to an organization's many audiences—employees, customers, partners, and investors. At the end of the day, it's all about putting the right content in the right hands—the updated price list distributed to the sales force and selling partners, the updated executive biography distributed to press and investors, and so on.

In fact, though, distribution for a larger enterprise is more complex than these kinds of examples. A useful term is "extended enterprise distribution," reflecting the many points of contact that organizations have with their various audiences. Content management technology needs to support complex, multiple-outlet distribution.

- *Distribution to multiple Web sites, Intranets, and Extranets.* Many larger organizations have multiple Web sites, and the largest organizations have multiple operations, each with multiple Web sites. Newly created or updated content needs to be efficiently (ideally, automatically) distributed to all appropriate outlets.

- *Distribution to widely dispersed and mobile audiences.* Audiences are no longer guaranteed to be accessing content via the browser. Instead, it's becoming just as common to deliver content via email, wireless, and syndication of various kinds.

- *Distribution through partner networks.* As electronic commerce has grown and matured, trading and partner trading networks have emerged to more efficiently tie sellers to distributors and buyers. When a partner network

exists for complex products that are supported by technical and product support content, this trading network then has to support the content along with the commerce. A participating company would then publish to these partner networks, and provide ongoing updates and content to their trading partners. Content management technology must support this kind of distribution, that often includes more subtle and complex rules for access—which partners have access to which content, for example.

Toward *Enterprise Information Integration*

The final challenge of enterprise content management is for it to work effectively in the context of other enterprise technology. Indeed, this has been the focus of much of the discussion of Enterprise Content Management over the recent past. However, most of this discussion has been on how content management technology can be integrated with other major applications, such as ERP and CRM. There is a broader perspective to this problem, which is that, just as users need transparent, flexible access to updated content at all times, *so do applications*. So rather than thinking in terms of "integrating" content management with other applications, organizations instead should think of content management as a key part of their enterprise infrastructure.

Given the key requirement—transparent access by both users and other applications to distributed content—content management technology must be architecturally open and flexible. Content management systems must go beyond standard Application Programming Interfaces (APIs) to include full-featured and easily configured interfaces to common WCM, DAM, and DM systems. Content management systems also must go beyond standard APIs to include interfaces to other key enterprise applications.

Finally, whether or not Web Services end up being widely adopted in the precise form now discussed, content management systems need to embrace the overall emerging trend toward "service-based" software. Content management technology can be logically divided into sets of separately installable and configurable services—capture services, management services, distribution services, and so on. When looking to integrate other applications with such discrete services, organizations face a more manageable task.

ECM: What has Worked, and What Hasn't

While enterprise content management may be new territory for many customers and vendors, the supporting technologies of ECM—WCM, DAM, and DM—are all well established and, by and large, successful. Many organizations have successfully implemented these systems. WCM technology drives the Web's biggest and busiest Web sites, DAM systems successfully support many media intensive organizations, and applications, and DM systems have long track records of success in many kinds of organizations.

Yet ECM has emerged as an umbrella term for these systems precisely because each of these systems has been revealed to have a natural limit. The best WCM systems fall short in DAM and DM features, DAM systems lack WCM and DM features, and, in doing so, fail to address the broad content management problem that most large organizations face. Moreover, the limited feature sets of some of these systems have prevented them from being widely adopted in an extended enterprise. They simply don't offer the features that a wider community of users requires.

As a result, these systems have not often grown beyond departmental or specialized use in larger organizations. When implemented for specialized use, the result often has been highly specialized tools and workflows that have been created with the early internal adopter in mind. These workflows and tools, then, are almost guaranteed to inhibit productivity when they are deployed across the whole enterprise. As one industry observer suggested, "Just because it's one department's treasure, doesn't mean it's another's." The most powerful specialized tools are simply overkill for the average user or content contributor. They are often designed—for better or worse—for the dedicated, skilled employee who is doing something all day or nearly all day. The specialized tools then overwhelm the average user.

The intensive investment in the early adopters has had at least one dramatic effect—an extraordinarily high cost per user for some implementations. Recent research from Jupiter has shown the cost per user and the cost per piece of content to be surprisingly high. According to Jupiter, it has not been unusual for some WCM systems, for example, to end up costing in excess of $20,000 per contributor to the system per year, and as much as $74 dollars for every new piece of content contributed to the system.[1] Such cost results in systems that do not lend themselves to wide-scale use and will not help with the need to address all of the enterprise's unstructured content. This certainly wasn't the plan when the system was first purchased and installed, but the intensive early investment has combined with a lack of widespread adoption to result in such high costs per user and per content object.

[1] Web Decision Makers April 2002, Lead Analyst: Janis Kim & Elif Akcayli.

Finally, first- and second-generation content management systems often simply did not have the right technical underpinnings—the right level of openness, the kinds of standard interfaces the implementers need, and so on. Even if an early implementation proved to be relatively successful on its own, the system may now be hard to modify and hard to integrate, leaving it as an island of automation in an era when interoperability is increasingly important.

Beyond the technical details of these early misses with content management technology, the net of all this effort has been, at a business level, lost opportunity. Organizations have simply not been able to invest enough time and effort into the creation and maintenance of content. This is more than a question of missing out on the earlier Web holy grail of "monetizing content." As we discussed earlier, most organizations' value in content is not overtly monetary—instead, it is tied to such things as productivity, efficiency, and improving ongoing customer relationships.

Summing Up: What is needed from next generation systems?

If content management systems need to provide users and other systems with flexible access to distributed content, then the key overall requirements of enterprise content management technology are *unification, usability, and adaptability*.

- *Unification.* Next-generation content management systems must provide transparent access to all data types and all repositories. They must provide a high-level of automation deal with the variety of systems and data in place. Real time access to information, across the enterprise, is a key tenet for ROI generation from ECM technologies.

- *Usability.* Next-generation content management systems must be highly usable by a wide spectrum of users. They must provide ready access to common and popular tools of choice for creation and editing, and they also must adopt and support existing workflow, or provide complementary workflow and collaboration across multiple teams and organizations.

- *Adaptability*. Next-generation content management systems must be open, adaptable, and based on widely used standards. At the very least, these systems should easily integrate with existing systems, allowing organizations to leverage their existing investments and even extend the value of their investments. Moving forward, these systems should be looking at models such as service-based software, with a goal of supporting the emerging model of "enterprise information integration."

In addition to these core requirements, next-generation systems should fully support *extended enterprise distribution.* Enterprises have many audiences, at many points of contact, accessing content from many platforms and devices. A content management system that supports these core requirements will allow an organization to go beyond simple return on investment to a model of *return on total investment in content*, or, more simply, *return on content.* The idea of "return on content" is technology and processes that enable organizations to realize all the value of their content. Content assets are key intellectual property assets, and, as such, represent a major portion of enterprise assets.

Conclusions

We are convinced of the importance of these three traits—unification, usability, and adaptability—in the success of future content management technologies and projects. The business requirement is increasingly clear and important—users and applications need constant, transparent, and flexible access to all enterprise content.

Context Media is well positioned to take advantage of this trend. Their product line successfully blends a unified view of distributed content with usable and useful tools and workflow. It has a user interface based on Windows explorer that provides ready access to content in multiple repositories in an extended enterprise. Business users are then able to use everyday tools such as those in Microsoft Office to create and update content.

At the same time, the Interchange Suite is built on an open, flexible architecture that uses contemporary programming models such as Web Services to enable low- and moderate-cost integration with a variety of systems. The Interchange Suite comes with full-featured easily configurable adapters for existing ECM and DAM systems such as Documentum, Interwoven, and Artesia. This is in addition to supporting industry standards for networking, interoperability, and database access. The system is delivered as a set of software services that can be purchased, installed, and configured together or as separate elements.

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Context Media, Inc.
One Providence Washington Plaza
Providence, RI 02903
USA

1.401.854.3400 (phone)
1.888.534.2828 (toll free)
1.401. 854.3473 (fax)
info@contextmedia.com