



Enterprise Information Portals

Enabling Knowledge Management in Today's Knowledge Economy

A Hummingbird Whitepaper



Where the future of e-Business takes flight

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Abstract

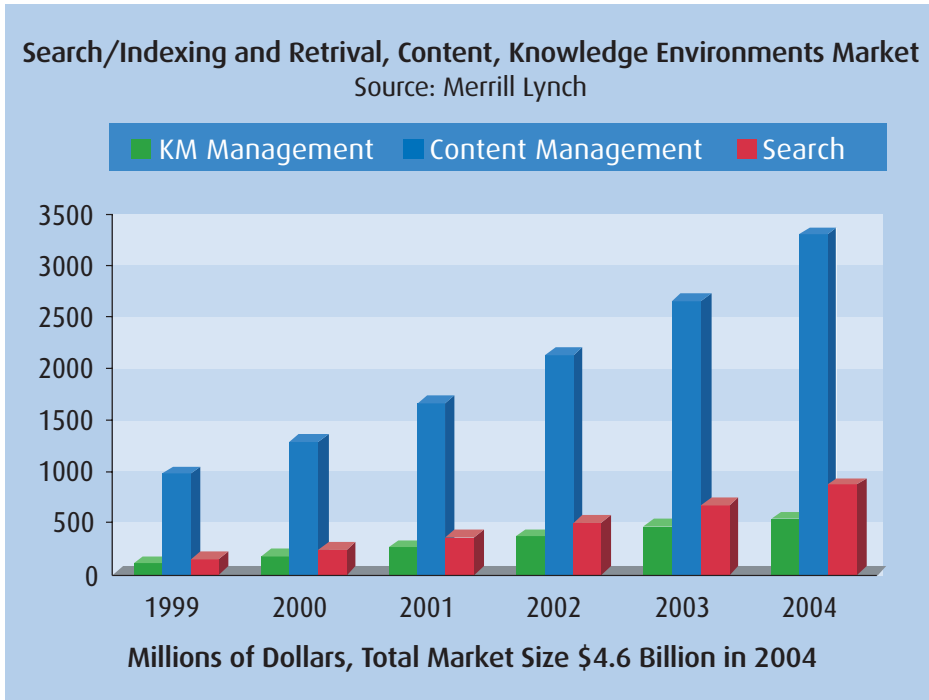
The most daunting challenge facing business management is delivering information to the virtual organization worldwide—information anytime, anywhere, and on any device. Web technologies are the foundation of today's intranets and over the past six years business, government, and education have discovered the power of these technologies as a new computing paradigm for information sharing and collaborative computing. The enterprise information portal (EIP) represents a significant evolution in the advancement of the organizational Intranets and graphical user environments (GUE). EIP technologies are rapidly becoming the foundation for many B2E, B2C and B2B e-commerce initiatives. As a powerful enabling technology, the EIP's ability to aggregate information and enterprise applications into a Web-enabled GUE facilitates many strategic organizational initiatives including collaborative e-commerce, customer relationship management (CRM), and knowledge management (KM) — including intellectual capital management and the development of communities of interest/best practice. The overall objective of this paper is to provide a comprehensive vendor-neutral overview of EIP and KM technologies and illustrate how they can increase organizational productivity and speed to innovation. Hummingbird hopes that this discussion will help identify many KM enabling technologies and be an aide in your decision making process.

Introduction

In July 1999, sixty managers of Siemens' telecommunications division were deposited on the shores of Lake Starnberger south of Munich, Germany. They were told they had to build rafts without using speech. The objective: one of the most seminal aspects of any knowledge management initiative, learning to win by sharing (*see Business Week March 19, 2001*). Knowledge management (KM) is back in vogue and its one of the top organizational information technology initiatives for business today. The challenges associated with implementing knowledge management systems extend far beyond the capabilities of most information technology and line of business managers. KM is much more than technology — transcending the worlds of organizational development, industrial and organizational psychology — KM is all about sociology, anthropology, culture, politics, people, and business processes. Beyond the realms of enabling technologies such as federated search and business content management, knowledge management becomes 95 percent culture and 5 percent technology, and represents significant organizational challenges well beyond what any technology can facilitate. The overall challenge faced by many organizations today is identifying where strategic knowledge (intellectual capital) resides and how to leverage and manage it across the enterprise, group and/or individual.

From a software vendor perspective, today's knowledge management market is highly fragmented and has undergone a great deal of uncertainty because of the confusing nature of its enabling technologies and the inherent organizational and cultural difficulties in their application. According to a recent Merrill Lynch report, the market for enabling technologies that facilitate knowledge management systems is expected to enjoy a 30 percent compound annual growth over the next four years, skyrocketing from \$97 million in 1999 to over \$500 million by the year 2004 (see graph on the next page). More importantly, this forecast clearly reinforces the concept that KM is 95 percent people/processes and culture and not technology, as the majority of technology growth is in information management (business content management) and classification systems.

The knowledge management business drivers are primarily the result of our evolution from the Internet-information age into what now might be termed a knowledge-based economy. The Internet and easy information access has created market chaos for some businesses and increased business complexity for many others. In other words, "If you don't have your eBusiness house in order, customers may know it before you do." Easy access to information anytime, anywhere, anyhow, and on any device has significantly compressed business response time overall. In addition, historically businesses have been challenged by managing and leveraging intellectual capital, and many organizations now realize that their most valuable resources drive home every night.



Industrial Economy— Information Economy— Knowledge Economy

In the past, many KM initiatives failed in part because of the complexity involved in implementing KM systems, organizational barriers, and/or management's failure to address important cultural issues inherent in their organization or business process. For example, if a non-information sharing culture exists within the enterprise, KM may be doomed to failure from the very beginning. Successful KM initiatives today are significantly scaled down, have buy-in at the executive level, and are designed to enhance a specific business process by increasing the productivity of knowledge workers. Productivity can be increased by facilitating information sharing through collaboration, which can ultimately lead to the identification and capture of intellectual assets through the creation of communities of interest and/or best practices. Communities of interest/best practice foster information and in the best of all worlds lead to the creation of new and better ways of conducting business, or in simpler terms innovation.

In most organizations KM initiatives begin with the implementation of information management technologies; which are closely coupled with complementary enabling technologies such as federated search and taxonomy (indexing and classification of information resources). Perhaps the most important advance in knowledge management enabling technologies to emerge in recent years is the enterprise information portal (EIP), or corporate portal. B2E EIPs are rapidly becoming an important component of today's organizational eBusiness infrastructure and are much more than intranets on steroids.

Defining Organizational Knowledge

Before we can actually begin an organized discussion of KM, it's important to define what knowledge is and how it can be captured and leveraged. There are three types of knowledge within any organization, individual, group and enterprise, and that knowledge can be generally classified along the lines of being explicit, embedded, and tacit. The overall challenge that many organizations face today is identifying where that knowledge resides and how to leverage it across the enterprise, group and/or individual. The majority of KM initiatives today usually revolve around identifying/discovering, classifying and indexing explicit knowledge in information systems, such as an enterprise document management system, and/or business content management system. In many cases KM systems also include access to structured information found in databases.

- ***Explicit Knowledge***—knowledge represented in documents, books, e-mail and databases.
- ***Embedded Knowledge***—organizational knowledge found in business processes, products and services.
- ***Tacit knowledge***—undocumented knowledge that is captured during business processes by knowledge workers.

Defining Knowledge Management and its Strategic Initiatives

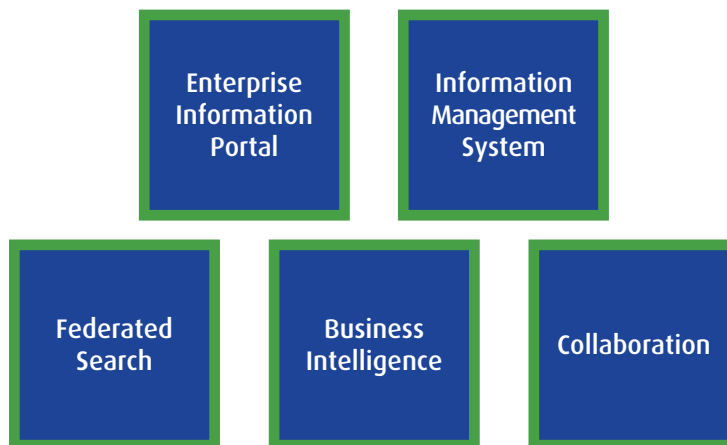
As an organizational initiative, knowledge management is usually manifested in the form of a business system that is enabled by an array of technologies. Today the convergence of knowledge management and business intelligence (BI) is underway in many organizations and KM enabling technologies are a vital part of any customer relationship management system. From an organizational perspective, CRM, intellectual capital management (ICM), communities of interest or best practices (BPM), and competitive intelligence all fall under the umbrella of knowledge management.

Strategic Knowledge Management Initiatives

- Customer Relationship Management
- Intellectual Capital Management
- Best Practices Management
- Competitive Intelligence
- Community of Interest Building
- eLearning-eTraining-eMentoring

One of the greatest difficulties in defining KM is the level of complexity inherent in many of the definitions themselves, and in their scope. This is perhaps the most difficult and confusing aspect of understanding what KM is and how it can be implemented from an organizational and/or business unit perspective. The graphic below depicts the five major technology blocks that are required to build a business-critical enterprise-wide KM foundation.

The Five Technology Blocks of Enterprise Knowledge Management



The Five Technology Blocks of Enterprise Knowledge Management

- 1. *The Enterprise Information Portal***—The EIP, or corporate portal, can be the focal point of an organization's KM initiatives and can facilitate a comprehensive range of functionality including, single point of access to relevant structured and unstructured information, community of interest building, and collaboration. Note that it is not a replacement for Windows graphical user interface.
- 2. *Information Management Systems***—For example, if you don't have an information management system in place that facilitates the organization, indexing, classification of documents, content, and digital assets (such as video and audio files), illustrations, records, policies and procedures, etc., then it will be nearly impossible to build an effective KM business system. Surprisingly, many companies in a wide range of industry segments have yet to build this type of enterprise-wide information system.
- 3. *Federated Search***—As defined in the KM enabling technology table below, this is the ability to search across all organizational structured (databases) and unstructured (documents, records, e-mails, video & audio files, etc.) information sources via a single technology (search engine). This is a seminal enabling technology that facilitates discovery of intranet and Internet information and data sources.
- 4. *Business Intelligence***—Formerly known as decision support, many business intelligence (BI) systems were designed for specific business objectives such as data warehousing financial information for routine data analysis, standard report writing, adhoc querying, OLAP and data mining. Many BI systems are now being deployed to deliver on the promise of CRM initiatives, which are significantly more complex than data warehousing of financial data.
- 5. *Collaboration***—Electronic mail is still the most collaborative technology in most enterprises, however, a new class of collaborative technologies is emerging that can greatly facilitate workplace collaboration and the creation of communities of interest/best practices. These technologies enable virtual workspaces and workrooms that allow members to share documents, e-mails, schedules and collaborative document creation, in effect enabling collaborative e-commerce.

The table below identifies key KM enabling technologies and how they can be applied to address organizational and business unit initiatives.

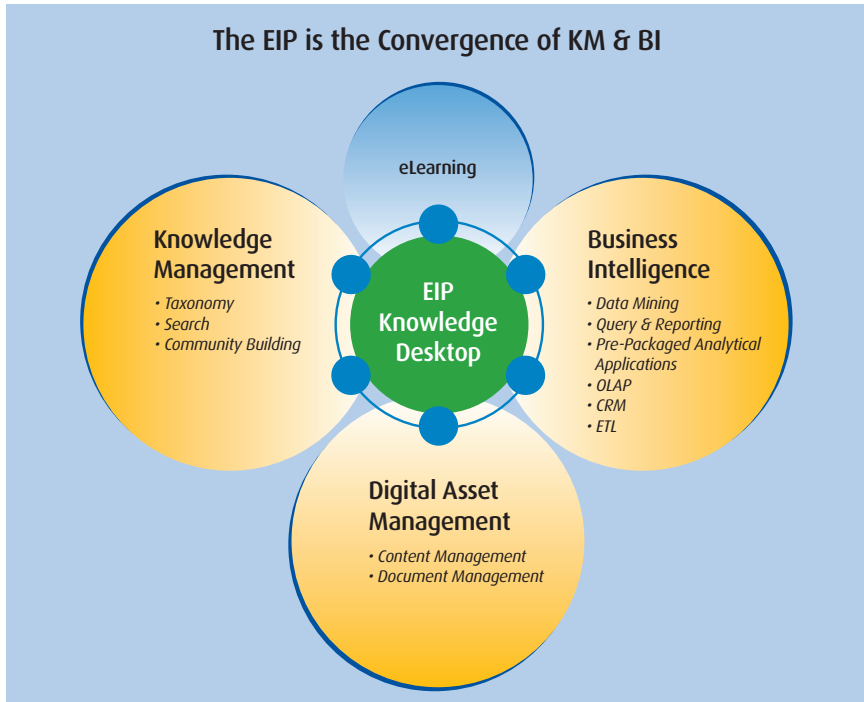
Key Knowledge Management Enabling Technologies	
B2E Enterprise Information Portal	Provides a single point of access to all relevant information and applications, while also functioning as a gateway to communities of interest best practice etc. EIPs can also function as a platform for knowledge networks.
Federated Search	The ability to search across all organizational structured (databases) and unstructured (documents, records, e-mails, video & audio files, etc) information sources via a single technology (search engine).
Taxonomy, Classification Indexing of Information Sources	Indexing of information resources and establishment and/or automation of an information taxonomy for industry specific or organizationally specific information.
Document/Information Management Systems	Organization and archiving of documents, e-mails, files, illustrations, policies, procedures, records, audio files, video files, etc.
Collaborative eCommerce application environments and/or workspaces.	Enable organizations to easily create virtual project team rooms, and/or communities of best practice by allowing team members to collaboratively develop and store documents, tasks and schedules in a secure virtual environment.
Simultaneous collaboration	Allow workgroups and project team members to share information in real-time.
Business Process Management Community of Interest Building	Facilitates best practices and community of interest building by leveraging an EIP front end with threaded discussion groups and collaborative technologies through an EIP.
Intelligent agents-Web crawlers, knowbots	Enable relevant information derived from automated searching to be pushed to the desktop or added to a repository.
Network News & Threaded discussion groups	One of the first technologies of the Web to be employed as a KM system for sharing information on projects and topics. Can also serve as a key technology for facilitating ementoring.
Chat/Instant messaging	A technology that evolved from Internet Relay chat, enables real-time person-to-person interaction.
Automated community building software	A new class of software that automatically builds communities of interest by profiling e-mail and documents.
Visualization software For information systems.	A new class of software that provides more intuitive and easier interface for navigating information systems including Web sites, this new way of viewing information can significantly enhance information discovery and access.
Expert Systems	Another new class of software that connects organizational experts with other members of the community by asking questions like <i>"who knows about this?"</i>

Knowledge Portals and the Intelligent Enterprise

Enterprise information portals are bringing together the worlds of business intelligence and knowledge management into a new, centralized desktop environment—the knowledge portal. In the millennium, the knowledge portal will play a key role in empowering the virtual enterprise and employees by providing a personalized single point of access to all relevant information— enabling better, faster-decision making. EIPs, or knowledge portals, are also beginning to help organizations capture and leverage their intellectual assets by facilitating assembly of communities of interest, best practice, and expert systems within a single, intuitive, Web-based user interface. The EIP should be viewed as an evolving technology platform, and in the future EIPs will incorporate streaming video and audio to include e-learning and e-training components, thereby potentially reducing overall organizational training costs.



Hummingbird Enterprise Information Portal™: Empowering the Virtual Enterprise.



Knowledge Management Functionalities Aggregated within an EIP

- Search/discovery and navigation to information from a knowledge map.
- Taxonomy, relevant indexing and classification of information sources.
- Knowledge network, user interface to communities of interest/expert systems
- Personalization and presentation of relevant information to the desktop.
- Dynamic delivery of information to the desktop via intelligent agents.
- Enterprise application integration

Organizational and Cultural Aspects of Implementing KM

Leading edge organizations have created a whole new class of business managers — called knowledge managers, knowledge environment engineers, best practices managers, and/or information architects to name a few. KM often starts at the top and its most difficult challenge is establishing a culture of getting people to work together and share information. By facilitating information access, sharing, and collaboration, an organization, business unit, or department can create best practices that ultimately lead to innovation and optimization of business processes. Increasing productivity and innovation are the seminal goals of any KM system, which can ultimately lead to increased competitiveness and success in any market segment. If your organization has a culture of not sharing information and senior management is not behind KM, then it is likely to fail. However, some KM initiatives are done under the radar of management and become highly successful, such as the Xerox Eureka project, (see Darwin Magazine February 2001). The Xerox Eureka project successfully leveraged the experience and knowledge of Xerox repairmen and resulted in saving the company millions in extraneous repair costs.

Building communities of interest and/or promoting best practices within an organization is more easily said than done, however, and the major barriers to successful implementation are primarily cultural, not information technology driven. We all live in a highly competitive society and workplace and some employees are not normally accustomed or open to sharing information.

Organizational Barriers to Building Communities of Interest and Expert Systems

- Senior management culture and support — “*Where is the ROI?*”
- Identifying the knowledge base — “*Who really knows about this?*”
- Buy in from knowledge workers and employees — “*What’s in it for me?*”
- Management and distribution of relevant and accurate content — “*Does this really work?*”

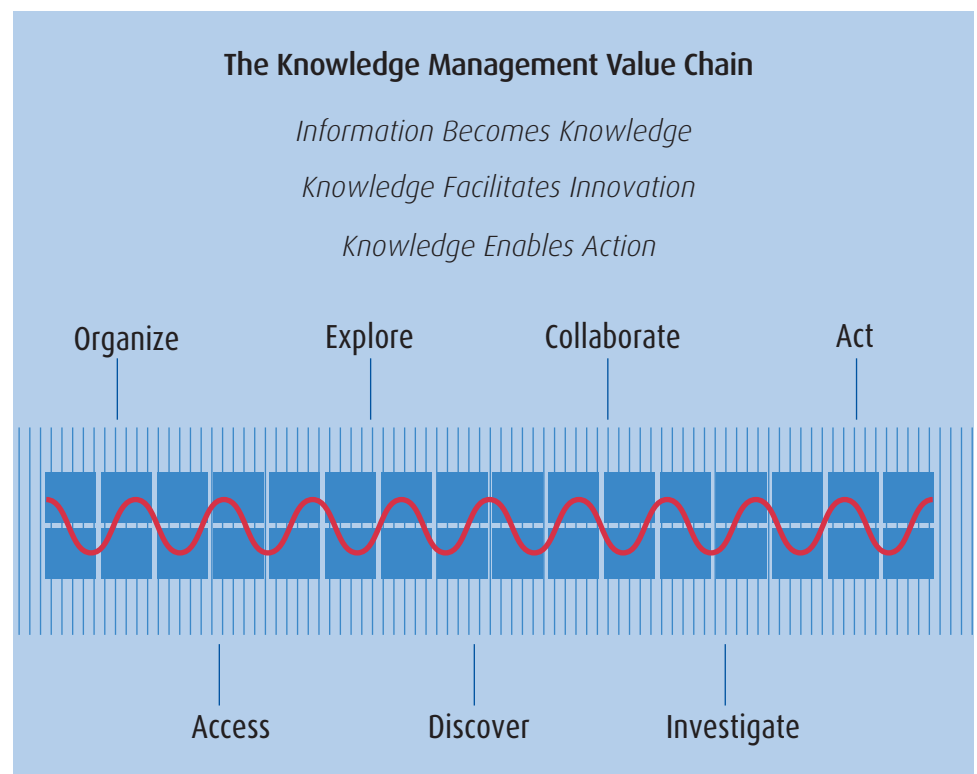
Successful KM initiatives are often focused on strategic business initiatives, and many organizations implement KM systems when they realize that the absence and/or loss of intellectual assets could negatively impact business. Often organizations search for and realize areas where they are vulnerable and are dependent on the knowledge and expertise of consultants and other knowledge workers. For example, a health care organization may have a virtual workforce of consultants in the field and headquarters may have no idea how they do their jobs. Or, a political organization may want to capture and archive the knowledge gained during the process of executing a campaign. This may include leveraging all of the information, documents, advertisements, speeches, and illustrations into future campaigns, however, the real “gold” is in the how to part of the campaign process — not the end-result elements themselves, but the processes and planning that surrounded those elements.

One of the fastest growing and most challenging areas in knowledge management is the capturing of tacit information and intellectual assets through the building of communities of interest. Intellectual capital management (ICM) is an overused term that is different for almost every organization. In an effort to preserve intellectual capital, some organizations video interview all retirees as part of their exit processing – often running into the tens of hours due to the fact that the retiree may have 20+ years of experience with the organization. Obviously, this is an inefficient practice... Today's knowledge-based organization must find ways of capturing and repurposing expertise and tacit information.

Some of the challenges faced by organizations include identifying what is intellectual capital, where it resides within the organization, and how the organization may be impacted (vulnerability) by the absence of this information.

Knowledge Management Value Chain

The following graphic depicts a “big picture” perspective on the organizational value of knowledge management. Before information can become relevant knowledge, it must be logically organized—building block two the IMS system—easily accessible for exploration—building block one the EIP—search and discovery—building block three, federated search. In the simplest of terms many organizations are now in the process of enabling information by essentially data warehousing unstructured data sources such as document and business content management archives.



Discovery and exploration of relevant information enables employees and the organization to act and collaborate—building block five, collaboration—which may ultimately lead to innovation of business processes resulting in increased competitiveness and higher profitability. Earlier we identified the convergence of BI and KM in facilitating CRM initiatives—building block four, business intelligence—with tools such as query and reporting, data mining, and online analytical processing (OLAP), that all enable access to structured information in databases.

Summary

Although knowledge management has become a strategic initiative in many organizations, it presents many and significant organizational challenges to all levels of management, including line of business managers and IT professionals. The confusing nature of the KM market is due in part to the broadness and complexity of the enabling technologies, and how it is defined and implemented in different organizations. KM's limited success in the past has been primarily the result of organizations taking a technology-only approach to those initiatives rather than addressing the salient cultural and organizational issues. Interestingly, when you ask many IT professionals what KM is, the typical responses usually include the first three bullets listed below, and in some cases collaboration.

Knowledge Management in Most Organizations

- Information-document-content management system.
- Federated search (the ability to search and discover information)
- Taxonomy (classification and indexing of information and documents)
- Collaboration and/or workflow
- Community of interest/ best practice/expert systems
- Intelligent agents (for dynamic assembly and personalization of information)

The most daunting challenge facing business management today is delivering information utopia to the virtual organization worldwide—information anytime, anywhere, and on any device. The technologies of the Web created the foundation of today's intranets, and over the past six years business, government, and education have discovered the power of Internet and Web technologies as a new computing paradigm for information sharing and collaborative computing within the enterprise.

The enterprise information portal represents the next significant evolution in the advancement of the organizational Intranets and graphical user environments (GUE). EIP technologies are rapidly becoming the foundation for B2E, B2C and B2B eCommerce initiatives. As powerful enabling technology, an EIP's ability to aggregate information and enterprise applications into a Web-enabled GUE facilitates many strategic organizational initiatives including: collaborative eCommerce, CRM, knowledge management: intellectual capital management and communities of interest/best practice. Again, Hummingbird hopes that this discussion provides a broad and comprehensive overview of EIP and KM technologies, and serves as an aide in your decision making process.

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