

Managing Knowledge @ Work

an overview of knowledge management



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Knowledge Management Working Group of the
Federal Chief Information Officers Council

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Acknowledgments

This document is the result of the commitment of the U.S. General Services Administration to the Federal Knowledge Management Working Group of the Federal Chief Information Officers Council. Although many books and articles have been written about knowledge management, relatively few people truly understand its concepts and potential. This lack of understanding has limited its acceptance and implementation. This document summarizes and condenses the work of experts with the aim to make the concepts of knowledge management more accessible to a wider audience. It will be a success if non-practitioners come away with a solid conceptual understanding of KM.

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Executive Summary

Many of us simply do not think in terms of managing knowledge. But we all do it. Each of us is a personal store of knowledge with experiences, training and informal networks of friends and business acquaintances whom we seek out when we want to solve a problem or to explore an opportunity. Essentially, we get things done and succeed by knowing an answer or knowing someone who does. Yet until recently, managing knowledge has been exclusively a personal endeavor. Now, organizations are discovering that managing knowledge creates value by increasing productivity and fostering innovation.

What is knowledge? It's neither data nor information. Knowledge is understanding, and one gains knowledge through experience, reasoning, intuition and learning. Individuals expand their knowledge when others share their knowledge and when one's knowledge is combined with the knowledge of others to create new knowledge.

Knowledge management (KM) involves systematic approaches to find, understand, and use knowledge to achieve organizational objectives. Managing knowledge creates value by reducing the time and expense of trial and error or the reinvention of the wheel. KM creates value when shared knowledge is put to use and reused.

Not all knowledge takes the form of a best practice. Indeed, the most valuable knowledge is the knowledge people have in their minds. This tacit knowledge is also the most difficult to access, because people are often unaware of the knowledge they have or of its value to others. By making tacit knowledge explicit, it can be shared and used by others.

Some people mistakenly assume that knowledge management is about capturing all the best practices and knowledge that workers possess and storing it in a computer system in hopes that one day it will be useful. "Knowledge is an emergent property of interpersonal relationships, and the only way to manage it is to create an environment in which open collaboration is the norm, not the exception," emphasizes the president of a knowledge management consultancy.¹

Knowledge management consists of three fundamental components: people, processes and technology. Knowledge management focuses on people and organizational culture to stimulate and nurture the sharing and use of knowledge; on processes or methods to find, create, capture and share knowledge; and on technology to store and make knowledge accessible and to allow people to work together without being together. People are the most important component, because managing knowledge depends upon people's willingness to share and reuse knowledge.

Many people see knowledge as power. And their fear is that if they share their knowledge they will lose their importance, their marketability. Organizations can try to overcome this deep-seated concern by providing incentives to workers to share their knowledge. Incentives are not enough however, to overcome a culture that rewards and promotes workers who hoard knowledge or one that fosters competition among employees or business lines.

Trust plays an important role in the sharing and use of knowledge. If people believe they will benefit from sharing their knowledge, either directly or indirectly, they are more likely to share. Whether people use the knowledge of others depends if they know and trust the source of the knowledge. For example, people are more likely to believe and use the equation $e=mc^2$ knowing that it came from a renowned physicist than from the young intern just hired. This is why KM efforts that focus primarily on technology seldom pay off. Studies show that people more frequently than not will contact someone they know before searching the corporate database or data warehouse.² Technology is an important enabler to the success of KM. But people make or break it.

KM is an amalgam of concepts borrowed from the artificial intelligence/knowledge-based systems, software engineering, business process reengineering, human resource management, and organizational behavior fields.³ Large management consulting firms and other companies began to manage knowledge internally in 1989 and the early 1990s. In 1994, large management consulting firms first offered KM services to clients. KM is evolving and being refined through implementation.

Knowledge management is in large measure a product of the tremendous changes of the 1990's. Globalization expanded, bringing both new opportunities and increased competition. Organizations responded by downsizing, merging, acquiring, reengineering, and outsourcing their operations. Utilizing advances in computer and network technology, businesses streamlined their workforces and boosted productivity and their profits. Higher profits plus low inflation, cheap capital and new technologies fueled the hottest bull market in US history. Employment levels were at record highs and skilled workers in high demand. Businesses came to understand that by managing their knowledge they could continue to increase profits without expanding the workforce.

Knowledge management attracted the attention of the Federal government, which like the private sector also experienced profound changes during the 1990's. Payrolls were cut by 600,000 positions; the use of information technology was expanded to improve performance, and management reforms were enacted to improve performance and to increase accountability to the American people. At the beginning of the 21st century, the Federal government faces serious human capital issues as it strives to improve service and be more accountable. It must compete for workers, as its workforce grows older. The average age of a federal worker is 46 years.⁴ Approximately 71% of federal senior executives will be eligible to retire by 2005.⁵ And unless the knowledge of those leaving is retained, service to citizens will likely suffer.

Along with tremendous change in the public and private sectors has come the explosive growth of the Internet and the emergence of e-business and e-government. There is so much information available and coming at us that we are at times drowning in a sea of information. Yet, our thirst for knowledge to be able to respond to the rapid changes in the workplace only deepens. For businesses and governments striving to be effective, the clear challenge is to seek better ways to learn and work smarter. KM is a means to address human capital issues and to take e-business and e-government to the next level.

In its "Knowledge Management Report 2000," KPMG, a management consulting firm, stated that while companies practicing KM were better off than those that did not, actual benefits did not live up to the expectations of 137 companies.⁶ As a result of this and other findings, KM is sometimes dismissed as "just another management fad" that does not deliver on its promises. The truth is otherwise. KM has demonstrated value, yet measuring its value is a challenge for most organizations.

What does the future hold for knowledge management? Interest in KM is growing according to an online survey published in May 2001.⁷ It appears that KM practices are here to stay although they may become embedded in other disciplines, such as customer relationship management or enterprise-resource planning, some experts suggest. Tom Davenport, director of Accenture's Institute for Strategic Change, likens KM to total quality management, which was all the rage in the early 1990s. "Although TQM isn't mentioned much these days, it has become incorporated into the way people think about business," he observes. "It would actually be a sign of success if knowledge management got embedded into other things."⁸

Managing Knowledge @ Work

An Overview of Knowledge Management

Introduction

Knowledge is power! That has been the mantra of the world for eons. Those who had the knowledge could navigate their way to find the person or the resource they needed to make a decision or complete a task. Those who successfully managed knowledge moved ahead of their peers. Knowledge was often not shared because that was seen as diluting one's value or one's power. The more valuable the knowledge, the less likely it was to be shared. Knowledge was hoarded. Managing knowledge was and has been exclusively an individual responsibility. That is, until now.

Purpose of this Report

In both the public and private sectors, more and more organizations are beginning to take responsibility for managing knowledge as a means to create value. Managing knowledge involves developing a new mindset about the nature of work and of working with others. It is moving from the view that knowledge is power to the view that knowledge is productivity. Having a conceptual understanding of knowledge management (KM) is key to developing this mindset. This report provides a succinct, conceptual foundation of KM and describes the ways organizations manage knowledge and the issues they face as they manage knowledge.

Background

In the last 15 years, economic, social, and technological changes have changed the workplace and the way we work. Globalization has emerged and brought new opportunities and increased competition. Organizations have responded by downsizing, merging, acquiring, reengineering and outsourcing. Utilizing advances in computer and network technology, many businesses have streamlined their workforce and boosted their productivity and their profits. Their successes came with a price, however. Many organizations lost institutional knowledge as they grew smaller.

At the same time, workers, especially highly skilled workers, have been in high demand and are difficult for organizations to attract and retain. Economic conditions have given workers options to move from company to company in search of bigger and better deals. When workers leave they not only reduce the organization's capacity they also take their knowledge with them. A relatively tight labor market limits organizations and motivates them to innovate and increase efficiency while getting the most from its people and processes. The

outlook is for greater shortages of workers as baby boomers retire in record numbers. Indeed, organizations will soon face the greatest worker flight in US history. The case for KM has been building for more than a decade.

Dr. Karl Wiig first coined the KM concept at a keynote address before the United Nation's International Labor Organization in 1986. In the early 1990's, some consulting firms and innovative companies began to discover that they could respond to these challenges and gain competitive advantage by sharing the knowledge that already existed in their company. Organizations began to take on the responsibility for managing knowledge. They realized that there was "gold in them thar hills" if knowledge could be managed. They could accomplish more and improve service without hiring additional people.

For example, Hewlett-Packard Company in the mid-1990s had difficulty finding enough good technical people to provide good customer support. So in 1995 the company implemented a knowledge management tool called "case-based reasoning" to capture technical support knowledge and make it available to personnel around the world. Results were unequivocal and dramatic: Average call times were reduced by two-thirds; cost-per-call has fallen by 50 percent, and the company has been able to hire fewer technical support agents.

The Rise of e-Business and e-Government

In the last five years, e-business has changed the face of organizations. Customers now expect information and services to be on-line and available at a touch of a button. Customers become frustrated if the information or products they want are not easy to find and purchase. Companies risk losing customers to competitors that are only a click away.

What began as the electronic exchange of purchase orders and payments, has evolved into business-to-consumer (B2C), business-to-business (B2B) and business-to-government (B2G) transactions. Organizations are accessible 24 hours a day and seven days a week, and 24/7 is a common business term. In 1999, the total value of B2B e-commerce sales was \$150 million. By 2004, forecasters project the total value of B2B sales to be \$7.9 trillion.⁹

E-business has spawned e-government. In the early 1990's, the Federal government began using e-commerce to reduce the cost and time of procurement. Now the Federal government has more than 20,000 Web sites. In September 2000, the Federal government debuted the Firstgov.gov portal to provide citizens with simpler and quicker access to information. The government will expand delivery of services electronically over the next several years. In fact, the Government Paperwork Elimination Act of 1998 requires federal agencies to provide electronic services to citizens by October 2003.

E-business and e-government have dramatically changed the workplace. Recently, Kepner Tregoe, Inc., a business consultant, surveyed 818 hourly workers, supervisors, and middle managers. It found that 66 percent of workers and 77 percent of managers saying that over the last three years the number of decisions that they have to make daily has increased. Yet 82 percent of workers and 85 percent of managers said that the average time they have to make those decisions had stayed the same or decreased. The most common negative result was “We do a poor job of sharing information.” A close second was “We fail to involve the right people.”

What’s more, the recent collapse of dot.coms illustrates the need for business models to be based on value creation. It is no longer sufficient to have a “presence” on the Web. Firms must have web sites that are easy to navigate and integrated with their business operations. To make this a reality, organizations will need to learn and apply constantly changing technology, streamline processes, integrate external and internal computer systems, plus share and use knowledge about the organization and its customers.

In short, organizations will have to seek better and quicker ways to learn and work smarter in a tight labor market with high demands for customer service. KM can enhance and extend e-business and e-government by improving the content that customers and citizens need while reducing the number of false steps to get there.

Definitions of Knowledge Management

You may think managing knowledge is an oxymoron. How do you manage what is in peoples’ minds, the products of their experiences, intuition and reasoning? The answer is simple but far from easy to accomplish. You encourage people to share their knowledge. Once in oral and written form, knowledge then can be stored, shared, used and enhanced by others. Managing knowledge is a difficult and complex undertaking because people resist sharing knowledge, and organizations typically are not structured for sharing information, much less knowledge. Knowledge management is an evolving discipline with few universally accepted definitions, approaches, or methodologies.

“KM is about people, not about technology.”

-- Shereen Remez, Chief Knowledge Officer of the Association for the Advancement of Retired People

Fundamentally, knowledge management (KM) is applying the collective knowledge and abilities of the entire work force to achieve specific organizational objectives. The goal of knowledge management is not to manage all knowledge. The goal rather is to manage the knowledge that is most important to the organization. Efficiencies occur when the right knowledge gets to the right people

at the right time. KM is the conscious strategy of putting knowledge into action as a means to increase organizational performance. KM is like a set of new oil well drilling techniques that allows more oil to be extracted from existing wells than was previously thought possible. But instead of being about oil and wells, it is about getting more productivity from an organization and its people.

KM involves three major components. People create, share and use knowledge. Processes acquire, create, organize, share and transfer knowledge. And technology stores and provides access to knowledge. Some envision people, processes, and technology the legs of a three-legged KM stool. The stool does not function if one or more of the three legs are not substantially developed. And one leg is particularly critical. While technology and processes are important to KM's success, people make or break it. They must be willing to share and use knowledge.

The size of an organization has direct bearing on its agility to share knowledge. Organizations with fewer than 150 employees have an easier time sharing knowledge than larger ones. In smaller organizations, people tend to know one another. When they need to know something they go to the person whom they know is an expert. In this environment, workers typically share a strong sense of connection and trust, which facilitates knowledge sharing.

The dynamics of organizations change dramatically once they exceed 150 people.¹⁰ As organizations grow larger, people organize into groups, which creates barriers for knowledge sharing. People do not operate as a team. Workers do not know one another well, if at all, and consequently, have little or no trust, which constricts knowledge sharing.

Benefits of KM

Organizations that manage knowledge claim higher rates of productivity. By having greater access to their employees' knowledge, claims the accounting and consulting firm, PriceWaterhouseCoopers, organizations make better decisions, streamline processes, reduce re-work, increase innovation, have higher data integrity and greater collaboration. In other words, managing knowledge reduces the cost of operations and improves customer service.

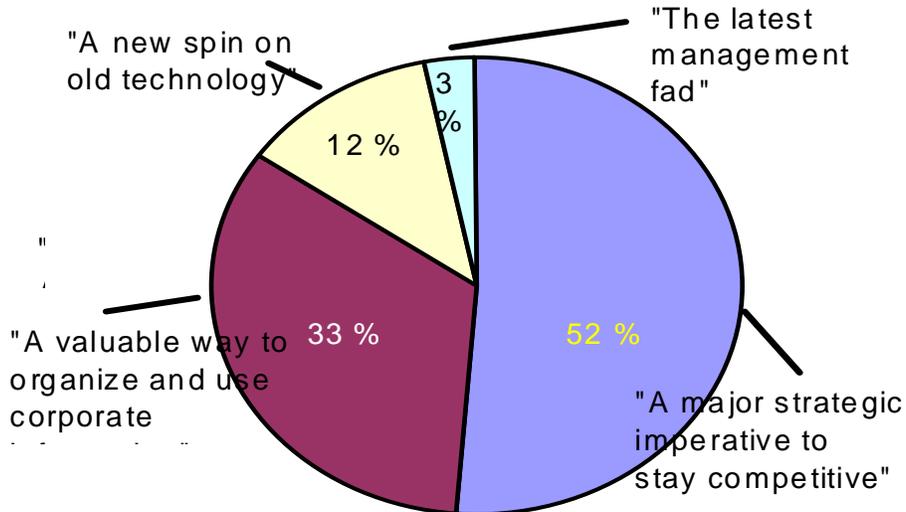
"If we only knew what we know, we would be 30 percent more productive."

--Lewis Platt, CEO of Hewlett-Packard (1992-1999)

As knowledge transfer is increasingly recognized as a source of value creation, corporations have come to identify knowledge management initiatives as

strategic facilitators of competitive advantage. The chart below indicates the perceived value by U.S. Corporations in 1997.¹¹

Knowledge Management's Perceived Value by US Corporations



Distinctions between Knowledge, Information and Data

The term "knowledge" is one of the more confusing aspects of KM. The terms "information" and "data" are often used interchangeably with the term "knowledge." In fact they have different meanings. And understanding the differences is essential to doing knowledge work successfully.¹²

Data are a set of discrete facts. Data are unorganized, but the independent numbers, words, sounds and images can easily be structured and captured on machines. Data carry no judgment or interpretation.

Data	=	Unorganized Facts
Information	=	Data + Context
Knowledge	=	Information + Judgement

Information is data that is organized, patterned, grouped, and/or categorized. Information changes the way a person perceives something by impacting judgment or behavior. In contrast to data, which generally resides in a fixed place called a database, information moves around organizations.

Knowledge is familiarity, awareness, or understanding gained through experience or study. It is richer and more meaningful than information. Because knowledge

is intuitive, it is difficult to structure, can be hard to capture on machines, and is a challenge to transfer. We often speak of a “knowledgeable person,” and by that we mean someone who is well informed, reliable, and thoroughly versed in a given area.

Knowledge is derived from information. It results from making comparisons, identifying consequences, and making connections. Some experts include wisdom and insight in their definitions of knowledge. Knowledge also includes judgement and “rules of thumb” developed over time through trial and error.

Types of Knowledge: Explicit and Tacit

Knowledge exists in explicit and tacit forms. Explicit knowledge includes patents, procedures, best practices, and lessons learned. Explicit knowledge is relatively easy to capture and store in databases and documents. It is shared with a high degree of accuracy.

Explicit knowledge can be categorized as either structured or unstructured. Documents, databases, and spreadsheets are examples of structured knowledge. Their individual data elements are organized in a particular way or schema for future retrieval. In contrast, e-mails, images, training courses, and audio and video selections are examples of unstructured knowledge because the information they contain is not referenced for retrieval.

Tacit knowledge is the knowledge that people carry in their minds. It is obscure and difficult to access. It is often not known to others. In fact, most people are not aware of the knowledge they possess or of its value to others. Tacit knowledge is considered more valuable because it provides context for people, places, ideas and experiences. Tacit knowledge is not easily captured as a best practice or a lesson learned. Tacit knowledge generally requires extensive personal contact and trust to share effectively.

Managing Organizational Knowledge

Managing knowledge is an imperative for large organizations in which such barriers as geographical and functional distances inhibit workers from knowing the work of others and benefiting from it.

Managing knowledge consists of deciding with whom to share, what is to be shared, how it is to be shared, and ultimately sharing and using it.

Managing knowledge produces value when shared knowledge is used and reused. Consistent value occurs when there is an atmosphere of trust and motivation for people to share and use knowledge, when there are systematic processes to find and create knowledge, and, when needed, there is technology to store and make knowledge relatively simple to find and share.

Essence of Managing Knowledge

- Deciding with Whom to Share
 - Internal and External
- Deciding What to Share
- Deciding How to Share
- Then Sharing and Using It

People Component

The success of KM initiatives depends upon people's motivation and their willingness to share knowledge and use the knowledge of others.

Reasons People Don't Share Knowledge

People do not share knowledge for many reasons. They often do not realize what they know or its value. Some people hoard knowledge for job security. They fear that sharing what they know diminishes their value. Some believe their knowledge gives them an edge over their peers. Others may not know with whom to share or how to share what they know. It may be that sharing seems too difficult or too time consuming.

If people do not receive credit for sharing, they may think, "Why should I take the time and energy to help someone else when I don't get anything in return?" If people do not share personal relationships or bonds, they are unlikely to share knowledge of high value. People resist sharing and using knowledge especially in environments where trust or morale is low or where there are conflicts. People who are disgruntled are unlikely to share.

"People rarely give away valuable possessions (including knowledge) without expecting something in return."

-- Davenport & Prusak, "Working Knowledge"

Reasons People Share Knowledge

People typically share knowledge for three reasons, researchers have concluded.¹³ The first reason is that people believe if they share what they have, others will share their knowledge with them. This exchange is called reciprocity and works better when people know each other. The level of trust has direct bearing on reciprocity. The more trust that exists, the more people share. Conversely, reciprocity does not work well with people who do not know each other since little or no trust exists.

People also share knowledge because they believe that it will enhance their reputation and standing within a particular community. By becoming experts, they are often sought out, increasing their prestige and furthering their opportunities.

Some share for altruistic reasons. They share without expecting any thing specific in return. People share because they believe sharing will help the overall organization and will ultimately benefit them. They may also share out of sense of duty or love of their work or coworkers. They feel better when they help others, make a contribution, or make a difference.

Incentives for Sharing Knowledge

To encourage employees to share their knowledge, organizations establish processes and tools to make sharing simple. They also provide incentives for employees to share their knowledge and to use knowledge shared by others. KM consultants believe that if employees see no payback for sharing their knowledge then they will not share knowledge – or share knowledge only to a limited extent. “Behavior that is reinforced will be repeated or amplified.”¹⁴

At Buchman Laboratories, knowledge sharing is a part of the culture. Each year, managers identify the top 50 knowledge sharers and reward them at celebration conferences in resort locations.¹⁵ At the Social Security Administration, when the information systems organization developed an on-line project resource guide for software development, including photos of the teams and individuals who shared their knowledge increased further sharing.

In some organizations, creating a culture based upon sharing occurs during the hiring process. Employees interview candidates and select those they want to work with and with whom they are likely to share knowledge. Other organizations create a sharing culture by developing leaders who foster sharing, build an atmosphere of trust in which sharing is valued and make promotions based upon demonstrated sharing. To encourage knowledge sharing, some organizations review how much their employees share and use knowledge during semi and annual performance reviews.

Barriers to Sharing Knowledge

Incentives alone are not sufficient for knowledge sharing to occur widely. Cultural, economic, and process barriers must be overcome. People frequently hoard knowledge because they believe that knowledge is power. By hoarding, they believe that they increase their importance in the organization and protect themselves against downsizing. In reality, they are helping neither themselves nor the organization. Hoarding results in both individuals and organizations being less productive and less responsive than they could be. If hoarding is tolerated,

the organization is sending a clear message that this is acceptable. If hoarders are promoted, organizations are sending an even stronger message.¹⁶

Process Component

Knowledge exists inside and outside an organization. The challenge is finding it, acquiring it, organizing it, getting it to those who need it, and encouraging people to actually use it. Organizations manage knowledge by:

- performing knowledge audits to determine and locate the knowledge that is needed
- creating knowledge maps to allow quick access to knowledge
- creating communities of practice and apprenticeships to share tacit knowledge
- collecting best practices and lessons learned to share knowledge
- managing content to keep knowledge current and relevant
- telling stories to convey knowledge
- encouraging learning to facilitate the transfer and use of knowledge.

“Today’s KM processes are contingency planning for tomorrow’s decisions.”

-- Alex Bennet, Chief Information Officer for Enterprise Integration for the Department of Navy

Performing a Knowledge Audit

A knowledge audit determines what knowledge is needed and available to achieve specific objectives or functions. This is a critical step for most firms in determining which knowledge can be leveraged for economic payback. Knowledge auditing is also known as knowledge mapping. The product of a knowledge audit is a knowledge map.

Establishing a classification scheme called a taxonomy is a precursor to development of an enterprise knowledge map. A taxonomy organizes information into groups with similar characteristics as related to a single reference point. An organization knowledge taxonomy illustrates the relationships between the various knowledge sources identified during the knowledge audit. Since people follow different paths to find knowledge, e.g., looking for a product by function or by manufacturer, taxonomies need to provide multiple pathways to knowledge in order for it to be found by workers in different functions.

Creating a Knowledge Map

A knowledge map is essentially an electronic yellow-page directory of an organization’s knowledge. Knowledge maps aid in finding hard-to-access tacit knowledge by identifying experts and the means to contact them. Knowledge maps also provide understanding of what knowledge, information, and data is important to the enterprise and its availability, location, and how it might best be

delivered to the enterprise. Knowledge maps tend to be political in nature because of the implied prestige of being identified as an expert. Knowledge maps also indicate where documents and other explicit knowledge can be found. Knowledge maps vary in size and depth and do not need to be fully complete to be useful.

Creating Apprenticeships and Communities of Practice

Organizations have multiple ways to share tacit knowledge. They can establish traditional apprenticeships and mentoring programs for transferring tacit knowledge. Typically, a senior person shares their knowledge with one or more junior persons. As participants become comfortable and their trust with one another builds, more and more tacit knowledge is shared. For these programs to be effective, care must be taken to match individuals in key positions within the organization to promising candidates. To make apprenticeships worthwhile, some organizations require and evaluate their senior people on their apprenticeships.

Another—and broader—means of sharing tacit knowledge is through a community of practice, a group of individuals with similar work responsibilities but who are not part of a formally constituted work team. Communities of practice differ from interest groups whose members share common interests but their interests may not relate to their day-to-day work.

“A community of practice can exist entirely within a business unit or stretch across divisional boundaries. A community can be made up of tens or even hundreds of people, but typically it has a core of participants whose passion for the topic energizes the community and who provide intellectual and social leadership.”¹⁷

There are many different kinds of communities of practice. Some develop "official" best practices, some create guidelines, some have large knowledge repositories, and others simply meet to discuss common problems and solutions. Communities also connect in many different ways. Some meet face-to-face, others have conferences; others share ideas electronically. To decide which kind of community and connection is best for an organization, it is helpful to know what knowledge people need to share; how tightly bonded the community is; and how closely new knowledge needs to be linked with people's everyday work.

To reap rewards from communities of practice and sustain them over time, organizations need to nurture them by making resources available to them and by allowing members the opportunity to participate. Organizations should also dedicate an individual to manage the group, to do administrative tasks to keep the group moving and to capture the conversations for others to benefit. Communities of practice work best when they set their own agenda and focus on developing members' capabilities. Experts recommend that management not interfere by dictating action.

Identifying Best Practices and Lessons Learned

Another means for organizations to share knowledge is by identifying and disseminating best practices and lessons learned. To facilitate the collection and use of knowledge, it is helpful to classify these terms. The oil company, Chevron, for example, recognizes four levels of best practices: (1) Good idea – not proven or substantiated by data but could have an impact on business; (2) Good practice – any technique, methodology, procedure, or process that has been implemented and has improved business results for the organization; (3) local best practice – determined to be a best approach for all or part of the organization; (4) industry best practice – approached based upon both internal and external benchmarks. The external benchmark can come from other industries. Lessons learned refer to the feedback gained from day-to-day experience. They can lead to best practices but typically tend to convey the situation, the options, choices taken, and the results.

Levels of Best Practice at Chevron

1. Good Idea
2. Good Practice
3. Local Best Practice
4. Industry Best Practice

Managing Content

Once collected, organizations typically store their knowledge in a repository, Intranet site, portal, or a combination thereof. To keep them from becoming overcrowded with extraneous or outdated knowledge, organizations need to manage the content of their knowledge repositories. Hewlett-Packard delegates content management to content creators who maintain information quality and currency. Creators designate the “shelf-life” of the content. For example, HP’s sales unit designates that presentations are current for three months, white papers for twelve months, and case studies for eighteen months. The HP Intranet routes expired documents to content creators for review. The creators either revalidate the content or mark it for purging. The more automated the system, the easier it is for workers to provide content and keep it current. HP’s up-to-date and easy-to-use knowledge management system makes its sales force more productive. The higher productivity results in a sales force reduction that creates cost savings.

Storytelling

Storytelling is another effective means to share knowledge.¹⁸ People gain more understanding and have greater recall through stories than they do from slide show presentations or written reports. “Storytelling brings people together in a common perspective, and stretches everyone’s capacity to empathize with others and share experiences.”¹⁹ Steve Denning from the World Bank and a proponent of storytelling tells the following story to convey the value of knowledge management.

In August 1998, the roads in Pakistan were disintegrating. The Transport Ministry did not want to use the technology recommended by the World Bank to make repairs but instead wanted to use a new technology. The Transport Ministry was under a tight deadline to make a budget decision. The Transport Ministry called a task manager at the Bank seeking information on the new technology. Traditionally, a request such as this would have taken the Bank up to nine months to respond to, and the Bank would have hired a contractor to conduct a study, then provide the findings back to the country.

Instead the task manager sent an e-mail message to members of the Highway Thematic Group, a Community of Practice within the Bank. Within one day the task manager received responses from experts in Jordan and Argentina. The expert from Argentina happened to be writing a book on highway construction technologies. The task manager also received responses from experts outside the Bank in South Africa and Australia. Within 48 hours, the Bank provided Pakistan with information about worldwide uses of the new technology and the Transport Ministry met its budget deadline.

The story conveys the remoteness and conditions of Pakistan, the global reach and speed of the World Bank, and the complexity and difficulty of finding knowledge in a large bureaucracy. A story helps an audience to visualize and to remember the situation, and when told with enthusiasm, is more memorable.

Transferring Knowledge

All the processes described to this point focus on sharing and making knowledge available. It is only when people use knowledge that value is obtained. Use is defined as a change in behavior or development of an idea that leads to a change in behavior. Before use occurs, knowledge must be transmitted and absorbed, i.e. learned. If knowledge is not absorbed then knowledge was not transferred. Just providing access to knowledge does not ensure its transfer. Consider this example.

“Engineers at Mobil Oil developed some sophisticated techniques to determine how much steam is required to drill in different conditions. When they applied the techniques at oil fields in Liberal, Kansas, they found that they could dramatically reduce the amount of steam needed,

which resulted in significant savings. The financial implications at other oil fields were immense. The engineers sent a memo describing their calculations and the resulting benefits to other Mobil drilling operations. They assumed the new methods would be quickly adopted because the benefits were indisputable. Nothing changed, however.

“After an investigation, an information manager determined that the transmission medium used was wrong. A memo simply did not have the power to convince experienced people to change what they had been doing for years. Mobil hired a consultant that developed a case study and made videotapes of the people who designed the breakthrough. The consultant also recommended days of debate and intensive discussions so the new techniques could be internalized and socialized.

“After six months the adoption rate was 30 percent. It probably will reach 50 percent. It may or may not reach 100 percent. Was the knowledge transfer process flawed? The consultants thought not. The adoption and application of new knowledge can be a slow and arduous process. The consultants believed that part of Mobil’s culture, a distrust of bragging, might have reduced the credibility and acceptance of the new technique. Resistance to abandoning procedures that have been successful for years is a universal problem, not limited to Mobil.”²⁰ This example illustrates how cultural norms inhibit knowledge transfer and how difficult it is to overcome them. Yet, this is often where the payoff lies.

An organization’s culture is a determining factor in the amount of knowledge that is learned and transferred. “If the work environment is overly judgmental of mistakes and the people who make them, then mistakes will be *less* likely to be noticed and responded to. The value of creating a non-judgmental work environment is that mistakes can be seen and dealt with when they occur.”²¹

To facilitate learning and to transfer knowledge among its soldiers, the U.S. Army conducts after action reviews of its training and military operations. During the reviews, teams identify actions that worked, those that did not and discuss ways to do better. By making reviews a standard operating practice, the Army fosters and encourages a working environment where knowledge sharing and learning are expected and valued.

Technology Component

Technology provides the means for people to organize, store and access explicit knowledge. It also provides the means for people to directly share their tacit knowledge without being face to face. Technology produces value when it increases the accessibility of knowledge, reduces the time and effort of employees to record and keep it current and facilitate interaction with citizens, customers, suppliers, partners and each other. Technology’s role in KM is

important but should represent no more than 40 percent of the spending on KM.²²

Portals have quickly changed the organizational computing landscape. Looking and behaving like web sites, corporate portals aggregate various types of KM activities and products.²³ They allow employees with Web browsers to interface with legacy systems, to access knowledge and information in data repositories, to run corporate applications such as document management, business intelligence, and enterprise-resource-planning, and to use tools to collaborate with other employees electronically. According to the Corporate Executive Board, leading organizations boast drastic reductions in cycle time, staff count and coordination error from the use of virtual collaboration.²⁴

Portals also serve other purposes. Customer portals link businesses to customers (B2C) to enable e-commerce and online service. Vertical portals or vortals link suppliers and buyers in particular industries to provide content and e-commerce. Not all organizations need a separate portal to link partners for business to business (B2B) transactions, however. Existing Intranet portals can be used to provide access to organizational databases. The table below summarizes portal characteristics.

Types of Portals ²⁵			
	Corporate	Customer	Vertical
Also Known As	Enterprise Information Portal	Premiere pages	Industry web site
Target User	Employees, professionals in a single discipline	Customers	Business professionals in a single discipline
Purpose	Provides individual and role-based views of business content and resources; provide access to productivity and role-based applications such as HR, purchasing, etc.	Provides a company-specific view of products, prices, services and transaction history	Provides original content, links to resources, and community in a business discipline, commerce, too.
Content	Corporate reports, training manuals, competitive analyses, performance status, resource links, best practices, news feeds, employee directories	Product catalogs, manuals, FAQs (frequently asked questions), reports on accounts and activity	Articles, books, industry reports, software, directories, job listings, product catalogs, shopping guides
Applications	E-mail, calendar, travel, conferencing, expense reports, function specific applications	Procurement, help desk, online customer service	Discussions, Web site creation, Web hosting, software downloads

Standards not only make portals possible but potent. Portals utilize many standards to integrate and exchange information from different operating systems and applications. One standard in particular, HTML (hypertext markup

language), is the foundation of the Internet. HTML provides rules for the display of information and the way web sites look. HTML also makes information sharing from many disparate computer systems, such as financial, personnel, transaction processing, and design systems not only possible but relatively simple. Web developers and automated tools follow HTML rules to mark the way information is to be displayed.

With the Internet containing over 100 million Web sites with over a billion Web pages, it is not uncommon for Internet searches to identify thousands of hits or matches. Having access to this amount of information is no longer a benefit but a productivity sinkhole. Organizations can greatly improve the accuracy of their searches by creating a thesaurus and enforcing its use. Current search engines use Boolean logic which require exact word matches. If one does not know exactly what to search for, finding information and knowledge is often overly time consuming and frustrating. With a thesaurus similar words are also searched. The searcher need not know the exact word to get the information desired. This simplifies searches and reduces search time.

Key Standards
HTML – Rules for displaying info
XML – Rules for describing info

Another standard, XML (eXtensible Markup Language) will make portals even more powerful. By implementing XML, organizations will be able to integrate related information from many disparate information systems, which will increase their access to knowledge than is currently possible. XML defines rules to mark the contents of files or databases using tags, which make accessing the information easier and searches faster. Organizations need to consistently define their tags to gain the maximum benefits from XML.

XML has not been widely implemented, unfortunately. A major challenge facing XML implementation is finding a non-labor-intensive way to mark existing and future documents. Some software programs can mark existing documents, but they are not 100 percent reliable, which means that someone has to take time to verify that the information is marked correctly. For new documents, the more automated the marking process the greater likelihood that employees will mark their documents when creating them. The Gartner Group projects that 80% of B2B Web activity will be XML-based by 2003.²⁶

Implementing portals is not easy as vendors typically make it seem. There are many barriers to overcome.²⁷ A portal does not improve content; it merely aggregates content. If an organization does not tackle underlying content issues such as poor organization or out-of-date content, the portal will have limited success. Other barriers include the complexity of aggregating information from proprietary systems and the complexity of determining the content for each group

of users. Once implemented, growth can occur too fast for the portal team to manage. Organizations can overcome these barriers by following a business plan that focuses on specific objectives, not attempting too much and involving the users in the design and rollout of the portal.

Implementing Knowledge Management

Implementing KM is not unlike developing a close friendship. Both take time and cannot be forced. In the early stages of a friendship, one person typically takes the initiative, takes risks, and stimulates interest. So it is with KM. Motivated by the move of a competitor, by success stories, or by the reality that a large portion of the workforce is eligible to retire, an innovator brings the concepts of KM into the organization. In this first stage, the objectives are to gauge the organization's openness to KM and to look for opportunities to apply and test KM principles against real organizational issues.

The next stage of implementation begins the process of exploration and experimentation. During this stage, a champion often comes forward and gains senior management attention using a success story from within or outside the organization. The objectives at this stage are to formulate a KM strategy, identify projects to demonstrate KM ideas and principles, and to identify possible pilots. Among the best candidates for pilots are those areas of the organization or projects that are experiencing "pain." The greater the pain the greater the opportunity to demonstrate the value of KM. Also because of the pain, those parts of the organization are likely to be more receptive to trying KM.

The objectives of the next stage are to find resources, conduct the pilots, and share lessons learned. A good strategy is to initiate multiple pilots to generate lessons learned that can be compared to determine which practices worked. By conducting multiple pilots, an organization avoids placing all of its "KM eggs" in one basket. If one pilot stalls or fails, other pilots may succeed. The lessons learned will serve as fuel for the future expansion of KM. People will be more open to try KM when they have a success story that is close to home.

After achieving success with the KM pilots, organizations are ready to expand the use of KM. At this stage, organizations develop an expansion strategy, determine critical success factors and develop facilitators. Some organizations make KM part of their strategy or mission. To build momentum, a passionate and persuasive champion is vital to drive initiatives.

The champion serves as a clearinghouse of KM practices to enhance new and existing KM initiatives. KM initiatives will not "bear much fruit" unless organizations provide resources and encourage employees to participate. A champion helps accrete support and resources to sustain momentum. For

expansion to succeed, organizations need to focus on specific objectives and provide incentives to encourage the sharing and use of knowledge. They will also need to identify the barriers that inhibit sharing and commit to overcome them. During expansion, organizations use formal budgeting and justification measures and activity-based measures to assess results.

The next stage is to institutionalize KM. To implement KM throughout an organization, senior management endorsement and support are essential. The leadership needs to articulate knowledge-sharing strategies, to embed KM in the business model, and to signal priorities and support for KM through budget allocation. Organizations need to monitor the value of KM to the business model and identify links to increased productivity and achievement of objectives.

Elements that Make KM a Success
<ul style="list-style-type: none">• Executive Support• Positioned with Vision Across the Enterprise• Passionate, Persuasive, Visionary Leader -- Able to Drive Initiatives Without Direct Organizational Authority• What Have You Done for Me Lately? -- Measurable Results
-- Sue Hanley, Plural Systems

Between the expansion and institutionalization stages, some organizations appoint a Chief Knowledge Officer (CKO) to be the focal point for implementing KM throughout the enterprise. A CKO helps groups within the organization to plan and implement KM initiatives by sharing knowledge about the ways to manage knowledge. Their efforts make KM initiatives more efficient and more effective by reducing trial and error, establishing standards for easier sharing, and achieving economies of scale with investments in technologies.

The Department of the Navy, one of the largest organizations in the world, has compressed these stages and is currently working to institutionalize KM. The Navy's implementation strategy has been and continues to be both top-down and bottom-up. In 1997, the Chief Information Officer for Enterprise Integration recognized that KM is essential to achieve the Navy's strategic objective of information superiority as a means to be more effective and efficient in safeguarding the interests of the United States. In 1998, the Navy Deputy CIO identified leaders of existing communities of practice and invited them to discuss KM practices. That discussion revealed many KM initiatives producing positive results. Participants recommended that KM be expanded within the Navy. Less than a year later in 1999, senior officers of the Navy adopted KM as one of its four strategic information technology objectives.

According to Alex Bennet, the Navy's Chief Information Officer (CIO) for Enterprise Integration and KM champion, the Navy employs a "pull" strategy to implement KM. Although now widely supported by senior naval officers, the Navy does not mandate KM. Their strategy entices people to "come to the table" through promotion of success stories and creating tools such as the "Knowledge-Centric Organization Toolkit" to help Navy personnel implement KM. The Navy's CIO office is fully engaged in jump starting and facilitating KM initiatives, in developing and promoting KM practices, and in garnering the support of senior officers. Concurrently, the Navy is rolling out the Navy-Marine Corps Intranet or N/MCI. Once implemented, N/MCI will greatly enhance the ability of Navy service men and women and civilians to share information and knowledge among its ships and shore installations.

Implementation Challenges

In a recent survey²⁸ of large and small companies, 63 percent of respondents had a project schedule of three years or less, another 22 percent had not set a time limit on their efforts. Therefore, organizations that think an effective KM program can be planned and implemented in just a few years should take note. "A knowledge management strategy represents a long-term initiative involving not only technology integration but also significant investment in change management and business process design."²⁹

According to the same survey, an organization's main implementation challenge stems from the absence of a "sharing" culture and employees' lack of understanding of KM and the benefits it offers. Organizations can address these challenges by making training, change management and process redesign primary components of their KM initiatives.

Although the focus on organizational culture and change may extend the timeframe for a KM program, "only measurable benefits justify increased duration and cost. Those benefits include better preparation for implementation and the ability to take advantage of existing technology."³⁰

Measuring KM

Performance metrics are important to prove the value of KM initiatives and to gain their acceptance within organizations. Yet for many organizations, determining the value of KM initiatives remains elusive. There are several reasons for this. Many organizations do not have useful performance measurement systems that can determine changes in business performance or productivity. It is also difficult to detect the benefits of a KM initiative if the initiative is not focused on achieving specific objectives or if the initiative only focuses on collecting best practices and not on knowledge use. The type of business in which an organization engages also is a determining factor. It is easier for example for

manufacturing firms to measure changes in productivity than it is for service-based organizations.

Measuring the value of KM initiatives is also complicated by the learning curve involved in implementing KM and measuring performance. One expert recommends experimenting with KM for at least three years before attempting to measure it. Davenport and Prusak recommend that organizations avoid separate measures for KM entirely and use existing measures of performance. Others recommend using anecdotes like the story from the World Bank (see the “Transferring Knowledge” Section) to convey the value of KM, when estimating the economic value is difficult, or the methods to do so are unknown.

While measuring the value of KM has proven difficult, gauging KM activity on the other hand has not. It is much easier to measure the acquisition, creation and sharing of knowledge. The following metrics published by the Corporate Executive Board³¹ are for business case preparation and performance evaluation of knowledge-management Intranets. They illustrate possible measures to determine the degree which workers are sharing and using knowledge.

Metrics for Knowledge Sharing:

- Ranking among top contributing units for the last time period
- Number of resources contributed per person per time period
- Number of times resources were accessed

Metrics for quality:

- Percentage of firm’s knowledge codified on Intranet
- Percentage of information needed that employees can find on Intranet
- Percentage of information that is less than one year old
- Percentage of material that is older than one year that has been revalidated

Metrics for determining use of Intranet:

- Resources most often downloaded or accessed
- Total number of unique users per time period
- Total number of unique contributors per time period

Metrics of knowledge efficiency:

- Time saved in product development/regulatory process
- Time to implement a best practice

Knowledge management faces serious issues. Excessive hype and flawed approaches have hindered its acceptance and limited its benefits.

“Larry Prusak, executive director of IBM's Institute for Knowledge Management, says he's observed about 220 KM implementations and at least half have been ‘deeply sub-optimized’ because it was easier and faster to just buy technology than think through the strategic issues. For example, Prusak tells of a global financial services company that spent six years and nearly \$1 billion on a KM project to improve the productivity of its financial planners. It was purely a technological exercise, and the company has gained almost no return on investment.”³²

In its “Knowledge Management Report 2000,” KPMG found that while companies practicing KM were better off than those that did not, actual benefits did not live up to the expectations of 137 companies.³³ As a result of these and other experiences, KM is developing a reputation as just another management fad not delivering on its promises. Is this reputation deserved? To answer this question, consider the evidence. In an effort to sell their wares, many software vendors, for example, oversold the benefits of KM and down played the difficulty of implementing KM.

It's all part of changing your culture. And if you don't change your culture, you'll never manage your knowledge—and KM will truly be a bust.

Darwin Magazine, April 2001

“The key is how individual companies approach KM—and many simply have the approach wrong. The big mistake is falling prey to vendors' claims that if you just buy the right search engine, portal or Intranet, voilà, you'll have knowledge management. Technology is only a small part of what's overwhelmingly a cultural endeavor, experts say. Before you even touch issues of technology, you need to figure out what types of knowledge your employees need to share and how to coax them into sharing. If you lead with technology, “KM is a bust” will be a self-fulfilling prophecy.”³⁴

Another reason some KM initiatives produce lackluster results is because “many senior executives have mistakenly put their IT departments in charge of knowledge management,” believes analyst Dan Rasmus, who leads Giga Information Group's information and knowledge management practice. “The CEO or some senior executive reads an article, gets turned on to KM and assigns it to IT, saying ‘Buy me a system.’” “The problem with that is twofold: Such an approach doesn't address any social or cultural issues; and even if it did, IS is not the best choice to lead cultural change within an organization.”³⁵

“Steve Cranford, who used to head the knowledge management services division at KPMG Consulting, agrees. Whoever you put in charge of your KM initiative will dictate the direction it takes. If an IT person does it, it'll have a huge IT focus. ‘It's easy to say, “Let's just give it to the IT guy and he'll build something,” says Cranford, who is now the CEO of KSolutions, a knowledge management consultancy in Annapolis, MD. ‘But that's why it's failing.’”³⁶

What does the future hold for knowledge management? KM practices are here to stay although they may become embedded in other disciplines. Tom Davenport, director of Accenture's Institute for Strategic Change in Wellesley, Mass., likens KM to total quality management, which was all the rage in the early 1990s. Although TQM isn't mentioned much these days, it has become incorporated into the way we think about business, he observes. "It would actually be a sign of success if knowledge management got embedded into other things." ³⁷

Glossary³⁸

B

Best practices

Activities that are superior in approach and results. This information can take the form of processes, studies, surveys, benchmarking, and research. They represent subject matter experts' experiences, research, and industry knowledge.

Boolean searching

A technique using three basic Boolean operators (AND, OR, NOT) to link concepts in database searching, e.g., music NOT (reggae or opera) will retrieve records on music other than reggae or opera. A way to combine terms using "operators" such as "AND," "OR," "AND NOT" and sometimes "NEAR." AND requires all terms appear in a record. OR retrieves records with either term. AND NOT excludes terms.

Browser

Short for Web browser, a software application used to locate and display Web pages. The two most popular browsers are Netscape Navigator and Microsoft Internet Explorer.

Business to Business (B2B)

Describes Web sites that sell products or services to other businesses.

Business to Consumer/Customer (B2C)

The retailing part of e-commerce on the Internet and aimed at the eventual user/consumer of a product. It is often contrasted to (B2B).

Chief Knowledge Officer (CKO)

Manages the knowledge sharing process at the command level; leads efforts to move the organization to knowledge centrality; requires a dedication to knowledge management principles, the ability to discuss the benefits of knowledge sharing and the vision to ensure that KM initiatives are adopted by the organization; ensures that the best, relevant information for the area of practice is accessible to all personnel and implements the knowledge sharing strategy in alignment with command guidelines; champions cross-organizational communities of practice, and organizational learning; establishes incentive programs for knowledge sharing and re-use; fosters cultural change; defines roles, skill-set, and opportunities for knowledge workers; and facilitates training and education of knowledge workers.

Collaboration tools

Computer tools designed to enable groups and individuals to dialog, share information and exchange ideas virtually.

Community of interest (Col)

Groups or individuals with a common interest, which does not necessarily relate to their day-to-day work or current task. Communities of Interest share ideas and communicate or collaborate.

Community of practice (CoP)

A group of individuals sharing a common working practice over a period of time, though not a part of a formally constituted work team. Communities of practice generally cut across traditional organizational boundaries and enable individuals to acquire new knowledge faster.

Copyright

The exclusive legal rights granted to an author, editor, composer, playwright, publisher, or distributor to publish, produce, sell, or otherwise use a creative work, within certain limitations. Copyright law also governs the right to prepare derivative works, reproduce a work or portions of it, and to display or perform a work in public. Such rights may be transferred or sold to others. Copyright protects a work in the specific form in which it was created, not the idea, theme, or concept expressed in the work, which other writers are free to interpret in a different way. A work never copyrighted or no longer protected by copyright is

said to be in the public domain. The vast majority of informational products produced at taxpayer expense with U.S. Government funding are considered to be within the public domain, though they may have restricted distribution due to security or privacy considerations.

Corporate capital

Includes intellectual property such as patents and copyrights as well as corporate functional and organizational processes. It also includes all the data and information captured in corporate databases. Corporate capital is one of the components of intellectual capital, along with human capital and social capital.

D

Data

A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing. Data are distinct pieces of information, usually formatted in a special way.

Database

A collection of interrelated data, often with controlled redundancy, organized according to serve one or more applications. Data are stored so that they can be used by different programs without concern for the data structure or organization.

E

Electronic commerce (eC or e-commerce)

The buying and selling of goods and services on the Internet, especially the World Wide Web. Often e-commerce and e-business are used interchangeably. In practice, e-commerce is usually restricted to the process of buying, selling, and paying; e-business refers to the digitalization of a vast area of business processes. For on line retail selling, the term e-tailing is sometimes used.

Electronic government (e-Gov or e-government)

The access to and interchange of government information via the Internet and electronic media.

Enterprise knowledge

Enterprise knowledge is all intellectual capital the enterprise has and includes three essential components: human capital, social capital and corporate capital.

Explicit knowledge

Formal, systematic knowledge that is easily identified in items, such as policy documents and operation and procedure manuals.

E-training

The process of training and educating using various technologies such as Internet based programs and video teleconferencing. Also known as distributed and distance learning.

H

Home page

The first page on a Web site. It is the starting point for navigation.

HTML (Hypertext Markup Language)

The document format used on the World Wide Web. Web pages are built with HTML tags, or codes, embedded in the text. HTML defines the page layout, fonts and graphic elements as well as the hypertext links to other documents on the Web. Each link contains the URL, or address, of a Web page residing on the same server or any server worldwide, hence "world wide" Web.

HTTP (Hypertext Transfer Protocol)

A protocol for exchanging HTML pages and forms.

Human capital

All the expertise, experience, capability, capacity, creativity, and adaptability possessed by the individuals in an organization.

I

Information

Facts, data, or instructions in any medium or form. Also, the meaning that a human assigns to data.

Information management (IM)

The creation, use, sharing, and disposition of information. It includes the processes to produce and control the use of data and information within functional activities, information systems, and computing and communications infrastructures.

Information technology (IT)

Any equipment, or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. The term "IT" includes computers, ancillary equipment, software, firmware, services and related resources.

Intellectual property

Refers to a body of tangible products of the human mind and intelligence, which have the legal status of personal property. These typically include works protected by copyright and inventions protected by patent (including trademarks). Ideas are not considered the intellectual property of their creator until they are recorded or published or publicly manifested in some form. The vast majority of informational products/documents created as a result of U.S. Government funding is not considered the property of their creators, and are not subject to copyright, though access to them may be restricted due to security and privacy concerns.

Intuiting

The art of making maximum use of intuition. Intuition is typically understood as being the ability to access our non-conscious mind and thereby make effective use of its very large store of observations, experiences, and knowledge. Another aspect of intuiting is empathy, which is the ability to take oneself out of oneself and putting oneself into another person's world.

J

Judging

The application of conclusions and interpretations developed through the use of rules of thumb, facts, knowledge and experiences, and intuition.

Knowing

Seeing beyond images. Hearing beyond words. And sensing beyond appearance. Knowing improves one's ability to discern, to associate ideas. To gain greater insight, and to make better decisions.

Knowledge

The ideas, understanding, and lessons learned over time. Knowledge is information that has value for decision and action.

Knowledge audit

A process to determine how knowledge is collected, stored, reported, and used. A knowledge audit determines the knowledge needed and available.

Knowledge base

In an organization, the stored knowledge and expertise of individuals accessible by users.

Knowledge-based systems

Systems which embody general forms of reasoning and rules (i.e., case-based and rule-based reasoning) that permit the system to analyze a new situation or process.

Knowledge-centric

The ability to leverage personnel and technology assets jointly, creating knowledge and then delivering the insights created quickly to the right person at the right time to solve problems.

Knowledge-Centric Organization (KCO)

An organization organized virtually around its critical knowledge needs and which builds useful and relevant information to fill those needs.

Knowledge intermediation

Also called knowledge brokering. It is the process of linking disparate knowledge providers with people in need of the knowledge, both inside and outside the

organization. Knowledge intermediation is a critical personal skill for the development of an effective knowledge-centric organization.

L

Learning organization

An organization that is committed to continuous learning at the individual and organizational level.

P

Portal

A World Wide Web site that is or proposes to be a major starting site for users when they get connected to the Web or that users tend to visit as an anchor site. Some general portals include FirstGov, Yahoo, Excite, Netscape, Lycos, CNET, Microsoft Network, and America Online's AOL.com. Niche portals include SearchNT.com (for Windows NT administrators).

S

Search engine

A program that searches documents for specified keywords and returns a list of the documents in which the keywords were found. Although search engine is really a general class of programs, the term is often used to specifically describe systems like Alta Vista and Excite that enable users to search for documents on the World Wide Web.

Storytelling

The construction of fictional examples to illustrate a point and effectively transfer knowledge. An organizational story is a detailed narrative of management actions, employee interactions, or other intra-organizational events that are communicated informally within the organization. When used well storytelling is a powerful transformational tool in organizations.

Systems thinking

An approach for managing complexity by helping decision-makers understand the cause and effect relationships among data, information, and people. It

identifies types (or patterns) that occur over and over again in decision-making. Systems thinking expands individual thinking skills and improves individual decision-making.

T

Tacit knowledge

Personal "know-how" that is hard to articulate because it is derived from individual experience and beliefs. Includes what an organization knows and what it knows how to do, but cannot express and codify.

Taxonomy

The science of classification according to a pre-determined system. The resulting catalog is used to provide a conceptual framework for discussion, analysis, or information retrieval. In practice, a good taxonomy is simple, easy to remember, and easy to use.

V

Vortal

A vortal or vertical portal is a portal originated on Web sites that caters to consumers within a particular industry.

X

XML (eXtensible Markup Language)

Provides a standard way for programmers and other users to exchange information about metadata (essentially, information about what a set of data consists of and how it is organized). Specifically, XML is intended to help programmers using the Unified Modeling Language with different languages and development tools to exchange their data models with each other. In addition, XML can also be used to exchange information about data warehouses.

Endnotes

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- ⁵ “Major Management Challenges and Program Risks: A Governmentwide Perspective,” General Accounting Officer Report GAO-01-241 of January 1, 2001
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- ⁷ “Increase in responses by smaller companies and the KM activity in a broader array of verticals reflect the growing interest in KM across markets.” [“The State of KM,”](#) Knowledge Management Magazine, May 2001
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- ⁹ Knowledge Management Magazine, April 2000, page 36
- ¹⁰ “The Tipping Point: How Little Things Can Make a Big Difference,” Malcolm McDowell, page 181
- ¹¹ “Perfecting Knowledge Transfer,” June 1998, Corporate Executive Board, page 2
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- ¹³ Program Management 2000: Know the Way – How Knowledge Management Can Improve DoD Acquisition – Report of the Military Research Fellows, DSMC 1998 – 1999
- ¹⁴ Knowledge Management Handbook, Edited by Jay Liebowitz, 1999, page 1-16
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- ¹⁸ For more information on storytelling, see “The Springboard: How Storytelling Ignites Action in Knowledge-Era Organizations,” by Stephen Denning
- ¹⁹ “The Springboard: How Storytelling Ignites Action in Knowledge-Era Organizations,” by Stephen Denning, page xviii
- ²⁰ Working Knowledge: How Organizations Manage What They Know, Thomas H. Davenport and Laurence Prusak, pages 103 - 104
- ²¹ “The Inner Game of Work,” W. Timothy Gallwey, page 157
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- ²³ A portal is not required for all KM tools.

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- ²⁴ “Perfecting Knowledge Transfer,” the Corporate Executive Board, page 25
- ²⁵ From the Delphi Group’s Corporate Portal Report, Knowledge Management Magazine, [April 2000](#), page 42. The Delphi Group identified two additional portal types, Commerce and Corporate. Those portals target business professionals in any discipline and consumers, respectively.
- ²⁶ [“When Bad Things Happen to Good Ideas,”](#) Darwin Magazine, April 2001
- ²⁷ For more information on barriers to implementing portals, see Knowledge Management Magazine, [October 2000](#), page 46
- ²⁸ [“The State of KM,”](#) Knowledge Management Magazine, May 2001
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- ³⁰ [“The State of KM,”](#) Knowledge Management Magazine, May 2001
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