

Managing Knowledge for Advantage:
Content & Collaboration Technologies



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Introduction

Now, more than ever before, the returns companies realize are increasingly related to their intellectual assets, and not the tangible assets they manage. Why? Because economic and competitive realities are demanding that companies focus on creating more value from their core business competencies — whether it's product development, customized services, or managing the relationships they have with customers and suppliers. And core competencies are based on intellectual assets, on the knowledge — the collected experience, expertise, and information — of the company's employees.

Knowledge management solutions are the key to building and sustaining intellectual capital assets and using them to create economic value. These solutions, which rely on a combination of content and collaboration technologies, enable individuals, teams, and communities to create, capture, share, and harness knowledge to do the things they do well, even better.

This paper will trace the shift from structural to intellectual capital, define knowledge management, and introduce the concept of communities of practice. It will also describe how content and collaboration technologies can be combined to build a successful knowledge management solution. Finally, it will show how companies are using knowledge management solutions to support their core competencies and solve specific business problems.

The Buzz Behind the Buzzword

Recently, the media has lavished a tremendous amount of attention on an emerging concept known as knowledge management. Though the exact definition of knowledge management is still being widely debated, there is general agreement that the circumstances that gave birth to the concept are fundamental and profound. Knowledge management is not likely to evaporate like some management fad that is here today and gone tomorrow. It is a key competitive tool that is here to stay.

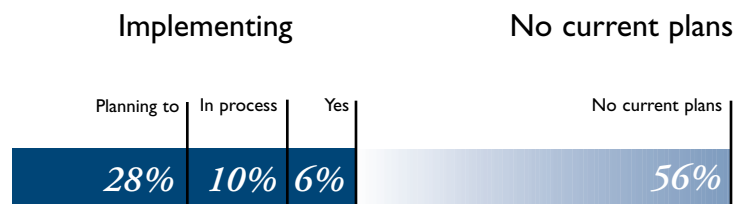
What is knowledge management?

It's the systematic management, use, and reuse of information, experience, and expertise to achieve a specific business benefit, goal, or objective. Put simply, it's leveraging knowledge to do the things you do well, even better.

In fact, the business drivers behind the move to knowledge management are so compelling that most industry analysts insist that if your organization hasn't already explored using knowledge management tools to harness your intellectual assets, it soon will. Research conducted by Cambridge Information Network, an online community where senior IT executives investigate and discuss technology and business issues, indicates that forty-four percent of the organizations surveyed are planning to implement some form of knowledge management application.

Have you implemented a formal knowledge management system?

Cambridge Information
Network (week of 8/10/98)
207 respondents



And there are good reasons why.

As far back as 1921, economist Thorstein Veblen in his book *The Engineers and the Price System*, recognized that the value of complex products rested not merely in the inventory and buildings required for their fabrication but in the minds of the people who invented the products. Veblen was one of the first to recognize that it was the intellectual capital — ideas, concepts, and engineering — more than the structural capital — equity and debt — that created and delivered market value.

Evidencing that point, the percentage of the U.S. economy that is directly related to the creation and management of intellectual capital has reached unprecedented levels. In fact, analysts estimate that as much as forty percent of the U.S. economy is directly attributable to the creation of intellectual property. Additionally, an increasing percentage of the market capitalization that a firm enjoys is a direct reflection of the value of its intellectual property.

Intellectual Capital is Economic Value

Economists struggling to explain why some companies have been able to achieve extraordinary market to book values while others have only seen modest appreciation in their market capitalization are pointing to intellectual capital and knowledge management as the primary factors. Companies rich in ideas and other intellectual assets are being rewarded with higher market capitalizations. Knowledge management is the tool that helps companies develop those great ideas, bring them to market, and reap competitive and economic advantage as a result.

Consider the following example:

Microsoft has an approximate book value of \$10.8 billion and a market capitalization of \$280 billion on roughly \$11.4 billion of annual revenue. Compare that to General Motors with an approximate book value of \$ 17.5 billion and a market capitalization of \$48.9 billion on roughly \$151.8 billion of annual sales. The difference in market to book values, economists explain, is the value of a company's intangible assets. Many of these same economists argue that the difference between Microsoft's intangible asset value and GM's intangible asset value (\$231.1 billion in market capitalization) is a direct reflection of Microsoft's ability to manage its intellectual capital.

Increasingly, market capitalizations well in excess of a firm's book value are viewed not only as a reflection of their future value as an economic entity but also as a reflection of their ability to manage and act upon intellectual capital. So while everyone might not agree as to the exact definition of knowledge management, nearly everyone is in agreement that knowledge management is the key to building and sustaining intellectual capital and the creation of economic value into the next century.

Knowledge Management Defined

Focusing on Core Competencies...

From a purely business perspective, knowledge management is the ability to create and retain greater value from core business competencies. That's why most knowledge management applications, which frequently rely on content and collaboration technologies, are designed to address a particular business problem. Often this problem is directly related to the organization's core competencies — whether it's creating and delivering innovative products; delivering customized services; managing and enhancing relationships with customers, partners, and suppliers; or executing and administering work practices, methodologies, and processes.

... Through Communities

The power of core competencies is harnessed by creating communities of practice — informal networks of people who share common objectives, interests, or solutions. These communities can be as small as a specific department or division, or as large as an entire enterprise. Individuals spanning multiple organizations and sharing a common interest or business problem can also make up a community. In any case, community members are bound together not by organization structure, but by the need to solve a problem or desire to innovate an existing process or product.

Competency Center (Figure 1)

Persistent Expertise

(Explicit Knowledge)



Content Repositories
Shared content & expertise

Agents, filters, documents,
data, messaging, routing,
Internets, intranets

Community of Practice

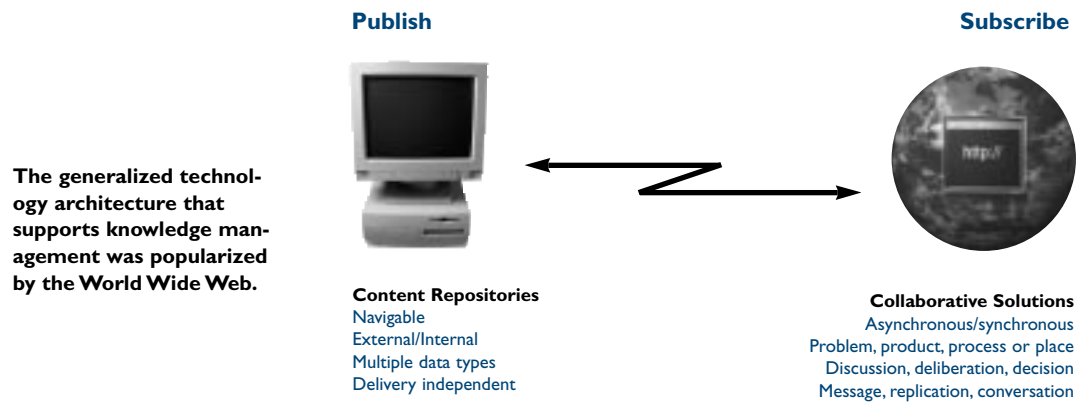
(Tacit Knowledge)



Collaborative Solutions
Shared problem, product or process

Knowledge management solutions built with content and collaboration technologies support both explicit and tacit knowledge.

Concentrating and Distributing Information (Figure 2)



What we know, what we do with what we know

Knowledge comes in two distinct forms:

Explicit Knowledge: is any form of information, expertise, or experience that can be articulated in detail, codified, rendered persistent, and shared. Explicit knowledge can take the form of a database, document, drawing, formula, patent, video, or presentation.

Tacit Knowledge: If explicit knowledge is an articulation of "what we know," then tacit knowledge is shared sense of "what we do with what we know." Tacit knowledge is experiential. In most organizations, tacit knowledge is a common, unarticulated system of values, vision, purpose, and behaviors that directs the community's activities. In fact, the collective wisdom of the community is a valuable source of tacit knowledge.

Whether it's stored in databases or in people's heads, knowledge is a critical resource from which innovation can emerge.

Bridging the gap between the explicit and the tacit

Fully developed knowledge management tools and practices bridge the gap between explicit and tacit knowledge. In most instances, technology-enabled knowledge management solutions employ content technologies that support the capture and management of explicit information and collaboration technologies that enable individuals and communities to create, share, and socialize content to meet specific business objectives. See Figure 1 for an illustration of how content and collaboration technologies combine to allow teams to share content and expertise to address common problems and processes.

Knowledge Management in Action

Content and Collaboration: A Dynamic Duo

In most instances, technology-enabled knowledge management solutions employ content technologies that support the capture and management of explicit information and collaboration technologies that enable individuals and communities to create, share, and socialize information to meet specific business objectives. When combined, content and collaboration technologies allow for the dynamic creation, capture, and sharing of all types of knowledge. They provide an architecture that supports the simultaneous concentration and distribution of information. Often this type of architecture is referred to as "publish and subscribe," the basic computing metaphor that fueled the explosive growth of the Internet. See Figure 2.

Here's how content and collaboration technologies work:

Content

Content refers to any and all information — from structured data, unstructured text, documents, and drawings to presentations, images, video, events, and messages — that an organization stores and maintains to share and distribute. It is explicit knowledge and takes many forms. For example, content can be proprietary in nature or publicly available through the World Wide Web. It can be made up of structured data derived from transaction processing systems and stored in data warehouse or OLAP servers.

Alternatively, content can be unstructured information (e.g., video, CAD drawings, etc.), that has been rendered persistent as "objects" and managed through "meta data," which are a series of attributes that describe the "object" and assist in its maintenance, usage, and manipulation. Frequently, this kind of content is managed using XML ("any" Mark-Up Language) standards, which are a super set of SGML (Standard Generalized Mark-Up Language), the standard from which HTML is derived. With the advent of these technologies, the publication and utilization of unstructured information has exploded. In fact, it's become a searchable, navigable, and renewable information resource of unprecedented consequence to almost every type of business.

Very often, content is rigorously maintained using varying forms of version control or check-in/check-out administration. Occasionally, content is created in conjunction with workflow, data logistics, or process-related management. In these instances, the content itself has substantial business value and could be a product design, a business proposal, or a customer's records. When text is stored or meta data are employed, the content can be searched using natural language interfaces and navigated through active links between objects. Content repositories are now being built to include sophisticated mapping and navigational tools that aid in the use and reuse of stored information.

Collaboration

Collaboration refers to how and why information is shared within a given community. Community members can share information that's been created and stored within a content repository. In most knowledge-intensive endeavors, such as engineering, professional services, and health care, however, a significant portion of the community's knowledge remains with its members. Quite often this knowledge relates to circumstances unique to the organization or community, the particular problem being addressed, or the context, conditions, and constraints under which the problem must be solved. Frequently this "informal" knowledge incorporates an organization's vision and values, its intuition and experience.

Collaboration solutions are often collectively referred to as "groupware," since they service multiple members of a specific community. Most groupware solutions facilitate the creation and distribution of content or work product (document, drawing, etc.) through a combination of communication techniques (messaging, conferencing, and event notification) that reflects the needs and objectives of the community being supported.

Community Works

Organizations reap a strategic payoff when a knowledge management solution makes it easier for practitioners to reach out to other practitioners who share common problems and have content and solutions to share.

Here's how the process works:

Community members interact by subscribing and contributing to a shared work product, such as a document, drawing, or project. Member involvement is governed by some form of prescribed coordination, work flow, or process design for work execution. In many instances, a specified sequence of events triggers notification that the involvement of a member is required. This event notification can cause not one but several members of the community to focus on a specific issue simultaneously.

Community members communicate in a number of different ways, depending upon the nature and urgency of a given situation. Threaded discussion groups are often used to support design teams debating the merits of a particular approach. Here, the communication is asynchronous and messaging or some form of electronic mail is frequently used. More often, groups use electronic conferencing, which combines white boarding, data sharing, and video conferencing technologies, to interact in real time. This type of synchronous communication is valuable in gaining consensus, enhancing content, and making decisions as teams.

Finally, newer forms of navigation tools are being developed that help communities "discover" and exploit their tacit knowledge. Like search engines for content repositories, collaborative filters discover and exploit the tacit knowledge that resides both within and outside the organization. Often, these filters act as agents that can uncover individuals attempting to resolve similar problems and quickly bring them together as a community. Large organizations, with pockets of local experience, find filtering especially beneficial.

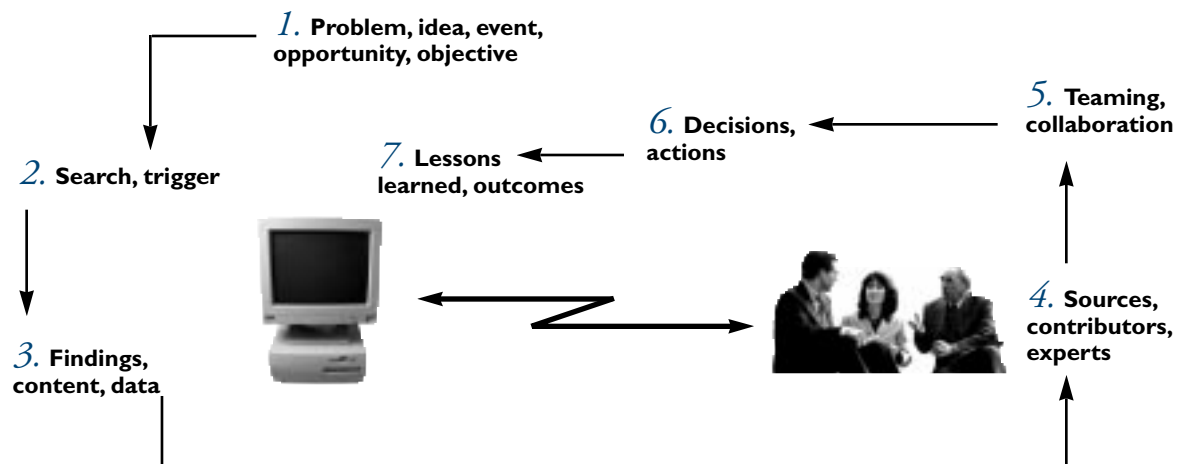
"A capacity to act!"

In its most elemental form, knowledge management is the capacity to act, writes Karl Erik Sveiby, a noted expert in the area of knowledge management, in his book *The New Organizational Wealth*. Knowledge management solutions, built on content and collaboration technologies, enable individuals, teams, and communities to collaboratively make better decisions, faster — and act on those decisions to create more value from core competencies.

Successful knowledge management solutions reflect the way individuals and organizations have traditionally managed and shared information and enable them to harness it more effectively.

A simple example illustrates this point. Imagine that you're the head of a department in a large organization. You're faced with a problem that must be resolved immediately. Quick action is required, yet the decision cannot be made in a casual manner.

"Knowledge Management...is the capacity to act"



Technology-enabled knowledge management solutions conform to a familiar way that most people and organizations use information to solve problems and make decisions.

What do you do?

Well, if you're like most people faced with similar circumstances, the first thing you would do is to seek counsel from others who can help you anticipate the outcomes of various courses of action and make the best possible decision for your organization.

Let's assume that your organization employs a knowledge management solution that combines both content and collaboration technologies. By searching a content repository, you can find information pertinent to the problem or opportunity at hand. By attributing this content — determining how it was obtained or who authored it — you can identify experts with first-hand experience. Then these experts can be organized into teams that collaborate to propose, refine, and reach decisions. Since these decisions have outcomes and actions that can be codified as lessons learned, they can be returned to the repository for future use by the organization for the next problem, issue, or opportunity that arises.

This cycle — from issue to discovery to teaming to decision and resolution — is common to all organizations and is a fundamental knowledge management process. It underscores the fact that knowledge management is not merely a matter of implementing technology but a way of consciously using information, experience, and expertise to better advantage.

Primary Knowledge Management Application Opportunities

Wouldn't it be great to model the best practices of one group across your entire organization? To bring products to market faster? To know what your competitors are planning to do and beat them to the punch? To have a firm handle on what your company — and your employees — know? To make better business decisions, faster? Depending on your company's value orientation, there's a knowledge management solution application category that will help you create significant additional value from your core competencies. The primary knowledge management application categories are Best Practices, Relationship Management, Innovation Management, Content Management (including Media and Intellectual Property Asset Management), and Decision Support.

Best Practices

Sharing concepts and experiences across the organization

Best practices applications transfer concepts and experience between the different constituencies of an organization. Most often this transfer takes place between practitioners, as in lawyer to lawyer, doctor to doctor, or technician to technician within the same firm. These practitioners share a common frame of reference and make up a community of practice.

Best practices applications are also an extremely valuable tool for transferring experience and lessons learned between firms whose areas of expertise appear to be dissimilar. For instance, when an expert in fluid technology solves a problem in oil extraction or an expert in valve technology solves a problem in the design of an artificial respirator.

Generally speaking, best practices applications appeal most to professional service firms such as health care, engineering, and project management organizations or other types of consulting firms. They are also effective in transferring experience within a community of practice such as technical services or sales professionals.

How Does Your Company Deliver Value?

To determine the knowledge your company needs to succeed, you must know how your firm delivers value to your customers. To do so, take a look at your firm's business value orientation (BVO). As M. Treacy and F. Wiersema, co-authors of "The Discipline of Market Leaders," explain them, value orientations come in three basic flavors:

- § **Product Leadership:** If your company falls into this category, then time-to-market with new products and services is the name of the game. You probably derive a large portion of your revenue from products that are less than five years old. You have a well-honed research and development arm. Collaboration across functional departments is often needed to compress the time to market with next-generation products.
- § **Operational Excellence:** Operationally excellent companies place heavy emphasis on efficient process execution, from supply chain management to branding to fulfillment. Cost containment and reduction strategies are critical. It's also important to automate and streamline business processes.
- § **Customer Intimacy:** Your company's business proposition is delivering high value products and services that are customized to your customers' needs and wants. You're continually looking for cross-selling opportunities and striving to build a profitable, loyal customer base. Relationship management is critical.

Understanding your BVO is critical for two reasons. First it drives your business strategy and objectives. Second, it drives your company's culture and how your employees collaborate and use knowledge. Once you understand your business objectives and how your employees interact, you can determine the knowledge you need to manage. And then deploy the right knowledge management solution to enable you to do the things you do well, even better.

Relationship Management

Forming and enhancing lasting relationships

The companies that focus on forming and enhancing relationships with customers, employees, shareholders, and suppliers will earn their long-term loyalty. The relationship management category is populated with applications that either provide for the formation of new relationships or enhance existing relationship with customers, employees, shareholders, communities, affiliates, or franchisees. Very often these applications are designed to increase the quality of relationships (customer service, benefits administration), the number of relationships sustained (sales), or the depth of the relationship in terms of value exchanged (share of customer).

In their most elemental form, these applications appeal to any organization looking to form long-term relationships. Solutions that call for sophisticated knowledge management technologies (including case-based reasoning, collaborative filtering, and neural networks) are usually applied to companies offering complex products and services, where the volume and nature of each customer contact make human intervention cost prohibitive.

Product and Service Innovation

Compressing the time-to-market with next-generation offerings

As competition increases, the ability to quickly innovate and get the right products and services to market at the right time has become a critical success factor. In fact, many industries now measure the contribution derived from a product or service as a function of the number of market days available to serve demand. The ability to quickly innovate encompasses a number of key skills including product/service specification, research, design, development, productization, and support.

There are a number of knowledge management applications available to help product and service leaders achieve their goals. Competitive and business intelligence systems look for patterns across multiple information sources to uncover activities that might otherwise be missed and enable companies to monitor the market and competitors. Data mining and neural networks are also useful for product specification, concurrent and continuous engineering, project management, and product approval.

Content/IP Asset Management

Managing the behaviors, skills, and expertise that support value creation

Increasingly an organization's intangible assets are the dominant factor in the creation of value for its customers and stakeholders. In professional service organizations, for example, the intangible asset is the experience and expertise of its employees. For product organizations, it can be a portfolio of patents or copyrighted inventions. In entertainment and media companies, it can be the content and images marketed. And for consumer package goods companies it can be signage, brand images, slogans, and trademarks that sustain revenue streams. Firms are recognizing the value of these intangible assets as a form of intellectual property that can be protected, managed, leveraged, and exploited. Applications that store, search, retrieve, transmit, permit modification, market, and detect piracy of intellectual property are becoming increasingly critical and popular.

Decision Support

Right information, right people, right time

Improved access to information leads to faster and better decisions. With that said, nearly every enterprise can benefit from a sophisticated decision support system. Over the years, these systems have gone by a number of different names, including Executive Information Systems, Balanced Score Cards, and Executive Dashboards. But they've always been developed using internally generated data from core transaction processing systems, such as order entry, customer service, logistics, finance, and accounting. Very often decision support systems were stand-alone entities or data warehouses constructed separately to not impede the availability of the transaction processing systems.

Changes in organizational structures and information technology have morphed the technical nature of decision support systems, but the need to get the right information to the right individual at the right time remains as strong as ever. Large stand-alone data warehouses have given way to smaller data marts serving empowered organizational units and decision makers. Agent-based computing allows events to be monitored and narrowcast on a near real-time basis, eliminating the need for stand-alone data repositories and making data an active collaborator in the decision-making process. Regardless of the technologies used, all of these systems are being developed with a common goal: to enable companies to leverage the power of information to make well-informed decisions, fuel new ideas, boost revenues, formulate strategies, and enhance customer service.

Use Knowledge or Lose to Your Competitors

In conclusion, if you wanted to determine why certain firms are inherently more valuable than others based on their market capitalizations, you would eventually concede, as do most economists, that it comes down to their ability to create and retain more value from their core competencies.

It comes down to their ability to manage knowledge.

Ask yourself one simple question: if you were to start a business today, what would be harder to find, the right people or the right money? In an era where people matter more than brick and mortar and ideas matter more than money, knowledge management solutions become the enterprise resource systems of the future.

And the future will belong to those organizations that effectively exploit knowledge management.

Credits

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Kirk Klasson is a practice leader and director of marketing and business development in Cambridge's Knowledge Management Solutions practice. In this capacity, he focuses on the conception and implementation of content and collaboration solutions for Cambridge's clients on a worldwide basis. Prior to joining Cambridge, Klasson was the vice president of strategy for Xerox New Enterprises. In this role he was responsible for the formation and implementation of business strategy for a portfolio of young, high-growth, businesses encompassing software, data encryption, collaborative, and Internet/intranet technologies. Earlier, he served as vice president of computing research and consulting at the Yankee Group. While at the Yankee Group, he also held the position of regional vice president responsible for business development and account management.

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