The Gilbane Report

White Paper

Delivering content that makes a difference

Local control facilitates informed decision-making by giving users access to highly relevant and timely information

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INMAGIC

Executive Summary

If organizations want to fulfill their potential they will have to provide users with powerful tools for creating effective *ad hoc* and persistent access to highly relevant content to make the best decisions possible. Many organizations today address this through implementation of enterprise-wide content management systems – systems that focus not on the needs of individual business groups, but on those of the enterprise as a whole. While often meeting a large number of corporate information needs, such systems are seldom attuned to the particular requirements of individual business units within the organization. Such groups benefit enormously from content management solutions designed to meet their local needs. Such a local solution, which can often be self-managed within the business group, maximizes the customization of content to users' particular needs. Tip O'Neill, the late Speaker of the U.S. House of Representatives, once said that all politics is local. The same can be said for effective content management.

In addition to being local to the business unit's requirements, the content must be effectively organized, whether through categorization or vocabulary or some other means. This, too, ensures the content will be as applicable as possible.

Thirdly, such local content management solutions should combine relevant internal and external content. For managers to make the best business decisions possible, they must have access to the most up-to-date information from both internal and external sources. The only time that matters in business these days is real time. To accomplish this end, the solution must have a flexible way to create common information formats and share both the format and the data on the World Wide Web, intranets, and elsewhere.

Finally, the best content management system will be built on a scalable and reliable platform, and will be based on current standards for operating systems, databases, and programming interfaces and approaches. Standards such as XML and SOAP increasingly allow organizations to develop local content management solutions that complement and interface with larger, enterprise-wide systems. The result is the best of both worlds for the business users: access to enterprise systems for corporate-wide content and access to local, self-managed content for their specialized information needs.

The Challenge of Providing Highly Relevant Information

Organizations face a large, growing, and increasingly complex problem: How to meet the information needs of business users. Employees, customers, and partners represent some of the key audiences that require regular access to up-to-date information. To compound the problem, these business users need to access this information in various formats, at both centralized and remote locations, and in the context of different business processes and applications. The ideal system would deliver precisely the right information to a user precisely when he or she needs it and in precisely the right format.

From the user's perspective, the organizational systems—search engines, document management systems, content management systems, portals, *et al*—represent either an impediment or an ally in fighting the problem of information overload. Even the most general query on the Internet can result in a bewildering and unhelpful flood of results. The more specialized the information, the more likely an unfiltered search process will be fruitless. So organizations have invested significantly to bring content under management. This includes internal and external content, as many users require ready access to organization-specific content, content in the public domain, and content available via subscription.

Depending on a user's profession and role in the organization, his or her information needs can be extremely complex and demanding. Consider the product manager in a biotechnology company doing research in anticipation of a new product launch. Not only is scientific literature a critical information resource – and one that grows exponentially – but so are business journals and the Web. Many other users face equally demanding informational needs, such as lawyers, market researchers, and those working on competitive intelligence. Clearly, technology plays a vital role in helping business users find, read, and organize material that is relevant to their needs.

Along with vast sources of external information, business users also need ready, intelligent access to internal data sources. Consider the scientist who needs to evaluate recent internal tests and lab reports, the executive who needs to comb through human resource records, and the lawyer who needs to research past correspondence with a particular client. Business users face an explosion in both external and local internal information.

Enterprise-wide content management systems seldom cater to the specialized requirements of these information intensive roles. Nor should they, necessarily. The typical organization has content in many forms. Increasingly, content management systems must deal with content in disparate repositories and must be able to consume and manage more types of content than ever. Meeting the unique and dynamic information needs of myriad individual business users is often difficult or impossible for such monolithic systems.

An Enterprise Problem, with Pressing Local Needs

"Enterprise content" is a useful term to describe the many forms that content takes in an organization. It is also useful in understanding the many ways in which content *is used* in an

organization. *Gilbane Report* readers have come to understand that enterprise content management is "content management that goes beyond Web publishing to support all types of content for all types of enterprise applications." For a truck manufacturer, this can mean content management technology that supports the complex customer service operation. For a supplier of electrical components, this can be the content management system that produces their print and online catalogs, and works in close concert with an e-commerce solution. In such cases, the value of the content is its ability to support critical business processes.

So when business users look to content management systems to help them with decision-making, are they seeing friend or foe? Are they seeing systems that help or hinder their processes? Some recent market research[1] shows a clear response from current users.

- The overriding concern was that current systems did not ensure that the right people would get the information all of the time. Users cited problems with "keeping the information current," with "trust(ing) the information," with "getting real-time information to all parties," and helping people not "get inundated with information."
- As they look at new systems, these users want improved access to information and increased ease of use. The respondents would like it to be easy for end users to "access information," to "navigate information," to "update information," and to "index information." This was true for the many types of users, "anytime, anywhere."
- They also want to exercise greater control over the management of the content itself, without requiring extensive integration or support from a vendor or IT staff. Users cited a need for systems that are "easy to administrate," that make it "easy to add or delete content," and that emphasize "reliability" and "expandability." Users also cited requirements for "ease of installation and maintenance" and "ease of interface with the rest of our corporate system."

Is this urge for ease of use and greater local control over content at odds with the need for "enterprise content" that can support a variety of applications and business processes? At first glance, it would seem to be. In fact, the two requirements are complementary, assuming that content management technology allows business users a level of control over what content they can access and manage. Consider the marketing and sales groups of a national office supply retailer. The content needs they have in support of effective day-to-day decision-making are clearly very different from the needs of their finance colleagues down the hall. Both groups are well served by an enterprise-wide content management system that delivers corporate information from human resources, corporate business planning and the IT group. But this sales and marketing group needs to share details of advertising programs done by their competitors, sales promotions from the various regions, and other rapidly changing market dynamics. This group is best served by a local solution and one that they can manage themselves with minimal ongoing support required from the systems or IT functions.

[1] Conducted by Wallace and Washburn Inc. of Boston, MA

Bringing Order to Content Chaos

While it is necessary to bring a level of local control to key business users of content, such control is not sufficient. Each user encounters such vast quantities of content and information that they need mechanisms to effectively organize the content in ways that are meaningful to them.

Information overload is not a new problem. Professionals in many fields have been faced with overload for many years, and the problem seems to be worsening. The Internet has exacerbated the problem, though perhaps not for the most obvious reasons. Yes, the three billion Web pages on the other end of the Google search engine are daunting, but the volume of information is less of a challenge than the lack of intelligent organization. How does the average user search through, organize, and ultimately understand such a mass of content?

Ironically, the growth in content has coincided with significant changes in the way organizations support users who need help in using this very same content. In too many organizations, information professionals have given way to a mix of automated systems—search engines, Intranets, Internet access, online subscriptions, and the like.

As these systems have been put in place, the personal computer has morphed from personal productivity tool to communication station to window on the world. Research is increasingly done online; almost from the beginning of the World Wide Web, users developed the habit of first seeking information through search engines. Google is almost everyone's first step in Web searching.

But, business users need more than Google. Content management technology must provide an intelligent mechanism for organizing information. These include categorization technologies and other linguistic tools for improving on search and retrieval. While some content management tools are adding features, many still rely on integration with third-party linguistic technologies. Such integration can be complex and time-consuming—one content source may be effectively indexed and categorized and the next not—leaving many users at an arm's length from key sources of information.

In this light, the requirement for local control overlaps with the requirement for intelligent organization. Users should be able to locate, manage, and bring under their control disparate content sources—without requiring extensive technical integration efforts. Given better local control, users will be able to organize and understand the content sources that are critical to their business efforts. The sales and marketing group mentioned above likely has quantities of internal documents that could be crawled with an automated spider and organized using automated categorization tools. This simple organization of relevant content into a format that can easily be browsed puts the information directly at the fingertips of the individual business user.

Intelligent Tools for Information Discovery

Content management spans many functions. *The Gilbane Report* has recently described five primary functions: creation, management, integration, transaction, and distribution. The information overload problem arguably touches on all five functions, though from the perspective of the content consumer it is largely a problem related to how the content is managed and distributed. The technological solution to the problem, from the consumer's perspective, is also very personal. The market research we cite and our own analysis both

point to the same solution: Organizations need to provide business users with powerful, self-managed tools for creating effective *ad hoc* **and** persistent views of important content.

Content must be somehow *enriched* to allow for automated views to be created. Of course, there are manual processes for enrichment. Authors can add keywords and other kinds of *metadata* to content during the creation phase to allow for later organization. Automated tools for content enrichment are growing in both strength and in popularity. Some take advantage of intelligent parsing algorithms to identify key words, create categories, and summarize lengthy text. Content can be processed by such tools on import to a content management system, while under management, or even when the content is distributed.

Enriched content also then lends itself to better organization on delivery. Content that shares keywords or categories can be aggregated, and business users can be provided with tools such as a hierarchical view that allows them to browse content in some logical structure. Moreover, enriched content leads to better search and retrieval. Search engines can be tweaked to make use of keywords and categories, and such tried and true methods for improving search—such as thesauri—can be better leveraged.

The goal should be improved information discovery. Much as drug discovery makes use of both domain knowledge and automation to accelerate the development of new drugs, information discovery should leverage the business users' domain knowledge with tools to accelerate business processes. The *ad hoc* and persistent views of relevant content are at the core of improved information discovery.

Many Sources, Many Needs

Intelligent organization of content spans the lifecycle of content management, from creation through distribution, and it also spans the many kind and sources of content business users require. And the needs of business users are large and growing. They need ready access to internal content and data. They need key professional sources—journals, professional databases, newsletters, and trade publications. Depending on their field, they may need access to highly specialized primary material and breaking research. Consider the intellectual property lawyer who needs to research a patent, the financial analyst who needs to comb through a company's records, and the clinical researcher who needs to assemble and summarize selected test results. Each of these different business users requires access to specialized information resources – some internal to the organization, some external. A content management system customized to their needs will bring together exactly the correct information sources to meet their specific needs.

Moreover, the information they need one day may not be the same information they need the next day. In a highly competitive market, with shifting business demands, a business user may suddenly need access to a new source of material – a journal to which they had not formerly subscribed or a newly published market research report.

Not surprisingly, the same market research cited above showed that users placed a premium not only on local control but also on ease of use. These users cite a need to quickly acquire, organize, deploy, and distribute high-value relevant internal and external content; all in the interest of making complex business decisions quickly and with high confidence.

In general, the *volume*, *heterogeneity* and *diffuseness* of content have lead to a persistent problem with information management despite the growing investment in content management technology. Thus far, these systems have failed to solve the problem for many

reasons, some of which are related to the technology still being relatively new and some of which are related to the needs of business users themselves. Among the reasons are:

- Not enough internal or external content is under management (only about 20%), as organizations have tackled one silo of content after another, with varying success. The content under management, then, doesn't represent enough breadth or depth to meet the needs of a wide cross section of users.
- The effort and cost associated with adding additional content in traditional, large-scale content management systems have not allowed organizations to get enough content under management even as the potential sources of content continue to grow.
- Content management efforts, especially in the late 1990s, tended to focus on Web delivery at the expense of adding more content and enriching it in ways it could be better managed for applications such as search and retrieval.
- Until recently, content management systems were often at arm's length from software tools that could enhance the information management experience for the end user. Even relatively obvious tools—such as full-text search—often required significant extra integration, and a new data source could mean a whole new integration effort. More advanced tools, such as those for categorization and keyword indexing, have only recently been built into content management platforms.

Taken together, these issues have proven to be a significant impediment to organizations trying to provide better information management tools for business users. As the larger organizations have often struggled to succeed with broadly based content management efforts, the needs of business users have largely not been met.

Specialized Technology in the Larger Enterprise

So, users need improved access to information, and they need this in the absence of the kinds of human support organizations formerly provided. All the while, the volume of content grows, and organizations struggle to get content under management. They may have 20% under management today—and that percentage will grow—but it won't be at 100% by tomorrow. And, as noted before, content is simply too heterogeneous and distributed to perhaps ever be completely managed by an organization. Enterprises are already dealing with multiple silos of content; indeed, content management has a whole new problem set in *integrating* multiple content management systems and repositories in a single enterprise.

Historically, technologies that provided this combination of local control, intelligent organization, and the ability to bring together diffuse information sources have been of two types:

- Large, expensive, and highly specific technologies that required significant integration.
- Desktop or departmental systems that did not easily mesh with larger enterprise systems.

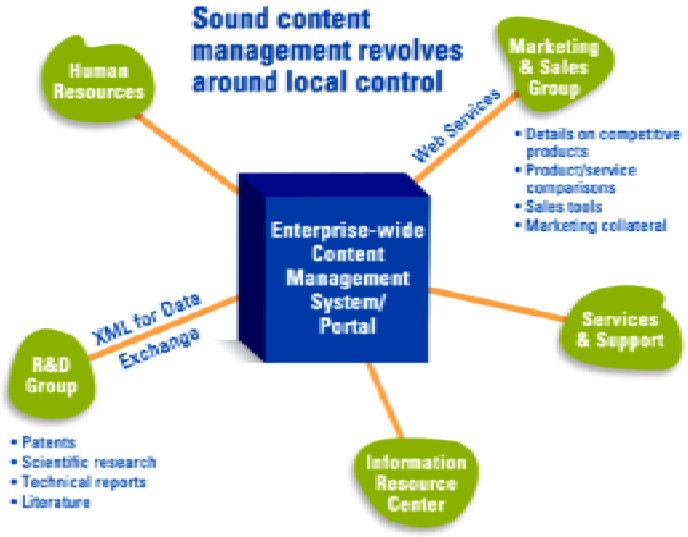
- As a result, these systems did not typically proliferate within an organization. One group may have successfully indexed and managed one silo of information, while another group had provided users with a specialized tool for accessing certain data stores. In both cases, such approaches proved to not scale well and the implementations likely did not keep pace with other enterprise upgrades and changes.

Clearly, systems that provide this combination of features must fit into the technology infrastructure of the larger enterprise. They must:

- Run on one of the dominant operating systems.
- Use industry-standard data access and storage mechanisms such as relational databases and XML.
- Have the kinds of Application Programming Interfaces (APIs) that are commonly in use (COM, CORBA, Java, Web Services).
- Be scalable, allowing organizations to add content sources without constant administration and tuning.

As more organizations implement enterprise-wide content management systems, the need for localized systems that individual business units can deploy to meet their unique needs, grows. Luckily, the technological tools available today allow such localized implementations to readily integrate with the enterprise level implementations. Individual business users gain the benefits of local control, the ability to manage and distribute the content specific to their needs while still effectively integrating into an enterprise-wide system.

Going back to our sales and marketing group, we find they are able to deploy a content management system for their departmental units that, because it is built with industry standard tools, can exchange data and otherwise integrate with their enterprise portal. Local control is maximized for the business' critical sales and marketing functions.



Summary and Conclusions

Despite the important emphasis on enterprise content management, the productivity of the users is still paramount. For business users that require constant access to relevant information, productivity comes from a combination of local control, intelligent management, and broad access to information. To that end, content management technology must support such users, while also working in the larger enterprise, which increasingly requires the use of industry standard and open technologies.

While enterprise-wide content management systems meet certain requirements, business users can and should expect solutions that deliver the kind of dynamic and relevant information that will effectively support their decision-making process. Through the use of open standards, local and self-managed content management solutions can be deployed at this level while easily integrating into larger, enterprise-wide programs.

We have looked at Inmagic Content Server, a new offering from a well-established company in the information management business. Inmagic has been solving information management problems for almost two decades, and Content Server is a new, open architecture version of their core information management product line.

Inmagic Content Server features a robust and flexible database management environment with high-speed search and categorization, making information retrieval, fast, easy, and precise. In keeping with the theme of this paper, Inmagic Content Server can be self-managed with a minimum of support from IT. Web publishing capabilities are built into Inmagic Content Server, offering a better way to publish, access and maintain information in corporate intranets and the Internet. Because it is XML-based, Inmagic Content Server easily integrates internal, external and licensed content, providing a single access point for users. Built on an industry standard database, Inmagic Content Server provides excellent scalability and reliability.

Our analysis concludes that Inmagic Content Server addresses the key requirements we have identified here: it can be self-managed, it is easy to use, it effectively combines internal and external content, and is built on a reliable and scalable platform.

Appendix: Solving the Challenge of Effective Content Management

The information overload problem is here to stay. In response, organizations need to provide business users with powerful, self-managed tools for creating dynamic views of important content. Armed with such tools, business users can most effectively bring together content and business process. In short, they can make better decisions more quickly, and with higher confidence.

The problem set we have described here is best understood through examples. We looked at three organizations provided by Inmagic that use their technology to solve the kinds of information management problems discussed in this paper. In each case, the organizations needed to give users better continuous access to a wide variety of content sources.

Philips Semiconductors: Driving Global Operations by Giving Decision-Makers Access to Key Resources

What key business process did Philips need to enhance?

With 27,000 employees and over 100 locations around the world, Philips Semiconductor faces all kinds of practical information management problems. As the company has grown through both internal growth and acquisition, they have worked hard to standardize technology platforms for all kinds of applications. This included a corporate Intranet initiative where the primary goal was to manage and disseminate information throughout Philips.

What content sets support this business problem?

In practice, certain groups with intensive research needs have made the greatest use of the Intranet. This includes the R&D and legal departments, which need to research patents on existing and planned Philips products, as well as marketing, which conducts extensive market research. In an application such as patent research, source materials include the patent applications, and associated image files. On the market research side, the staff combines internal documents with an extensive and growing collection of outside market research.

What new control or capability could key employees have if this process were enhanced?

Employees need to have up-to-date research information in an easy-to-find and easy-to-consume format. Applications such as patent research and market research work best when the researcher has ready access to all relevant information.

In the past, employees relied on paper records and/or incomplete coverage of topics that needed to be researched. For instance, market research reports would be circulated by hand; a time-consuming, laborious process that left many individual marketing groups uninformed about breaking information. Ideally, key business users would have a powerful yet easy-to-use interface. They would be able to quickly query the content source, compile the results, and digest the information. Their ability to make key business decisions would be greatly accelerated.

How was this problem solved?

Philips implemented Inmagic's technology to create databases of key content. In patent research, the Inmagic repository combines both internal patent documents with external resources such as the United States Patent Office. On the market research side, the staff combined internal documents and the massive collection of outside reports to create a single repository.

How has the organization benefited from improved content management?

- The organization sees significantly increased technical expertise because of the improved access to both internal and external content.
- There is a streamlined product development process because scientists can research a topic early on and avoid redundant efforts.
- There is an increase in royalties derived from existing patents, which can now be more easily and efficiently researched.
- There is a decrease in time and cost to circulate market research to multiple locations.

Berlex Laboratories: Providing Highly Relevant and Individualized Information for Drug Development

What key business process did Berlex Laboratories need to enhance?

Berlex Laboratories, a pharmaceutical company devoted to developing novel diagnostics and therapeutics, has various business and therapeutic units that require constant access to a broad set of authoritative information sources to make ongoing business and technical decisions. This information is crucial to maintaining an awareness of market developments, government regulations, and the competitive landscape. The most compelling issue was how to provide users with personalized information that would allow them to maximize their ability to do their jobs.

What content sets support this business problem?

The company has maintained a corporate library to acquire, organize, and distribute information sources. Over the years, these sources have become increasingly digitized. At the core of the library's resources is valuable information on markets, technology, products, competitors, and industry trends and developments as covered by hundreds of analysts, experts, and media. The collection includes professional databases such as Dialog, Dialog Toolkit, Dialog1, Dialog Monitor, Profound, NewsEdge Live, NewsEdge Topics, Physicians' Desk Reference, Index Nominum, Martindale's, Corporate-ResourceNet, Wood McKenzie, IDdb3, FDC Reports, NDA Pipeline/newsletters, LexisNexis, Hoover's, ILI StandardsWeb, MicroPatent, and Information Express.

What new control or capability could key employees have if this process were enhanced?

Berlex's business and therapeutic units require instant and efficient access to critical research and information. The users had access to this information through the company's dynamic Intranet. However, the library staff was concerned that the users were not getting the most out of the information because it was not as organized as it could be.

How was this problem solved?

Berlex foresaw a need to both provide many information sources (they called it stocking the "grocery store") and providing end users with the ability to create their own personalized information portals ("shopping lists").

Since there is so much information available, the implementation team at Berlex knew they needed to provide users with tools for organizing their own content, such as personalized start pages and a simple search form that would allow the average user to quickly find other content sources of interest and add them to their personalized start page.

How has the organization benefited from improved content management?

Users throughout the organization now have access to the most current and actionable content available, thus leveraging the company's investment in information to the fullest. For instance, Berlex has a competitive intelligence application that provides users with the most current information on the company's competitors and customers. They use a single interface to deliver actionable information to the desktop by contextually merging existing business intelligence with streaming e-content.

Fisher Controls International

What key business process did Fisher Controls Interntional need to enhance?

Fisher Controls International is the world's leading supplier of process control valves and related instrumentation. A process control valve is simply the device that manufacturers use to regulate the flow of fluid, gas or steam in a pipe. Fisher Controls valves can be found in oil rigs, power plants, paper mills and chemical factories. The company employs over 2,000 technical experts in nearly 200 locations around the world. The business problem at hand was to ensure that those 2,000 technical experts have access to crucial data around the clock and around the globe. In addition to establishing a system that would index internal and external papers and reports, Fisher Controls needed a way to manage business development information and track and monitor projects.

What content sets support this business problem?

Fisher Controls needed to organize a variety of documents, including:

- All research papers produced by Fisher Control employees
- Papers and articles purchased from research institutes and publications
- Lab reports and equipment test reports
- Hazardous materials interpretations and project design files

What new control or capability could key employees have if this process were enhanced?

FCI wanted their employees to be able to share information with on a worldwide basis in an easy and straightforward system. Users needed the ability to build databases and search all documents in the system. Time to implementation was also crucial and they rejected the off-the-shelf product because of the required six to nine-month development time, opting instead for a Web-enabled system that was up and running within only 30 days, and saved money because they avoided buying client software.

How was this problem solved?

The new system gave them the power and precision of a database with the speed and flexibility of a full text retrieval system, allowing them to set up 25 databases, including seven Web-enabled databases. Their number of Web-enabled databases continues to grow, making the creation of new applications an on-going process, allowing them to meet changing demands of their employees.

How has the organization benefited from improved content management?

The Global Project Pursuit application is the company's most acclaimed Web-enabled application. It is utilized by the sales force to track capital projects with a value of at least $300 million. It gives the sales force the ability to track bids and ongoing projects in a variety of ways, including comparing projects by industry, cost or geography. It allows the sales force to provide timely and well-researched bids for new business.

The new system also helps Fisher Controls employees work safely in potentially hazardous environments. The Materials Safety Database provides a full text description of the safety issues relating to fluids that flow in all company-manufactured valves. For instance, you type in the word ammonia, and submit a query, you will find a particular valve was used with ammonia at a particular plant, preventing a lot of safety-related problems.

Sponsoring Company Information

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Inmagic Content Server

Inmagic *Content Server* combines the advantages of a robust and flexible database management environment with high-speed search and categorization, making finding relevant information fast, easy and precise. Built-in Web publishing capabilities allow content to be published to a corporate intranet or the Internet. And, unlike more complex content management systems, Inmagic *Content Server* is a system that can be deployed for use quickly and cost-effectively with only minimal support from the IT staff. By taking advantage of the unparalleled scalability and reliability of Microsoft SQL Server, Inmagic *Content Server* is able to provide a breadth of content management solutions – from the single department or workgroup to global deployment of an enterprise-wide system. Utilizing industry standards for connectivity such as SOAP and XML, Inmagic *Content Server* is ideally suited to manage unstructured content with maximum flexibility and complete local control.

About Inmagic, Inc.

Inmagic is a global provider of content and information management software and services that organize and deliver enterprise content, seamlessly integrate both internal and external content sources, and deploy business-critical information to corporate portals, intranets, extranets, and the Web. Specific applications include market, business, and competitive intelligence, library automation, litigation support, and Web publishing. Inmagic's information management solutions are installed in more than 8,000 organizations in over 50 countries.