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*Content Management:
Role and Reality*

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Content Management

Role and Reality

A representative of a leading European consultancy began a speech on knowledge and content management by saying, “The problem addressed in this paper is essentially fuzzy.” To spare the “expert” embarrassment, his name shall be kept a secret. [1]

Fuzzy is a term unloved by managers and information technology professionals. Dozens, possibly hundreds, of software companies are trying to find ways to boost their sales. The economic slide after more than a decade of boom times has fostered a sales and revenue crisis in companies that build custom solutions, hook legacy systems to the Internet, and automate certain procedure-oriented functions such as answering customer calls to a telephone hotline, keeping track of sales calls made by employees, and producing Web pages that are personalized by scripts, not programmers.

The greatest risks to an organization are in communications within and among their partners, customers, and constituents. The substance of communications is content. The Internet’s biggest influence is on business process innovation, and reducing communication and interaction costs. Content management has been perceived as a pivotal software and system function.

Most people know what content is. A content management system must provide authoring, routing, updating, publishing, disseminating, archiving, and security functions for different types of content. A single PowerPoint presentation is an typical content object. A PowerPoint usually contains one or more tables, graphics, even multimedia. The content management system must have a way to handle the PowerPoint presentation and the bits and pieces within it. Content management systems typically have tools to manipulate:

- Textual information about products, people
- Binary files (audio, video, programs, pictures)
- Electronic mail with text and rich media
- Facts—structured in database tables or unstructured text
- Numeric information—static or dynamic tables, visual representations
- Metadata — information about information

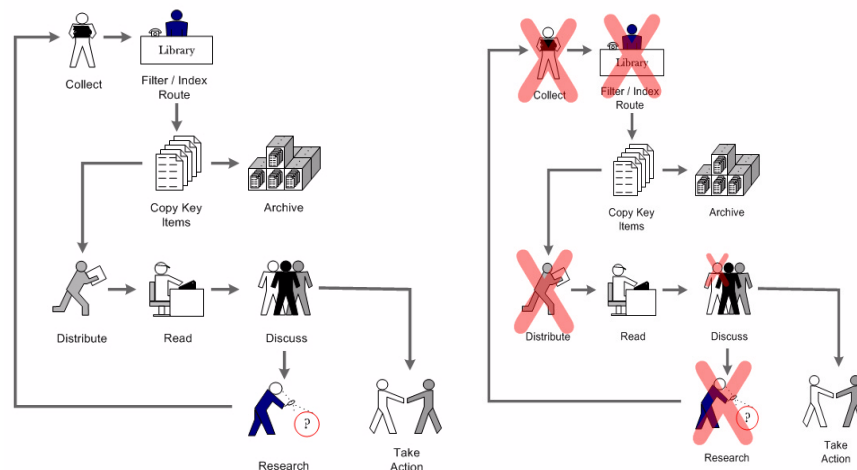
The discipline of content management can have very narrow definitions or broad ones. A presentation at Internet World (April 2002) featured a panel on content management. Among the definitions offered in that symposium from the panel and the attendees were these ideas captured in a much abbreviated form below:

Content management is the collection of policies and technologies that guide and enable corporations to contribute, manage, and share their structured and/or unstructured information. Enterprise content management automates the production and exchange of dynamic, trusted content within and among organizations on a global scale. Enterprise content management includes not only collaboration, contribution, publishing, and archival for the Web content deployed in sites. It includes management of the software code and integration with back-end and other enterprise systems.

The packaging of software is interesting because the approach is an about face from the rah-rah days of Dot Com frenzy. *ROI* or *Return on Investment* is a key concept and usually undefined and not supported with hard data. The term has a ring to it, nevertheless. The idea is that if you buy a product or service, the customer must get measurable value in return. *Efficiency* is popular as well. *Cost effectiveness* vies with *competitive advantage* for the customer's taking the bait and getting the hook as well. Content management (what's content?), knowledge management (what's knowledge?), customer relationship management (what's a relationship?), and the other tawdry wrappings placed on software and system technology are indeed fuzzy.

These concepts are somehow important. Conferences are organized in Madrid, New York, London, and other centers of commerce and thought. Managers are promoted to titles such as "chief knowledge officer," "chief information officer," or "vice president, information and content relationships." Organizations are putting money where their hope is. In a chaotic, unpredictable, and uncertain world, software and systems must be able to bring some order to the behavior of humans engaged in enterprise. The illustration "Old and New Way of Understanding and Creating Content" depicts in a generalized way the method used by people in organizations to convert written or printed content into actionable information. The outcome might be a written document or an opinion shared with a prospect or partner.

Figure 1: Old and New Way of Understanding and Creating Content



The "new" way is to get the same type of payoff from software and systems that resulted from human effort. The idea is that content managements systems will allow fewer people to do more work at lower cost.

One concludes that buyers of software are optimistic. A group of very bright people with a solid list of satisfied customers must have a way to get Web sites under control, provide a usable way to know what one's colleagues have written, or find out the status of a large customer's order now.

Most of these objectives are unmet in many organizations. Individuals working as independent consultants are not excluded. One Canadian information expert said, Most of these objectives are unmet in many organizations, and the situation reflects itself in challenges for individuals. One strategic planning and content management consultant told me, "I see my clients spending more and more time getting less and less value out of the vast 'information landfills' they have collectively built up over time as volume simply outpaces any attempt to apply housekeeping solutions. I'm sympathetic as I, too, experience the challenge of husbanding a growing body of project related material." [2]

One incontrovertible fact: the personal computer has made it possible for people to create a great deal of content. If one believes the calculations of ivory tower scholars at the University of California-Berkeley, organizations today are creating as much data every few months as all of mankind created prior to the personal computer's appearance. Scott McNealy, founder of Sun Microsystems, used to say that the

number of Web pages doubled every six months. System managers use the rule of thumb that storage requirements in an organization double every 12 months. Is any of these statements true? No, but they underscore the problem that content volume poses.

Managing content, then, is necessary. When the primary information distribution medium was speech, no one had the type of content problem facing a Web master in a trade association. Handwritten manuscripts and later printed documents were a problem because they were bulky, difficult to use, and were an excellent fuel. Access and storage were difficult because of the physical nature of the content object. Man coped by inventing libraries, archives, and various disciplines such as records management.

The computer and content were symbiotic. The more computers there were, the more content there was. Content was in paper print outs, long novels by word processor equipped writers such as Stephen King, and the storage devices in computers, on networks, and at managed service providers. Content is increasing at a prodigious rate and will continue to skyrocket because images, video, and other rich content objects nestle comfortably in today's devices. Voice-to-text, instant messaging with photographic images, and assemblies of these text and non-text objects are second nature to mobile phone and personal digital assistant content creator.

Content, especially digital content, can come back and haunt an individual or organization. Oliver North's electronic mail was not "gone." Enron's shredding eliminated the paper evidence but the digital objects remain for the forensic accountants to study. A criminal in London is captured on monitoring devices. Even though the images are of poor quality, the data must be stored, indexed, and searchable in the event the digital camera captures a crime in progress.

Section 1: Definition of Content Management

The meaning of *content management* comes from the context in which the term is used. For individuals trying to update a Web site, content management includes such functions as an interface that allows the text on pages to be changed and point-and-click functions that allow a page to be moved from the author's desktop to the server without the involvement of a systems specialist. [3]

From the point of view of a manager, content management implies control of content processes. One wonders how F. Scott Fitzgerald or Edgar Allen Poe would have adapted their work habits to rules-based content management online systems.

System denotes rules. Specific individuals must approve and change information before content moves to the next link in the chain of content events. Getting approvals the old fashioned way requires an author to print out a text or graphic and walk it through the approval process. Many authors send text via electronic mail and then make a follow up telephone calls to [a] make sure the content was received, [b] if received, read, and [c] if read understood, changed, or approved. Today's cost-efficient manager wants work flow rules to move the text from the author through the approval chain and then to the Web site. Better, faster, and cheaper the catchphrase says. Experienced people know that only two attributes apply to software and systems.

From the financial executive's point of view, multiple Web sites and separate systems for creating Web pages is a needless duplication of expense. In large organizations, there are usually many different ways of creating content for the Web pages on Intranets (intended for employees and selected contractors), the Internet (the public online space accessible to anyone with a connection), and, in some cases, an Extranet (a specialized set of content and services for vendors, key customers, and some other individuals). Content management is a system that allows a single software system to provide the various services necessary to maintain a Web site. Truth be told most financial executives have a dim concept of "authoring."

The chief executive may see the Web as a single cog in a larger machine. The “machine” is the ability to generate revenues, increase cash, and generate buzz about the company’s products and services among prospects with money. The senior executive team needs to have access to orders, invoices, payroll records, and other types of financial data. With most senior executives performing sales and marketing functions, current facts are needed about proposals, contracts, inquiries from prospects and customers, the electronic mail messages sent by another sales person to a major customer, and so on. If content management or any other enterprise sophistry can deliver these results, the chief executive is likely to support the initiative. Most organizations have undergone significant downsizing. Software and systems should be able to fill in the gaps like caulk fills the gaps in a wooden sailboat, correct?

The narrow definition of *content management* as a software or system for managing Web content is valid—to a point. Other professionals will see content management as a way to involve others in the shaping of information that will be available to different constituencies. From the top of the organization, the flow of information within and among the people in the organization embraces many different types of content.

Content management, therefore, takes its meaning from the context in which the processes for authoring, structuring, approving, publishing, and archiving digital content are used. For a one-person consulting firm, Microsoft Front Page performs these tasks reasonably well. Mid-sized organizations may want to focus on moving information to the Web, but have a way to route information for approvals prior to release. Ektron, Inc. (Amherst, New Hampshire). and eMojo Ltd. (London, England) offer mid-range products that provide basic work flow and routing functions.

Senior managers may want to turn to one of the specialized enterprise software systems such as Documentum, Inc. (Pleasanton, California) or Stellent, Inc. (Eden Prairie, Minnesota) where content management extends to a wide range of information, ranging from images created in Photoshop to reports generated by mainframe computers and stored in flat files.

The chief executive may opt to use the organization’s enterprise software system to handle content management chores. Within the last 12 months, SAP Aktiengesellschaft (Walldorf, Germany), J. D. Edwards & Company (Denver, Colorado), Siebel Systems, Inc. (San Mateo, California) and Oracle Corporation (Redwood City, California), among others, have extended their systems to embrace content management.

In addition, highly specialized content management tools are available to handle an organization’s need to keep track of original software programs. Content management systems that maintain versions of source code are usually called configuration management software. Some configuration management features are often included in content management systems when the Web sites make use of executable code for dynamic page rendering, personalization, and other types of functions embedded in the hypertext markup language or extensible markup language for a Web site or page. There are similarly specialized software systems to manage the files generated by computer aided design systems and the databases that often accompany architectural drawings, assemblies, and other types of drawings that reference structured lists of components, facts, prices, and technical specifications.

If we ask the question, “What is content management?” after considering how the scope, functionality, and features of the system that delivers content management maps to different organizational requirements, we can make several observations:

- 1 Content management takes its meaning from the person or the group who have a need to handle text and other types of content object for a specific purpose. Content management can be relatively straightforward when

defining the term from the point of view of a Web master managing a site with a handful of pages and one or two people adding information to the site manually. An off-the-shelf product can be bought, loaded, and used in a matter of days or weeks. Costs are easy to predict and control.

- 2 When more groups and people are involved, content management becomes a software system that must mesh with business processes used by the different people involved. Business processes when codified in software must be converted to rules and procedures. Business processes must first be identified and then converted to rules and the tested. Most organizations, despite their managers' best efforts, do not have documented, efficient business processes. Content management requires that these processes be nailed down and converted to a formal sequence of steps. Costs are difficult to predict and control
- 3 Enterprise software vendors offer tools, utilities, and functions that can be applied to content management. In large organizations, individuals or departments may have implemented a content management system from a specialist software vendor. For sound business reasons, the larger software system will play a role in the organization's content management activities. The collision of the incumbent enterprise software vendor with the one or more specialized content management systems is inevitable. Costs are likely to be high and the potential for internal turf battles even higher.

We can derive a working definition of content management from the foregoing: content management is the software, system, and business processes used by an individual or an organization to author, edit, publish, track, archive, and reuse for in electronic or printed form.

Section 2: The Role of Content Management

Content management plays numerous roles because each user of the content management system sees a different function. The Web master sees the content management system as a way to bring order to the otherwise chaotic, complex, and inefficient processes used when Web sites are manually updated.

The marketing manager sees the content management system as a way to get information in front of prospects quickly. If print versions of the information are needed, anyone can display the Web page with the information and send it to a printer for a hard copy. Marketing professionals no longer have to stand with hat in hand until the Web master or technical staff takes the news release, codes it, and puts it on the Web site. Financial managers see content management as a means of reducing costs and increasing the efficiency of certain information-centric operations. The senior managers of an organization will see the content management system as an important component of the firm's strategic competitiveness.

Content management is able to play the lead role or a supporting role. The same content management system may play both roles simultaneously. When an organization wants to introduce a new product, a number of different functional areas are required. Each of the representatives of marketing, finance, research and development, and legal functions needs different information. Many teams work via telephone, electronic mail, and face-to-face meetings. Content management systems can provide some useful functionality and services to this type of group. Content management, however, cannot handle all of the content-related tasks one might expect a modern system to perform.

Content management, then, faces a dilemma. For those using the content management (hereinafter, CM)

system, the ebb and flow of electronic mail, telephone calls, and the remarks made in face-to-face conversations are outside of most CM systems today and for the foreseeable future. If the team makes use of new collaborative technologies such as Groove or IBM's Web Sphere collaboration functions, additional programming is required to move the content objects from these systems into the CM systems from the vendors mentioned in this chapter.

This disconnect between the CM system deployed at any level of the organization and the newest technologies used by professionals working in that organization comes as a surprise to many. Content management, like many of the other silver-bullet solutions, promises more than it delivers.

The expectations for a multi-million dollar CM system such as one from FileNET Corporation (Costa Mesa, California), Mediasurface Ltd. (London, England) or Percussion Software Inc. (Stoneham, Massachusetts) are high. The reality—like implementations of SAP R/3, Siebel Systems or PeopleSoft enterprise applications—is different. Software marketers have taken prospects to the cliffs above the sea to watch the dawn of new efficiencies. All too often, the customer does not understand the implications of moving business processes to software. The time, the expense, the political turf battles—all teach the customer the painful lesson that reality is different from marketing hyperbole.

The solution is engineered into the fabric of software development and marketing. The vendors shift the argument. Content management exists as a separate segment in the software industry. However, companies such as BEA Systems, Inc. (San Jose, California), Microsoft Corporation (Redmond, Washington), and Sun Microsystems (Palo Alto, California) offer a suite of tools that allow an organization to build:

- A portal—this is an umbrella term for a single browser-accessible page that links an employee to applications, communications, and information needed by the organization
- A knowledge management system—this is a class of software system that includes the functions that generate, retain, share, and exchange knowledge in an organization.
- An enterprise information system—this is a collection of software that shares a common architectural foundation. Using industry standards, EIS allows an organization to weave the many different information, computer, and communication systems into a whole. (Think of EIS as a digital taco shell into which all other systems and data are gathered for easy and tidy handling.)
- A CRM (customer relationship management solution)—this is a class of software that can be implemented at the department level and then extended into an enterprise application or EIS solution. Anything that touches a customer is included in CRM.

What becomes evident is that a certain fuzziness exists with any of these terms unless the definition is agreed upon before talking about content management, knowledge management, CRM, or any other term used to describe software that solves an organization's problem. Without a precise and agreed upon definition of terms prior to looking for software or beginning a discussion of any content-centric function, the project is likely to end in failure. Hard figures are difficult to locate, but the received wisdom is that more than 50 percent of large-scale content centric systems are failures.

The role of content management, therefore, is defined by those involved in the project. No dictionary will save a project when no one knows what it is supposed to do.

Section 3: Lessons Learned

Content management, like any of the newly-minted phrases used to describe software that automates human-centric functions, seems to be a straightforward service. A person writes something, and software puts it on the Web site or generates a printed version of the document.

Online content is unfortunately anything but straightforward. Moving business processes that are informal and undocumented to the formal structure of rules is a difficult job at best and an almost impossible one in many organizations.

The lessons learned by those who have worked to define requirements for CM systems and then implement are not well-documented in the trade publications. Consider these “lessons” as checkpoints, since each situation varies:

- Technology is 20 percent of the job. The real work behind content management or any information-intensive task is figuring out the business processes and codifying specific actions that take place in specific situations. Vendors of CM software derive the bulk of their revenue from services sold to the software customer. “Setting up” software is shorthand for figuring out what to have the system do in a specific situation. The cost comes from the time required to figure out the system and reconciling what really happens with what management believes is happening.
- CMS affects business processes at a fundamental level. Despite radical downsizing in many organizations, a great deal of real work is performed by people. Whether full-time or contract workers, these individuals often innovate to do their job. What people actually and what management wants them to do is a task that requires diplomacy, time, and cooperation. Moving a process from the human to the system is a radical change.
- CMS requires time to do “right”. In the era of 7X24 companies and always-on systems, the perception among many is that content management (CRM, knowledge management, or any enterprise initiative for that matter) will be quick and easy. The age of going faster does not equate to doing stupid things more quickly. Time is needed to understand, plan, research, and implement a CM system. Speed often invites failure.
- Integration with existing ERP applications not flawless. CM (like CRM and knowledge management) systems are immature. Integrating these software systems into backoffice enterprise systems which may have a longer history at an organization is difficult. Even when the exchanges are handled using Extensible Markup Language (XML), exceptions and anomalies are common. The economic benefits of automation can be undermined by having to process exceptions manually until the scripts are completed to handle the anomalies missed in the initial build. When systems collide, the winner may be the incumbent with a long history and hence a greater value to the client. The newcomer may be forced out.
- Low cost means limits to scalability and functionality. At the beginning of this chapter, the relationship of cost and functionality was touched upon. The less costly a CM system is, the less functionality it will provide. The most costly systems, however, require more time and money to set up and deploy in an

organization. Within the next three to five years, CM systems will be less of an exercise in invention and more like installing Microsoft Word on a personal computer. At this time, the cost of CM systems is related to functionality. The greater the functionality, the higher the cost of the system.

- Standards support important. A tornado of acronyms awaits anyone venturing into the standards arena for digital information. The battlelines are being drawn at this time between software developers who support standards-based open source software and proprietary solutions. The battle is not between Microsoft and IBM. The war is more complex and blurred. The key to success is to identify the standards that are meaningful to the industry or business sector in which the CM system will be deployed. The standards used must be those supported by such groups as the World Wide Web Consortium as well as any industry subgroups. Ignoring standards increases the risk associated with any software solution.
- Management support vital. CM, knowledge management, CRM, or any of the content-centric systems will fail if the management of the organization does not support the effort. Projects fail if costs and complexity are not understood and bounded by a tight set of requirements and a well-conceived project plan.

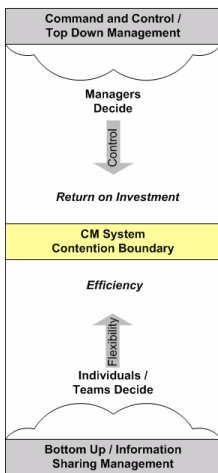
One way to accelerate along the CM system learning curve is to focus on such basics as formulating a plan. Among the key checkpoints in a plan are a requirements document, a statement of work, an estimated cost, a timeline, and a “plan b.” Technologists will want to focus on the role of Web services, database architecture, and rich media. These points are important, but the project manager for the CM system must get the priorities right at the outset. The wrong priorities coupled with skipping over the basics means that the CM project may be headed in the wrong direction. Instead of reducing costs, the CM system becomes a black hole for resources. Although software for a workgroup may cost less than \$3,000 for a basic license, the actual implementation cost may be four times or more. A rule of thumb is that the license cost for the first year should be multiplied by 4.4 to get a quick estimate of the direct fees associated with acquiring and activating basic content management services.

Section 4: The Reality

The reality of content management and the other labels stuck hastily on software modules is that software must be tailored to the cultural, economic, and technical environment. The institutional context—a phrase used by Max Boisot, ESADE (Barcelona)—determines the meaning of content management and, to a large degree, what content management will do, by whom, and for whom.

Figure 2: The Business Process Contention Boundary

Each of the new labels placed on software that allows more and more services to be viewed as functions available from a Web browser helps marketers and creates a tension between the customer and the purveyor of the solution. The customer wants to believe that there is a Santa Claus, a tooth fairy, and Peter Pan. The vendor knows that “solutions” are built from what is sold to the customer. The customer wants a solution that meets specific needs at a good price and quickly. The vendor needs to install what is available and then assemble or write what is really needed. The shift in the software industry from licensing programs that work out of the box to a license with services that are 40 percent or more of the annual licensing fee puts buyers of information-centric software on notice. Content, knowledge, relationships, and other nebulous yet euphonious terms were tough to figure out when epistemology was all the rage long before there were computers.



The management of a firm wants to consolidate software and systems to increase efficiency and reduce costs. The staff working within a “bottoms up” department want the freedom to select tools that meet their needs. Content management as well as CRM, knowledge management, or other network applications must be implemented within a contention boundary. The software and system must meet the needs of different groups with different needs. Costs balloon because considerable research, analysis, and customization in order to deal with business process issues that may be [a] unacknowledged by management, [b] inherently unclear with no “one right way”, or [c] overly complex and, therefore, non-resolvable within the time and budget parameters of a project. Content management, like customer support, may seem a modest undertaking at the outset of a project. After some initial work, the project becomes larger, more costly, and more time consuming than anticipated or explained by the content management vendor / integrator. [4]

Today culture, the complexity of life in organizations and in software itself, and a somewhat desperate search for bits and bytes to replace what humans do best before downsizing, rationalizing, or terminating them. When a skilled professional leaves an organization, what goes with her / him? The losses for which systems are hoped to deliver include content (past, present, and future constructions of facts and data in a fungible form), knowledge (the ability to assemble from many different and often unacknowledged sources), relationships (connections to, among, and between individuals and information), and the interaction of these elements with others.

The reality of content management in a pharmaceutical company boils down to knowing what the expert knew when she / he signed on with a competitor. Content management in a publishing company becomes a system that reproposes articles, art work, and data without incurring more human editorial costs or rekeying. Content management in a distributor of steel products is knowing what orders are in the pipeline and the information associated with inventory, accounts, and sales expenses.

Content management software and the other types of what might be called “salvation systems” are often outcomes of programming jobs for a specific client. Rather than toss the code, the programmers decide to package the modules in hand and start selling a solution.

Three observations are warranted:

- 1 The build-it-as-we-go approach to software—particularly content management software—means that the modules will pick up functionality. Snowballs benefit from this; enterprise software does not. As CM systems become more robust, they are likely to collide with other enterprise applications.
- 2 The issues raised by CM systems are [a] technical, [b] financial, [c] procedural, and [d] jurisdictional. Control of content provides a manager with considerable “influence.”
- 3 The crossing of the boundary of contention is signaled by increased involvement of departments not directly involved in authoring content for the Web or the marketing department. The increased buzz content management often attracts indicates that what was a software acquisition to solve a narrow problem has been perceived as a key function in an organization where various types of data and information are perceived as the keys to success.

Work-flow processes are particularized in each company. Making one-size-fit-all is a tall order in an immature, fluid niche. There are, therefore, hard limits on what content management (and by extension knowledge management) systems can achieve. The limits are different within each organization.

The business processes associated with information, knowledge, and relationships are difficult to convert to a structured, flexible representation. Information and content, knowledge and wisdom are similar to a file compressed to reduce its size. The file cannot be reduced substantially. It is what it is.

A CM system is a concept that fits better in a top-down, hierarchical organization. CM may be almost impossible to implement where the organization is flat, fast-moving, distributed, self-regulating, and composed of loosely-coupled units or individuals.

What is the optimal path forward in this reality? As the lessons indicate, defining the project and limiting complexity are common factors in successful content management implementations. In the business climate that seems to be gripping much of the industrialized world, reduce risk through planning, careful preparation, and clearly defined expectations.

The future of computing is what might be called the executable Internet. Just as the personal computer was the development platform for such pioneer software as Lotus 1-2-3 and WordStar, the Internet is the development environment for today's innovators. Content is the muscle and sinew of applications for the executable Internet.

Coupled with this x-net is the real-time enterprise. The idea is simple. The proliferation of wireless devices and easy, low-cost connections in the United States and a handful of other countries allows prescient managers to make computing and communications available to every employee. One benefit is that information and access are available anytime and almost from any location. The more streamlined business processes will exploit the x-net in order to have a competitive advantage over organizations that are time-constrained. With data available in these real-time systems, scripts can examine the content and provide insights into various types of business activities. With a single interface to applications and content, individuals in an organization can perform many of their job tasks more efficiently.

Content management sits dead in the center of the real-time enterprise. Content management is a core business issue. The future of content management is that it will be absorbed into such enterprise functions as the portal, the application server, and enterprise integration platforms. Although change in content management will be rapid and dramatic, one cannot sit on the sidelines. Content management is an important game. Organizations of all sizes and types must play it or find themselves at a disadvantage.

Notes

[1] The curious may want to locate *The Proceedings of Online Information 2001*, Learned Information Europe Ltd., December 2001, page 37.

[2] Interview with [2

] de Stricker, April 2002, de Stricker Associates, Toronto, Ontario. See www.destriker.com for more information.

[3] Those seeking a more textbook-like definition may wish to consult <http://whatis.techtarget.com/>.

[4] Graphic based on a diagram on page 43 in *The New Craft of Intelligence: Personal, Public, and Political* (OSS Inc.: Reston, Virginia, 2002) by Robert D. Steele,